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Rochester Institute of Technology

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

Learning Hangeul with Games:

Applying Multimedia Techniques to Educational User Interfaces for
Young Korean-American Children

By Eun-Hee Han

01-12-2006

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Abstract

Learning Hangul with Games: Applying Multimedia Techniques to Educational User Interfaces for Young Korean-American Children

This program is designed to motivate four- and five-year old Korean-American children to learn Hangul, the Korean language. Multimedia techniques make these lessons fun and interesting, by using lively visual images, sounds, and animation to communicate the material and have children practice Hangul. To do so, the program utilizes a three-part methodology:

- ** Lesson 1 is word recognition,
- ** Lesson 2 teaches Korean language characters
- ** Lesson 3 teaches sentences.

Once children understand the lesson concepts, they play games to reinforce their understanding of those concepts. This practice stimulates functions of the brain and provides an interesting way for the children to learn and practice Hangul. Many Korean parents are eager to teach their children the Korean language because they live in an immigrant society. They permanently have moved to another country, but still wish to retain their Korean heritage. This program recognizes the desire many families have to maintain their Korean culture through future generations.

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I. Introduction

The aim of this thesis is to provide a way to stimulate children's interest when they learn "Hangul," the Korean alphabet. The primary users of the program will be young Korean-American children between the ages of 4 and 5, who have lived in the U.S. before starting their regular schooling in elementary school. The essential parts of the program apply multimedia techniques to integrate visual, musical, and animated art for educational language purposes.

A computer has been shown to be as an excellent tool for learning languages, because basic text and graphics as well as motion pictures and animation can be provided using program applications. Indeed, computer-designed multimedia techniques have truly become the new learning methodology today. This educational phenomenon is expected to continue into the future with the increasing need to communicate using multimedia images.

One can easily observe the powerful use of multimedia techniques around us, especially those used for educational purposes. Many kinds of electronic books, educational software, and other learning materials used in schools and public places are good examples. Many experts have also worked to develop educational programs for learning challenged children who are learning languages and utilizing integrated computer games for basic language education methods.

In this regard, one of the major issues when developing a computer-based language education program is how effective the teaching program will be. For this reason, this thesis researched and divided the market demands and designed an age specific language program for Korean-American children. Its two distinct parts, Lessons and Games for the program can enhance a child's self learning process. The Lesson part of the program invokes and helps learners perceive the proper image of the characters of the Korean language, Hangul, while the Game part of the program helps children enjoy memorizing and practicing their new knowledge of the Hangul characters.

II. Current Educational Programs Reviewed

A. Computer games as learning tools

Before mid-1990's, it was uncommon to use computers in schools and homes. Today, computers are ubiquitous and nearly everywhere. Use of computers has also rapidly spread in the educational field. While the earliest educational software proved to be poor and ineffective, recent computer programs have introduced a new era of technology for educational purposes. Some current educational software focuses on formal learning methods that use text, illustrations and photographs. Most of these do not focus on adventure or interesting learning methods, such as games and puzzles.

Newer programs, however, tend to emphasize the effectiveness of computer games for learning languages. Recent developments in computer games have changed the role of computer-based education and have made learning more fun. Games are effective tools for teaching and learning a language because games are fun and stimulate a child's curiosity. Enjoying the learning process is important when children are learning language.

Children often lack patience and concentration, so introducing the aspect of fun into learning a language helps children to develop the discipline of language study. As most early childhood experts already know, dramatic play is an extremely valuable part of any child's daily learning curriculum. Moreover many scholars agree that games are an extremely good way of learning language. Knotts and Keys (1997) state that, "Game-based courses have produced superior learning to case-based courses." (p. 378). Other experts, Bisson and Lucker(1996), agree: "The role that fun plays with regard to intrinsic motivation in education is twofold." (p. 109-110). Rose and Nicholl (1999) state that, "Play is an important part of the learning experience. When we enjoy learning, we learn better." (p.63). Dr. Frank Moretti (Columbia Teachers College) has said that, "Games are a particularly motivating factor when there is little intrinsic motivation in the subject itself." (<http://www.games2train.com>). All of these comments support the positive use of games in learning languages.

However, there is also a negative side to game-based language learning. For example, there can be too much entertainment in language learning games. Games are

not the only way persons can learn language. Games are just one effective method among many technique choices. Still, educational games are effective ways to combine study with pleasure. For this reason, I chose to design a program for learning a language that combines lessons with games.

B. Characteristics of previous programs for learning language

This thesis used seven existing sources: Two Korean online websites, three American websites, and one Japanese multiple interface. Referring to these sources, this new program improves on all current educational language programs by eliminating their weak points. The program makes it easier for Korean-American younger children to learn Hangul by applying multimedia techniques to educational user interfaces. Source 1. The web site [familyschool.co.kr](http://www.familyschool.co.kr) is an educational web site for children from 2 to 9 years old. (<http://www.familyschool.co.kr/>). Source 2. The website [jaeminara.co.kr](http://www.jaeminara.co.kr) is for children from 2 to 9 years olds. (<http://www.jaeminara.co.kr/>). Source 3. The website [bebeline.co.kr](http://www.bebeline.co.kr) is a special brain-development program for children from 0 to 8 years old. (http://www.bebeline.co.kr). Source 4. The website [cogcon.com](http://www.cogcon.com) is designed for children to learn English through games. (http://www.cogcon.com). Source 5. The website pbskids.org is a total educational website meant to support public broadcasting. (<http://pbskids.org/>). Source 6. The website [onestopenglish.com](http://www.onestopenglish.com) provides Interactive games for children learning English to make learning more fun. (http://www.onestopenglish.com). Source 7. The website [blackbeltlanguage.com](http://www.blackbeltlanguage.com) does not provide an online source. Instead it offers a CD titled, *BlackBelt Japanese: the Language Learning Game*. (<http://www.blackbeltlanguage.com>).

1. Strengths

a. A variety of subject material

These various sources have different features and strengths. Source 1 (familyschool.co.kr) focuses on learning Hangul. The first step to learning Hangul is learning words, and the second step is learning vowels and consonants. The third step is learning short and long sentences. Source 2 (jaeminara.co.kr) focuses on learning stories.

Its first step for learning Hangul is to learn words, the second step is learning characters and the third step is learning stories. Source 3 (bebeline.co.kr) focuses on learning etiquette and poetry. There are six steps to Learning Hangul: Dancing Hangul, reading Hangul first, traveling Hangul, reading an illustrated book, reading poetry, and learning manners. Source 4 (cogcon.com) consists of three levels of games for the beginner, intermediate, and advanced learner. These contents are related to precise educational standards of teaching: Identify letters that compose words, recognize and use the correct word order in sentences, spell 3-letter short vowel words, and demonstrate knowledge of antonyms. Source 5 (pbs.com) supports many different learning concepts, such as story time, music, games, and coloring sections.

b. A plethora of content for each subject

Some sources used many kinds of content to learn language, such as house furnishings, families, animals, transportation, etiquette, and culture. Others content included colors, numbers, shapes, transportation, park, paint and play, a Barney's music game, and others. Another program provided a few simple games for learning English. For example, Find the missing building game, Find the animal game, a Drag and Drop game, Connect the Dots game, a Look and Write game, and others. Still other sites offered many subjects, such as animals, body, colors, daily routine, food, recreation, shopping, weather, and other material to learn language.

2. Weaknesses of current learning language programs

a. A design for general audiences

Some current programs do not identify the various stages of children's learning. They are divided only into two ranges, toddlers and children. Another source offered various levels, but the service can only be obtained through a paid subscription. One program indicated three steps; 0-2, 2-4, 4-8, which was too broad for learning a language. Some programs are just for kids. Another program was designed for use in elementary schools and universities, by business people as well as travelers. Instead of a general target audience, a design is needed for a specific age group to enhance the effectiveness of the

educational software and the actual learning. The target audience for this project is 4-5 year old Korean-American children.

b. Insufficient information on Hangul concepts

Some programs lack sufficient contents for children. The programs are described only once and then move to the next contents to show different ways of understanding the material. They do not explain enough about the content. For instance, this is a 'pen'. The sentence does not explain anything about a pen's material, function, or source. In my program, the content is interpreted in three kinds of different ways: Words, characters and sentences. The program connects each chapter of the content. It has the same content, but different information about it. In the first step, the program shows a simple word; in the second step, the program offers a little bit deeper information about the word; in the third step, the program supports even deeper information about the contents and shows its use in sentence format.

c. Difficulty in understanding Hangul concepts

Some programs offer content that is too varied for children to understand. For instance, some programs provide stories or sentences, but their content is difficult to understand. In my program, the content is repeated throughout Lessons 1 to 3 and Games 1 to 3. A repetition skill is necessary for children to recognize Hangul easily and unconsciously.

d. Use of only static images

Some sources used static images. It is impossible to stimulate children's interesting in learning language by using just static images. My program's images use dynamic contents, 2-D animation, sound, and interactive images.

e. Use of just games to teach language

Some sources used only games to teach language except for the actual lessons or

other information. When language is learned only through games, children will have a narrow concept of the language. My program incorporates two kinds of learning skills. Both lessons and games are utilized to achieve effective language learning. It is possible to learn a language, play games after studying the lessons or learn the lessons after playing the games. This program aspires to offer a balance of methods to learn a language.

C. Summary

Based on the research, there are no websites, CD-ROMs or DVDs for younger Korean-American children. Most websites or electronic sources aim to educate adults in the business world. Terry S. Salinger (1996) indicated the nature of problem in a different way "Educational software of any kind was scarce because most early software developers concentrated on business applications." (p.86). There are few websites sources, or multiple interface designs that present the learning of language with games for younger children. From those I investigated, I could not find proper sources for a specific target audience. I found few sources with learning language programs for young children.

There are three Korean websites available for children. Also, there are three English websites for children; another website focuses on Japanese for children to adults. These seven sources are well organized and offer a considerable amount of information. There are also several weak points to the sources. First, grade levels are not separated, and target audiences are too broad and ambiguous. Secondly, several sites lacked sufficient examples. Third, the contents varied too much to be effective with just children. Fourth, practice lessons were filled with static images. Fifth, the sources used only games to teach language and not any lesson content. They did not offer support lessons, visuals, and sounds.

My program improves on all the current educational language programs by eliminating these identified weak points. The program is also created for specific users: 4-5-year old, Korean-American children. The program consists of three learning steps: Learning words, learning characters and learning sentences. Each learning step interprets three different concepts: Words, characters and sentences. Those topics consist of dynamic content, 2-D animation, sounds, and interactive images. The program

incorporates two different learning skills, namely lessons and games. For fun, educational memory lessons and games will stimulate children learning Hangul. Other educational software programs use a lesson style method or a game style method to teach, but not both. This program helps the children learn effectively by offering both styles in a balanced format to learn Hangul. The lesson style enhances the learning of Hangul while the game style makes the learning fun and keeps the children's attention on the topic.

III. Methodology

A. Programming focus

1. What creates a child friendly environment?

This thesis offers two options for when children start learning Hangul: Choose a character or select a specific place. Children like exciting objects and familiar environments. They like bears, fairies, cats, robots, and magicians. Boys especially like robots, magicians and cats; girls like bears, fairies, and magicians. Hence, children can choose different objects to use the program to learn. Next, are the friendly places, A Zoo, My House and Toyland are common places in children's lives. These three places have different features. My House is a daily life place, and children will recognize household objects. The Zoo is a place children like to visit. Children will learn to recognize Hangul animal names and features here. Toyland is another interesting place children want to go. They quickly learn Hangul about toy names because they already know how to play with these toys. These three areas were selected because children like to learn language using friendly objects and familiar places.

2. What characters do Korean-American children need to learn the Korean language?

Children learn language systematically through lessons and games. This program shows Korean characters, words, and sentences with interactive visual images and displayed Korean pronunciations. The program also explains the content using English

expressions. From this program, children will learn the Korean language along with supporting information.

3. How do children learn using this program?

When children open the program, they see and hear the Korean language. The content consists of many kinds of interface designs, animations, sounds, and visual pictures. When the user clicks on an image, Hangul characters and sounds appear. Children will learn the Korean language by moving from words to sentences seeing exciting images that spark their curiosity. Children will learn Korean language words in Lesson 1, learn characters in Lesson 2, and learn sentences in Lesson 3. After finishing each lesson, the children will play a game. Children will have fun and enjoy their learning through playing/practicing the game. The content of the program connects the lessons with the games. Therefore, children will understand the topic easily and learn readily through applying repeating lesson skills. Moreover, they will be able to evaluate and refresh their lessons through using the games. The same content is used in each step of the lesson and the game, but the images are presented differently in three places: A Zoo, My House and Toyland.

B. Obstacles to the programming

1. What information could/should children learn?

What boundary information do I support for the first step, second step, and third step? I designed three steps for the lessons and games. The first step is learning words, the second step is learning characters, and the third step is learning sentences. The entire content in the first step presents simple words under the categories of Zoo, My House and Toyland. In the second step, the program represents the meaning of each language character with visual information. In the third step, the meaning of the word creates and then becomes a sentence. All the activities are linked to typical routines of general knowledge for the Zoo, My House and Toyland.

2. How best to explain Hangul?

What is the best way to explain the Hangul? The target audience is for 4- to 5-year old children. They are not ready to understand complicated alphabets. Therefore, this program refers to word, "기차(Train/gi-cha/)", compound characters, "기/gi/" of "기린 (Giraffe/gi-rin/.)" "차/cha/" of "자동차 (Car/ja-dong-cha/)" and simple sentence, "기차는 길어요. (The train has a long tail./gi-cha-nun gil-oe-yo/.)" divided into three steps. Through each step, children can recognize the basic information about the Hangul. Korean and English letters, Korean sounds, pronunciation, and proper images are used in each lesson and game. If the user does not understand the Korean sounds, pronunciation clues are also presented. Moreover, if younger American, non-Korean children have a chance to use this program, they may also be able to learn the Korean language.

3. How to determine the right audience?

I determined the range for the target audience to be 4-5 years. Research indicates that these age groups usually have curiosity about objects and the ability to control learning tools, such as a computer. Also, the language ability of 4- and 5-year old children is normally sufficient to express simple and compound sentences. For instance, "코끼리는 코가 길어요. (An elephant has a long trunk.)," "침대는 창문아래에 놓여있어요. (A bed is under the window.)," and "연은 꼬리가 길어요. (A kite has a long tail.)," and so on. When these age groups study a second language, they usually learn faster than do other age groups.

4. What is the best first step to learn the Korean alphabet and language?

Which step is the best step to learn the Hangul? Is it characters or words? The choice is too difficult to decide. The Korean alphabet consists of forty letters: Twenty-one vowels and nineteen consonants. But twenty-four letters are basic: 14 consonants and 10 vowels (Figure1). Jane Wightwick (2001) reported that "There are no capital letters in the Hangul alphabet. The letters making up each syllable are also written together to form a square shape. A syllable consists of:

- ** Consonant + vowel, or sometimes
- ** Consonant + vowel + consonant:

ㅈ(j) + ㅏ(a) = 자(ja)
 ㅅ(s) + ㅜ(u) = 수(su)
 ㅋ(k) + ㅣ(ee) = 기(kee)
 ㅁ(m) + ㅏ(a) + ㄹ(l) = 말(mal)"

Sometimes a consonant can be doubled:

빠(ppa) 싼(ssan)

Note also that the letter ㄴ(ng) is silent when at the beginning of a syllable:

양(yang) 오(aw) 입(eep)

Exactly how each combination of letters is written in a syllable is determined by the shape of the letters and convention. (p. 5~6).

In Korea, a children educational expert (Anonymous, 2000) said that the alphabetical order language learning system is called "an educational way of left cerebral hemisphere." It means rational study way to stimulate left-side brain. Commonly a child's right cerebral hemisphere is more developed than the left cerebral hemisphere at the same age. Children more easily can start word study at this time, instead of starting alphabetical study because the right cerebral hemisphere is stimulated at 4- to 5-year age. The learning will have a more effective result when using an educational method of right cerebral hemisphere rather than using the educational stimulating of the left cerebral hemisphere. (<http://www.jaeminara.co.kr>). For this reason, I did not mention Korean alphabet units because these alphabets are difficult for 4- to 5- year old children, for example, "ㄱ(g/k), ㄴ(n), ㄷ(d/t), ㄹ(l), ㅁ(m), ㅂ(b/p), ㅅ(s/sh), ㅇ(ng), ㅈ(j/z/ch), ㅊ(ch), ㅋ(k), ㅌ(t), ㅍ(p), ㅎ(h/ng), ㅏ(a), ㅑ(eo), ㅓ(oo), ㅗ(aw), ㅛ(u), ㅕ(i/ee), ㅗ(ae), ㅛ(e), ㅑ(ya), ㅓ(yo), ㅗ(yo), ㅓ(yoo), ㅑ(wa), ㅛ(we), ㅓ(wee)," and so on. I only mention the compound characters. For instance, "원(won)" of "백원(\$10)" and "송(sung)" of "송어(Mullet)" "이(i)" of "옷걸이(Coat hanger)" are combined to make "원숭이(Monkey)" As an English, "M" is like the letter in "Monkey," "Money," and "Mother." I focused on demonstrating the words as the first step and the compound characters as the second step.

This program is designed to have three steps for learning language: First, learn words, second, learn compound characters, and third, learn short sentences. The first level demonstrates the words with sounds and images (Figure 2). The second step demonstrates compound characters (Figure 3). The third step demonstrates short sentences (Figure 4).

Figure 1. Korean Hangul Alphabet (14 consonants and 10 vowels)

| Consonants | | | | Vowels/Vowel Combinations | | | |
|------------|------|---|--------|---------------------------|-----|--------------------|-----|
| ㄱ | g/k | ㅇ | ng | ㅏ | a | ㅡ | u |
| ㄴ | n | ㅈ | j/z/ch | ㅑ | ya | ㅣ | ee |
| ㄷ | d/t | ㅊ | ch | ㅓ | o | Vowel Combinations | |
| ㄹ | r/l | ㅋ | k | ㅕ | yo | | |
| ㅁ | m | ㅌ | t | ㅗ | aw | ㅛ | e |
| ㅂ | b/p | ㅍ | p | ㅛ | yo | ㅜ | wa |
| ㅅ | s/sh | ㅎ | h/ng | ㅠ | oo | ㅠ | we |
| | | | | ㅠ | yoo | ㅣ | wee |

Figure 2. Learning Words. 코끼리 /ko-kki-ri/ Elephant

Learning words:

Click the animal The animal pops up and names itself in Hangul letters. Move the mouse, and the named animal returns to the first picture.





Figure 3. Learning Characters. 코끼리는 코알라의 “코”, 도끼의 “끼”, 소리의 “리”가 어울려져 “코끼리”가 되었어요. (“ko” of ko-al-ra, “kki” of do-kki, “ri” of so-ri are combined to make “Ko-kki-ri / Elephant.”)

Learning Characters:

Click the animal



“코” of “코알라”, “끼” of “도끼” and “리” of “소리” are combined to “코끼리”

This Korean symbol forms the English word, Elephant.

Figure 4. Learning Sentences. 코끼리는 코가 길어요. 큰 두개의 앞니도 있어요.
(An Elephant has a long trunk and two big tusks.)

Learning Sentences:

Click the animal



코끼리, 코끼리는 코가 길어요.
큰 두개의 앞니도 있어요 "

This Hangul with sound and pictures
composes a sentence. This also
demonstrates pronunciation in
Hangul for Elephant.



▼ 코끼리,
Elephant /ko-kki-ri/

코끼리는 코가 길어요.
ko-kki-ri-nun ko-ga gil-eo-yo

큰 두개의 앞니도 있어요.
kun du-ge-e ap-ni-do eef-ee-yo

An elephant has a long trunk and two big tusks.



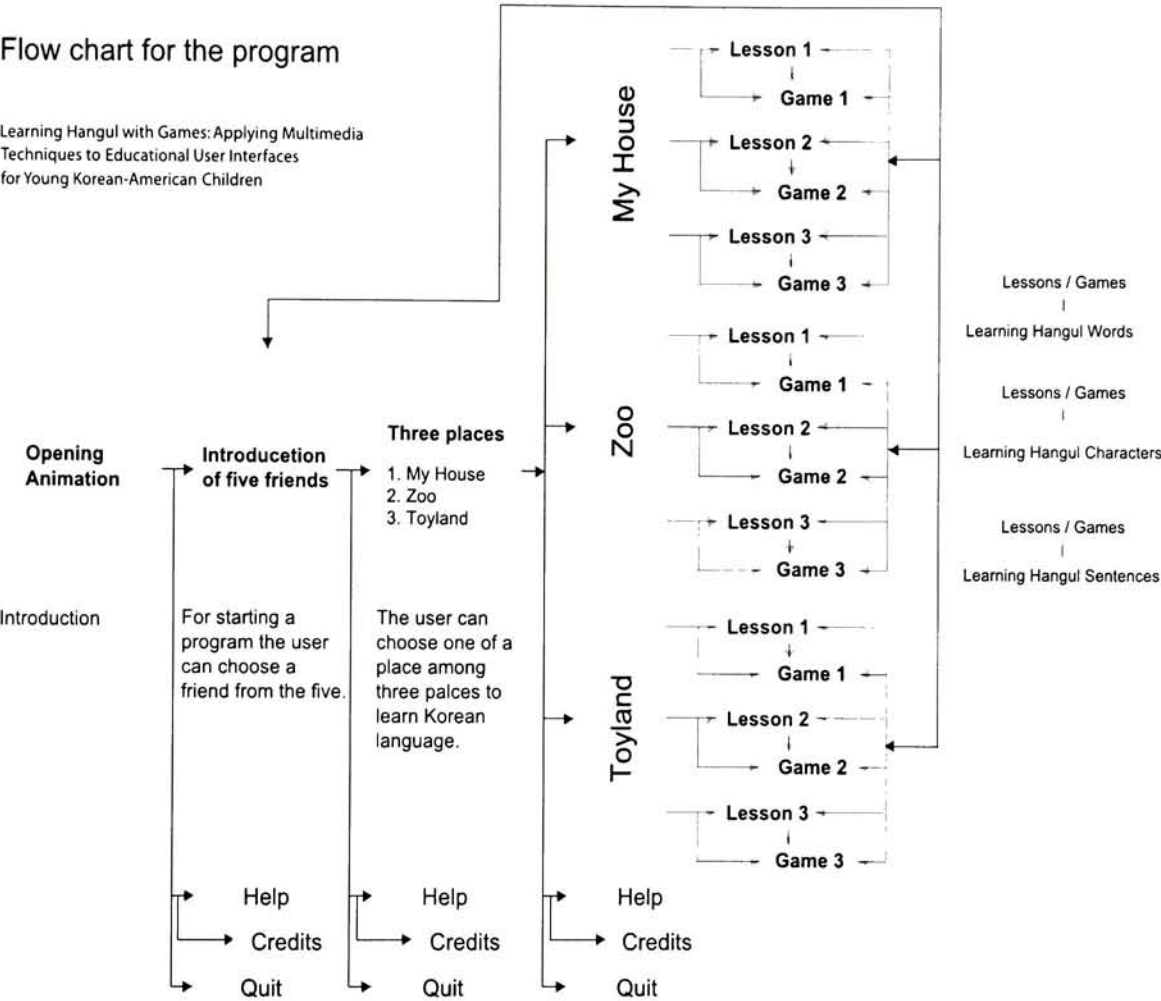
5. What kind of typeface, color, visual expressions, sound, and music does the program use?

It was very difficult to organize these elements into a completely interactive design. I focused on selected users who are young Korean-American children. The content was designed for simple and easy expression. I designed several simple trial versions and demonstrated it to non-Korean learners who offered different opinions, such as the designs demonstrate a pronunciation in Hangul with English and uses dynamic images. The learner enters a user name before playing the games, and the program calculates the time taken for the user to find all the correct answers. Two children practiced a game, they were competed each other to find a correct answer while calculating time. I would think at this stage of learning, it is accuracy of the learning and understanding that is crucial and not time. I accepted the children's recommendations and then redesigned the program several times. For voice recording, I contacted two people. The first was Siae Kong. She has a very attractive voice, but she later returned to her country. I made a trial program using her voice. Another voice I tested was that of Shin-Ji Lee, who helped me positively. In the end, I had the program use Shin-Ji's voice. Graphical components in this application are presented in a two-dimensional ways. (See an example from the program)

I used a different color for each place: Green for the Zoo, yellow for the House and blue for the Toyland. Children recognize comfortable and familiar objects in a house, know

the natural environment of various animals, and dream in a Toyland. The combination of using bright and warm colors is effective for children's educational software.

C. Flow Chart



D. A Korean language learning program

This project presents three levels of lessons and games that address step-by-step lessons and playing of games to reinforce the same lessons. The technology used for this application was Macromedia Flash, Adobe Photoshop, Illustration, Spark ME, and Audition. I used Flash to create the interactive user experience, Photoshop to edit the images and create graphics images, and Spark ME and Audition to edit the voice and sound.

This program is in a CD-ROM format. To open the language program, the user/learner clicks a button and interactive images appear. The user or learner will choose a lesson section or a game lesson, each of which he or she can use to step through different activities. The learner used functional and interactive buttons to active the program.

Table 1: Contents of the program

| Section | Composition | Contents | Note |
|---------|--|--|---|
| Intro 1 | <p>들어가기 (Enter button) 그만하기(Quit button) 학습가이드 (Help button)</p> | <p>한글배우기 게임랜드에 오신 것을 환영합니다.</p> <p>Welcome to The Gameland for Learning Hangul!</p> | The user clicks the Enter button to move to the next scene. |
| Intro 2 | <p>다섯명의 친구들 Five friends</p> <p>-곰인형(Teddy Bear) -요정(Fairy) -고양이(Cat) -로봇(Robot) -마술사(Magician)</p> | <p>어린이가 좋아하는 캐릭터를 선택하세요.</p> <p>There are five friends: A Robot, magician, teddy bear, fairy, and cat. You can choose one friend from the five to learn Hangul.</p> | <p>왼쪽, 오른쪽 버튼을 누르면 캐릭터가 돌아가는 방향을 바꿀 수 있어요. 원하는 캐릭터를 클릭하면 소리와 함께 중앙에 와서 멈추게 됩니다. 클릭한 캐릭터와 함께 한글배우기를 하려면 다시 한번 중앙에 있는 캐릭터를 클릭하세요.</p> <p>Push the right or left button to make the friends turn right or left. When you choose one friend you like from the five, you can hear the voice and the friend stops on the center of the stage. Then click one more time if you want to learn Hangul with the friend.</p> |
| Intro 3 | <p>세개의 장소 (Three places)</p> <p>우리집(My House) 동물나라(Zoo) 장난감나라(Toyland) 처음으로(Home) 그만하기(Quit) 학습안내(Help)</p> | <p>우리집, 동물나라, 장난감나라 세개의 장소 중 어린이가 가보고 싶은 곳을 선택하세요.</p> <p>Which places do you want to go? You can choose one of three places; - My House - Zoo Toyland</p> | <p>캐릭터를 드래그하여 가보고 싶은 장소에 드롭하세요.</p> <p>Use your mouse to drag the friend and drop it in place.</p> |

| | | | | |
|-------------|-----------------|--|---|---|
| | 우리집 (My House) | <p>처음으로(Home) 학습1(Lesson 1) 학습2(Lesson 2) 학습3 (Lesson 3) 게임1(Game1) 게임2(Game 2) 게임3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>우리집에 오신 것을 환영합니다. 우리집에는 많은 물건들이 있어요. (11 종류의 물건들)</p> <p>Welcome to My House. There are many things in My House.</p> <p>11 objects</p> | <p>각각의 물건들을 클릭해 보세요. Click on the objects to hear the sound of the name of each object.</p> |
| | 동물나라 (Zoo) | <p>처음으로(Home) 학습1(Lesson 1) 학습2(Lesson 2) 학습3 (Lesson 3) 게임1(Game1) 게임2(Game 2) 게임3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>동물나라에 오신 것을 환영합니다. 동물나라에는 많은 동물들이 살고 있어요. (10 종류의 동물들)</p> <p>Welcome to the Zoo. There are many animals in the Zoo.</p> <p>10 animals</p> | <p>각각의 동물들을 클릭해 보세요. Click on the animals to hear the sound of their name.</p> |
| | 장난감나라 (Toyland) | <p>처음으로(Home) 학습1(Lesson 1) 학습2(Lesson 2) 학습3 (Lesson 3) 게임1(Game1) 게임2(Game 2) 게임3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>장난감나라에 오신 것을 환영합니다. 장난감나라에는 많은 물건들이 있어요. (14 종류의 장난감들)</p> <p>Welcome to the Toyland. There are many toys in Toyland.</p> <p>14 toys</p> | <p>각각의 장난감들을 클릭해 보세요. Click on the toys to hear the sound of the name of each toy.</p> |
| 학습 (Lesson) | 학습1 (Lesson1) | <p>단어배우기 Learning words</p> <p>처음으로(Home) 학습1(Lesson 1) 학습2(Lesson 2) 학습3 (Lesson 3) 게임1(Game1) 게임2(Game 2) 게임3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>A. 우리집(My House) 우리집에 어떠한 물건들이 있는지 알아볼까요? What kind of things are in My House?</p> <p>B. 동물나라(Zoo) 동물나라에 어떠한 동물들이 있는지 있는지 알아볼까요? What kinds of animals are in the Zoo?</p> <p>C. 장난감나라(Toyland) 장난감나라에 어떠한 장난감들이 있는지 알아볼까요? What kinds of toys are in the Toyland?</p> | <p>점선으로 그려진 각각의 형태들을 클릭하세요. Use your mouse and click the shapes and draw dotted lines of animals, objects, and toys.</p> <p>You will see the images and letters and hear sound of the words.</p> |

| | | | | |
|-----------|-----------------|--|--|--|
| 게임 (Game) | 학습 2 (Lesson 2) | <p>날자 배우기 Learning characters</p> <p>처음으로(Home) 학습 1(Lesson 1) 학습 2(Lesson 2) 학습 3 (Lesson 3) 게임 1(Game1) 게임 2(Game 2) 게임 3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>A. 우리집에 있는 물건들의 이름을 알아볼까요? What are the names of things in My House?</p> <p>B. 동물나라에 있는 동물들의 이름을 알아볼까요? What are the names of animals in the Zoo?</p> <p>C. 장난감나라에 있는 장난감들의 이름을 알아볼까요? What are the names of toys in the Toyland?</p> | <p>각각의 물건들을 클릭하세요. 낱말을 설명하는 글, 그림과 함께 소리를 들을 수 있으며, 다시듣기 버튼을 누르면 다시 들을 수 있어요.</p> <p>Use the mouse to click the objects, animals and toys. You will see the varieties images, and letters and hear sounds of the characters.</p> <p>If you want to hear the sounds again, click the Replay button.</p> |
| | 학습 3 (Lesson 3) | <p>문장 배우기 Learning sentences</p> <p>처음으로(Home) 학습 1(Lesson 1) 학습 2(Lesson 2) 학습 3 (Lesson 3) 게임 1(Game1) 게임 2(Game 2) 게임 3 (Game 3) 그만하기(Quit) 학습안내(Help)</p> | <p>A. 우리집에 물건들이 어디에 있는지 알아볼까요? Where do I place my things in the House?</p> <p>B. 동물나라에 있는지 동물들의 특징을 알아볼까요? What are differences of animals in the Zoo?</p> <p>C. 장난감나라에 있는 장난감들의 특징을 알아볼까요? What do these toys do?</p> | <p>각각의 물건들을 클릭하세요. 낱말을 설명하는 문장, 그림과 함께 소리를 들을 수 있어요. 다시듣기 버튼을 누르면 다시 들을 수 있어요.</p> <p>Use the mouse to click the things, animals and toys. You will see the varieties of images, sentences, and hear sounds.</p> <p>If you want to hear the sounds again, click the Replay button.</p> |
| | 게임 1 (Game 1) | <p>단어 게임 Play word games</p> <p>게임: 시작하기(Play) 도움말(Help) 닫기(Close) 결과(Result) 참 잘했어요. (Good job!) 다시하기(Replay)</p> | <p>물건들의 자리, 동물들의 집, 장난감들의 이름 찾아주기</p> <p>A. 물건들의 자리를 찾아주세요. Find where the object belongs in the House</p> <p>B. 동물들의 집을 찾아주세요. Where are the animals in the Zoo?</p> <p>C. 물건들의 자리를 찾아주세요. Find where the toy belongs in the Toyland</p> <ul style="list-style-type: none"> ● 게임을 마친 후에는 결과와 함께 점수와 시간을 알아 볼 수 있다. You will see the score and time after you finish the game. ● 다시하기 버튼을 누르면 다시 할 수 있다. Click the Replay button to start the game again. | <p>아래에 놓여진 버튼을 드래그하여 점선으로 표시된 각각의 자리에 맞게 놓아주세요.</p> <p>Look at the pictures of draw dotted lines, drag the buttons and then drop them at the proper places.</p> |

| | | | | |
|-------------|---------------|---|---|---|
| | 게임 2 (Game 2) | <p>날자 게임 Play character games</p> <p>게임: 시작하기(Play) 도움말(Help) 닫기(Close) 결과(Result) 참 잘했어요. (Good job!) 다시하기(Replay)</p> | <p>빠진 글자를 찾아주기</p> <p>빠진 글자를 찾아주세요. Find a missing character</p> <ul style="list-style-type: none"> ● 게임을 마친 후에는 결과와 함께 점수와 시간을 알아 볼 수 있다. You will see the result and your score, and time after you finish the game. ● 다시하기 버튼을 누르면 다시 할 수 있다. Click on the Replay button to start the game again. | <p>보기 중 알맞은 답을 골라 빠진 자리에 넣어주세요.</p> <p>Choose a correct answer in each of the cases, and then drag and drop that answer to the target position.</p> |
| | 게임 3 (Game 3) | <p>문장 게임 Play sentence games</p> <p>게임: 시작하기(Play) 도움말(Help) 닫기(Close) 결과(Result) 참 잘했어요. (Good job!) 다시하기(Replay)</p> | <p>우리집, 동물나라, 장난감나라에 있는 각각의 물건들의 특징을 듣고 이름을 찾아주기</p> <p>나는 누구일까요? Who am I?</p> <ul style="list-style-type: none"> ● 게임을 마친 후에는 결과와 함께 점수와 시간을 알아 볼 수 있다. You will see the result and your score and time after you finish the game. ● 다시하기 버튼을 누르면 다시 할 수 있다. Click the replay button to start the game again. | <p>주의 깊게 소리를 듣고, 문장을 읽고 맞는 답을 골라 클릭하세요. 소리를 잘 듣지 못하였으면 다시듣기 버튼을 누르세요.</p> <p>First, listen and carefully. Then click the button for the correct answer.</p> <p>If you want to hear the sounds again, click the Replay button.</p> |
| 학습안내 (Help) | | <p>학습안내 (Help) 사양 (Options)</p> | <p>학습안내 (Study guide) 프로그램 사양 (Options for computer)</p> | <p>학습안내는 별도의 창에 보여진다. Shows a separate scene.</p> |
| | 출처 (Credits) | | <p>조연(Chief adviser, Associate advisers) 누가 만들었는지 (Designer/ director) 이미지 자료 (Image sources) 도와준 사람 (Helper) 목소리 (Voice) 소리 (Sounds) 음악 (Music)</p> | |
| 나가기 (stop) | | <p>그만하기 (Quit)</p> | | |

E. Storyboard for the program

Learning Hangeul with Games: Applying Multimedia Techniques to Educational User Interfaces for Young Korean-American Children.



1. Opening animation

When you click the Enter button, the stage goes to the next scene. A new screen appears.



2. Introduction of five friends

There are five friends: A Magician, Robot, Bear, Fairy and Cat.

When you choose one friend you like from the five, you can hear the voice and the friend appears and stops on the center of the stage.

Then click one more time if you want to learn Hangeul with the friend.



3. Three places: A Zoo, My House, Toyland

Three rooms with different friends appear on the screen. Use your mouse to drag the chosen friend and drop it to one of these places to start lessons or games.



- Drag the friend and then drop it in the Zoo.
- Drag the friend and then drop it in Toyland.
- Drag the friend and then drop it in My House.

Zoo



There are many animals in the Zoo.
Click on the animals to hear the sound of their name.
The friend stands at the right bottom corner.



Zoo-Lesson 1, 2, 3



Zoo-Game 1



Zoo-Game 2



Zoo-Game 3

My House



There are many things in My House.
Click on the objects to hear the sound of the name of each object.
The friend stands at the right bottom corner.



My House-Lesson 1, 2, 3



My House-Game 1



My House-Game 2



My House-Game 3

Toyland



There are many toys in Toyland.
Click on the toys to hear the sound of the name of each toy.
The friend stands at the right bottom corner.



Toyland-Lesson 1, 2, 3



Toyland-Game 1



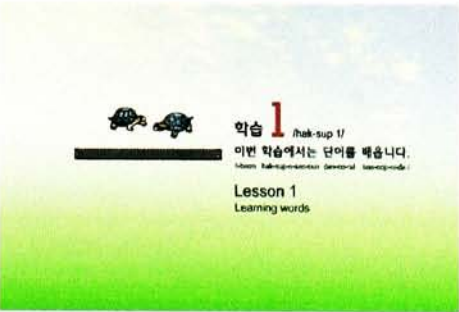
Toyland-Game 2



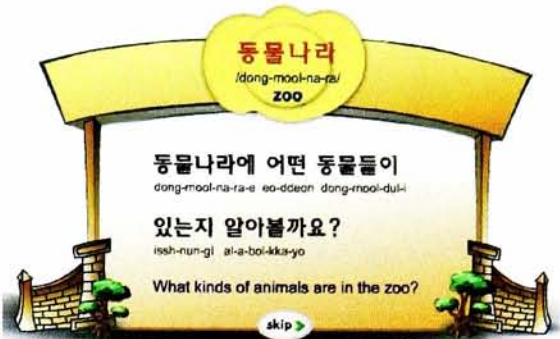
Toyland-Game 3

F. An example of the program

The Zoo - Lesson 1, Learning Words



1. Loading page



2. Contents of lesson 1



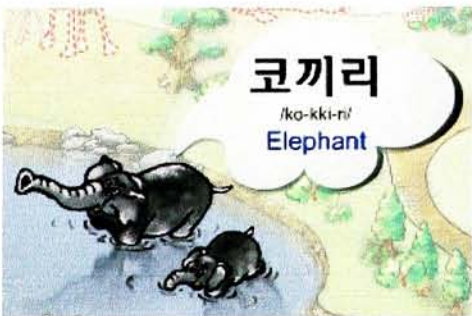
- 3. This lesson teaches Hangul for the following 10 animals: A Camel, turtle, elephant, lion, eagle, seal, hippopotamus, giraffe, monkey, snake.
- 4. Use your mouse to click or rollover one of animals.
- 5. The animal pops up and names itself in Hangul letters.
- 6. Move the mouse, and the named animal returns to the first picture.

Example

• Image step 1



• Image step 2
Mouse click / rollover



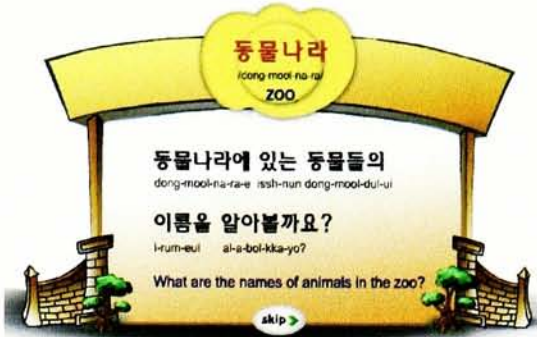
• Image step 3
Mouse out / rollout



The Zoo - Lesson 2, Learning Characters



1. Loading page



2. Contents of lesson 2



- 3. This lesson teaches Hangeul for the following 10 animals: A Camel, turtle, elephant, lion, eagle, seal, hippopotamus, giraffe, monkey, snake.
- 4. Use your mouse to click one of animals.
- 5. The animal pops up and names itself in Hangeul characters.
- 6. Click the Replay button to listen again.
- 7. You can click the Close button to move to other contents or main stage.

Example

- Image step 1



- Image step 2/ Mouse up/rollover

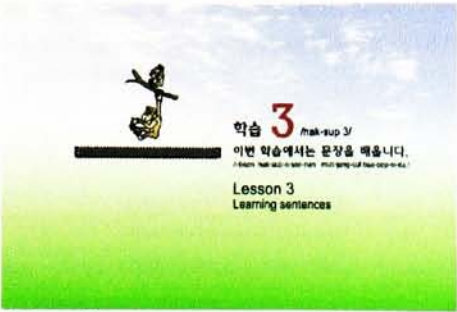


- Image step 3/ Mouse click

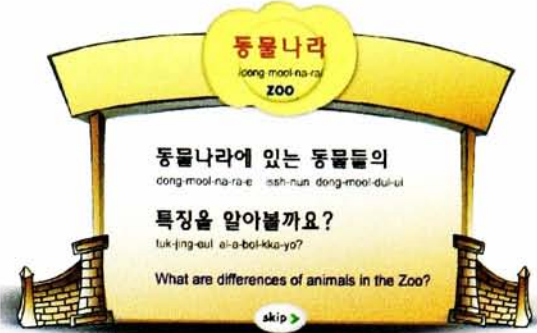


코끼리는 코알라의 “코,” 도끼의 “끼,” 소리의 “리”가 어울려져 “코끼리”가 되었어요. (“ko” of ko-al-ra, “kki” of do-kki, “ri” of so-ri are combined to make “ko-kki-ri.”)
The Korean symbol forms the English word, Elephant.

The Zoo - Lesson 3, Learning Sentences



1. Loading page



2. Content of lesson 3



- 3. This lesson teaches Hangul for the following 10 animals: A Camel, turtle, elephant, lion, eagle, seal, hippopotamus, giraffe, monkey, snake.
- 4. Use your mouse to click one of animals.
- 5. The animal pops up and names itself in Hangul sentences.
- 6. Click the Replay button to listen again.
- 7. You can click the Close button to move to other contents or main stage.

• Example

• Image step 3/ Mouse click

• Image step 1



• Image step 2/ Mouse up/rollover



코끼리,
Elephant /ko-kki-ri/



코끼리는 코가 길어요.
ko-kki-ri-nun ko-ga gil-eo-yo.



큰 두개의 앞니도 있어요.
kun doo-gae-ui ap-ni-do iss-h-ea-yo.

An elephant has a long trunk and two big tusks.



“코끼리, 코끼리는 코가 길어요. 큰 두개의 앞니도 있어요.” (An Elephant has a long trunk and two big tusks.)
This Hangul with sound and pictures composes a sentence. This also demonstrates pronunciation in Hangul for Elephant.

The Zoo - Game 1

Where are the animals in the Zoo?

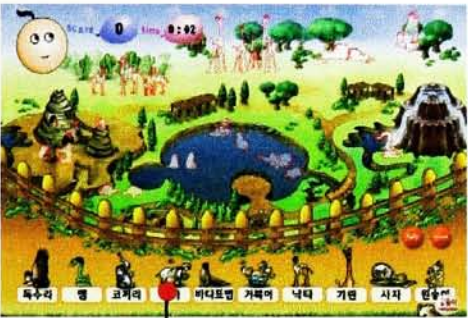
- Look at the pictures and drag the buttons and then drop them at the proper places for the Zoo.



1. Click on the play button to start



2. Type your name



3. First scene of the game

Match the symbol with the correct picture.

Example: Repeat each step until finished.

- Image step 1/
Mouse click



- Image step 2/
Mouse drag



- Image step 3/
Mouse drop



- If you click the incorrect answer, the sign appears "Try again."
- If you click the correct answer, the sign appears "Correct."



4. Playing game



5. Final time, score and replay button



6. End game

The Zoo - Game 2

Find a missing character

- Choose a correct answer in each of the cases and then drag and drop that answer to the target position.



1. Click on the play button to start



2. Type your name



3. Playing game

Example: Repeat each step until finished.

- Image step 1
Mouse drag



- Image step 2
Mouse drop



- Image step 3
Result



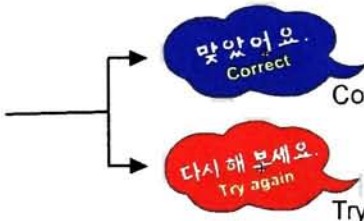
- If you click the incorrect answer, the sign appears "Try again."
- If you click the correct answer, the sign appears "Correct."



4. Correct answer



Result



Correct

Try again



5. Final time, score and replay button



6. End game

The Zoo - Game 3

Who am I?

- First, listen and read carefully. Then click the button for the correct answer.



1. Click on the play button to start



2. Type your name



3. Playing game



4. The result



5. Final time, score and replay button



6. End game

Match the correct answer to the sentence.

Example: Repeat each step until finished.

- Image step 1
Mouse up



- Image step 2
Mouse down



- Image step 3
Mouse release



- If you want to listen again click the replay button.

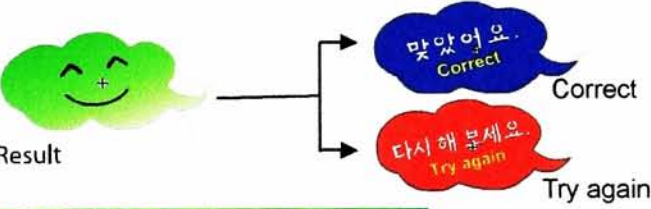


Replay button up



Replay button down

- If you click the incorrect answer, the sign appears "Try again."
- If you click the correct answer, the sign appears "Correct."



Result

IV. Test Results

The target audiences: Korean-American children
 Number of Learner: 10
 Age Range: 4~5, 6~7

| Questions | | | | | | | | |
|--|-----------------------------|-------|----------------------|-----|--|-----|----------------------|-----|
| Can you speak Korean? | Yes | 80% | No | 20% | | | | |
| If "yes," how much do you know? | Speaking only | 20% | Speaking and reading | 30% | Speaking, writing and reading | 10% | Underst and a little | 40% |
| Have you ever learned the Korean Language? | Yes | 90% | No | 10% | | | | |
| Do you want to learn the Korean Language? | Absolutely | 60% | Yes | 40% | | | | |
| How interesting is this program for you? | Very interesting | 40% | interestin g | 40% | Slightly interesting | 20% | | |
| Do you understand the contents of this program? | Most of it | 30% | Some of it | 70% | | | | |
| What do you think about the lessons? | Too difficult | 40% | A little difficult | 50% | Some lessons difficult, some not difficult | 10% | | |
| If the lessons are "difficult", which section is difficult? | Lesson 2 | 10% | Lesson 3 | 40% | Lesson2 3 | 40% | All the lessons | 10% |
| What do you think about the games? | Too difficult | 10% | A little difficult | 30% | Some games difficult, some not difficult | 20% | easy | 40% |
| If the games are "difficult", which section is difficult? | Game2 | 20% | Game2, 3 | 40% | | | | |
| Did you enjoy using the program? | Very much | 40% | Yes | 60% | | | | |
| Do you want to the learn Korean Language using this program? | Yes, I really want to learn | 80% | Yes | 20% | | | | |
| How much Korean language did you learn through this program? | A lot | 20% | Average | 40% | A little | 20% | | |
| Is the navigation of the program clear? Are the menus simple and the sections appropriately named? | Yes | 90% | So so | 10% | | | | |
| Is there an easy way to get back to the Home page from elsewhere in the program? | Absolutely yes | 10% | Yes | 70% | So so | 20% | | |
| Does the program have an attractive overall look and a well-balanced use of color? | Yes | 70% | Average | 30% | | | | |
| Is the text a readable size and style? | Comfortable to read | 100 % | | | | | | |
| Are the graphics simple and attractive without being distracting? | Yes | 60% | Average | 40% | | | | |
| Is the program user friendly? | Yes | 80% | Average | 20% | | | | |

This program was tested with Korean-American children whose language use varied considerably. Of those children, 90% understood simple Korean phrases. 100% of the children wanted to learn Hangul.

Of the test group, 80% of the children were enthusiastic about the program, and 80% of the children wanted to learn with this program. All students gained some use of Hangul by using the program. After testing, 40% thought the lessons were too difficult, 50% thought they were a little difficult, and 10% found the lessons to be easy. Of the test group, 40% thought the games were easy and the lessons had some difficulty. Which steps were difficult to children? 40% of the children had trouble with Lessons 2 and 3. Games 2 and 3 were also a little difficult for them the same 40%.

Regarding the visual aspects of the program, 100% of the children agreed that the text was comfortable to read. They also found the graphic interface both effective and user friendly.

The primary target audience for the test was 4- to 5-year old children. The Korean ability of these test users was too low to test. First, they were afraid of learning Hangul using a new program. They did not want to control the program by themselves, but they were interested in using this program later. Once one child wanted to play a game the other children wanted to join him. Later, they were all together to learn lessons and play games. If the younger brother and sister did not understand something about the program, the older brother and sister helped. In this situation, learning language with over two children was more effective than having one child learning. Some of the children wanted only to play a game without doing the lesson. The 6 ~ 7 year old Korean-American children participated in this test because some of this age group also wanted to use the program. They knew Hangul, but they could only speak a few words of Korean, such as "go to sleep," "eat food," "drink water," "do not do something," and so on. They had no ability to read and write the language. When they played the program, some of the children read the English directions and then controlled the program.

The parents and I helped the children learn how to deal with the program; when they seemed interested in playing the games and doing the lessons. If parents, instructors, and

aided instructors can help the children the first time, the children are indeed eager to learn the Korean Language. Parent effort is necessary for these children. Korean-American children's language ability demonstrated nearly the same whether their ages were 4 to 5 or 6 to 7. Older children did concentrate on the new material better than the younger ones did.

To teach Hangul to Korean-American children parents must have aspiration to the learning and patience. This program is effective when children work together. Through the test, this program helped children learn the Korean language, and 80% of the children responded enthusiastically.

V. Features of this thesis

A. Specified target group

This application teaches Korean language using games and targets 4~5 year old Korean-American children. The target audience lives in the United States. They are bilingual in English and Korean, but they know a few Hangul words, characters and sentences. English is a first language for them. They are not being educated in Korean, but in English. They use English in school and public places. Normally the users have contact with the Korean language by overhearing conversations between their mothers and fathers. Using English is easier than using Hangul at home for these users. If their parents do not try deliberately to teach these children the Korean language, the children will gradually forget Hangul. Most parents want to teach Hangul and are eager to find educational Hangul programs or curricula for their children. This application will help them teach Hangul to their children by using various colorful and different lessons and games. This thesis aims to help young Korean-American children begin to learn Hangul and maintain their culture.

Some experts declare (Dr. Diane Bales. 1998) that "The baby's brain is actually "primed" to learn language. Babies are born with billions of brain cells, including millions that will control language. Most of the brain's language connections are well-established by about age 10. After age 10, learning a new language is harder because your brain is "wired" now to the language you learned first."(<http://www.fcs.uga.edu>). Child development

experts studied the habits of 4- to 5-year old children, who have learned typical language skills. They have concluded that 4- to 5-year old children use language in the following ways; (2004)

- *Recognize some letters if taught and may be able to print own name*
- *Recognize familiar words in simple books or signs (stop signs, fast food signs).*
- *Speak in fairly complex sentences-*
- *Enjoys singing simple songs, rhymes, and nonsense words.*
- *Ask, and answer, who, what, why, where, and what if questions.*
- *Name six to eight colors and three shapes*
- *Follow two unrelated directions. Such as, "put your milk"*
- *Love to tell jokes that may not make any sense to adults" (<http://www.extension.iastate.edu>).*

At this age, children are also able to understand that letters and numbers are symbols of real things and ideas and to "write" is a way to tell stories and offer information. They also want to "read" on their own. Their sentence structures now incorporate up to eight words, while their vocabulary is between 1,000 and 2,000 words. Young preschoolers make comments and requests and tell others what to do. By 4 or 5, they know the names and gender of family members and other personal information. They often play with words and make up silly words and stories.

Educational experts (Dr. Diane Bales. 1998) state that "In 95% of right-handers, the left side of the brain is dominant for language. Even in 60-70% of left-handers, the left side of the brain is used for language." "Each hemisphere of the brain is dominant for certain behaviors. For example, it appears that the right brain is dominant for spatial abilities, face recognition, visual imagery, and music. The left brain may be more dominant for calculations, math, and logical abilities." (<http://www.fcs.uga.edu>). A Korean study of language development recommends the study of words, not an alphabet, as the most effective way to teach language to 4- to 5-year old children.

These statements are of course only generalizations about children. Usually their right brain is more developed than their left brain. In addition their visual sensory ability is developed better. Therefore, the learning language method also is designed for the children. Following the opinion of several educational experts, this software application consists of three steps: First, learning words; second, learning compound characters; and third, learning short sentences. Children can easily learn to recognize interactive visual

content through the right brain without the stresses of learning. That is the important point when children want to learn a new language.

A major target audience for this application is young Korean-American children between the ages of 4 and 5. At this age, children have the ability to recognize, understand, and memorize rapidly. They are becoming interested in using multimedia techniques by themselves or with the help of parents, helpers, or instructors. They have the ability to use a computer with a mouse by themselves. These young users want to learn Hangul characters and have a high or neutral motivation to learn Hangul.

B. A cooperative Lesson and Game program

This application provides a language - learning tool and is supported by computer lessons and games. The target of the application is restricted a target common to four- or five-year olds. In the future, the same techniques can also be adapted for older children.

The aim of this project is to help children learn Hangul more easily by introducing interesting lessons and effective games. In this way, children are exposed to different levels of games and lessons. The program provides a basic word lesson and progresses to a higher level of sentence lessons. In each level of the computer game, the learning process is evaluated using a scoring system. The subject matter for this application is adapted from practical resources for firsthand learning. All the activities are linked to typical routines regarding general knowledge of a Zoo, My House and Toyland. The empirical familiarity of these places for children is expected to make it easier to learn Hangul.

The program consists of two parts, and there are three steps in each part. In each process, Korean characters are taught using English pronunciations. One part of the program focuses on the reason for learning Korean characters. The other part of the program assists the learning process by using a computer game. In each part, the first step is to learn new Korean words. The second and third steps extend the compound characters of Korean words to sentences. For example, in the first step, when a child learns some Korean characters, that learning is then strengthened with the help of a computer game using the same words. Children can go further in the second step where

they learn more about the compound nature of the Korean language. Therefore, they will be able to learn the Korean language step by step and both have fun and be challenged.

Especially through games, the Korean language will become more familiar to children. "Find a place," "Find a missing character," and "who am I?" are three different game methods used in the program that will stimulate children's curiosity and interest about the Korean language.

C. Child friendly learning steps

The aim of this program is to improve comprehension, creativity, and word recognition by completing lessons using repetition, familiar sounds and games, and slow reading. "Repetition helps babies learn to understand speech and strengthens the language connections in the brain." "Talk to your baby!, play language "games" with your baby, read aloud to your baby, don't use the TV as a substitute for you; have your baby's hearing checked, teach multiple language early." Dr. Diane Bales (1998) emphasizes that these are ways babies learn language. (<http://www.fcs.uga.edu/outreach>. p.1). The important steps to learning language are repetition, friendly speaking, and playing games. Therefore, I based my program on these ideas and designed an effective and strong application to produce language learning. These points are necessary to improve children's comprehension and creative and cognitive abilities.

There are three major opinions about learning language as children. One is "When you show your child letters and words over and over again, he or she will identify and use them more easily while learning to read and write. He will also be eager to learn when the letters and words are connected to objects that are a part of his life." The other opinion says that, "Using wordless picture books can help improve children's language and spark their imagination. Encourage your child to play rhyming games on a computer, if one is available." Another concept says that (U.S. Department of Education, 2000) "The storyteller's voice helps your child hear the sounds of words and how they are put together to mean something. Reading and writing support each other. The more your child does of each skill, the better off she will be at both." (<http://www.wsfa.com>). That information is also valuable for children when they learn language.

The Hangul language learning program follows these concepts. The first level includes comprehension of pictures, names of pictures, and other activities appropriate for users. What is called comprehension is based on children's understanding of pictures. The second level represents recognition of pictures by explaining words, showing vivid visual examples, and more explanation of the same ideas for users. Creativity is encouraged by having children imagine what objects would look like and what actions the children would take with the objects. The third level suggests a creation of pictures from the visual pictures and sound. The users can retain new knowledge gained through repetition of lessons and games. Cognition also develops in harmony with objects and surroundings. Children learn language from their surroundings; moreover, those surroundings improve precise comprehension, understanding, and creativity by using a variety of circumstances.

This application organizes three steps of learning skills, including repeated practice, intensive instruction, boosting of creativity, and the power of concentration. Each step includes visual examples, animations, characters, and sounds. Various interesting games will help users actively learn and keep their attention on the learning. This thesis consists of professional content, reasonable examples, and outstanding visual arts examples.

All of the following summary includes helpful elements to help children to memorize and understand how to learn a language easily.

1. Letters and spellings consist of sound, visual forms, and sensory qualities.
2. The whole program includes fun and curious examples to draw the user's attention.
3. Graphical components in this application are presented in both three-dimensional ways and two-dimensional ways.
4. Every level illustrates different subjects and presents them in a different way.
5. The color graphics and text are displayed for best interaction with children.
6. Each lesson is unified by connection to a corresponding game.
7. Each word has a Hangul and English pronunciation

VI. Conclusion

The aim of this program is to stimulate children's interest when they learn "Hangul," the Korean Language. Once children understand the lesson concepts, they play games to reinforce that understanding. This practice may stimulate functions of the young brain and

provide an interesting way to learn Hangul.

The contents are composed of active visual information, sounds, and interactive images accessed through a CD. This program provides a user-friendly interface for learning language and a well organized visual presentation. Each element has a unique design that supports the different information presented in the language program. An interface provides images and sounds to facilitate learning language with less effort. This application not only looks great, but contains clear language learning material. The user clicks an interface button, and images and sounds pop up right away. Throughout the entire program, children can have fun learning to use a second language. There are five characteristics of this program: First, content utilizes many different objects in the learning language steps. Children choose one of three places to learn the language: A Zoo, My House and Toyland. Second, outstanding visual images serve as vehicles for a variety of communication activities, such as understanding, speaking, listening, and viewing. Third, multimedia technology helps children learn the language more easily. Even though the program/learning is not one-to-one communication, computerized voice instruction can provide children with opportunities for reinforcement and extend the learning experience during study. The technical development of a user interface helps lead the children to pay more attention to learning 'Hangul.' Moreover, children will enjoy the computer game-based, user friendly environment when they learn 'Hangul.'

Through the test of the program, this application was seen as interesting and curious for nearly all children. However, it was slightly difficult for age 4 to age 5 children. Because their first language was English, they had no knowledge about Hangul. Even though they knew Hangul, they had only a speaking ability. They had no ability to read and write Hangul by themselves. They knew fewer than 200 hundred words. The few children who could speak Korean well they only understood simple words, such as "eat rice," "go to the bathroom," "sleep," "drink," and so on. Children's language ability depends on their situation, personality, and aspiration to learn Hangul, including parental desire to teach Hangul. Children with siblings seemed very interested in this program. They competed with a brother or sister to learn the language and play the games. Learning language is more effective for two children than for one child. Moreover, if parents, instructors or other assistants help children to use this program the first time, the children will enjoy the program more than trying to control it the first time by themselves.

In brief, this language program helped children to learn Hangul. In the future, when individual differences are considered and adaptations made, the program should be very effective.

Using play and lessons as the crucial elements in the learning process, this educational program is aimed at fostering the harmonious development of Korean-American children. This program is part of a comprehensive educational mission, and its goal is to prepare children for subsequent stages of learning throughout their ongoing development.

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