

Vietnamese Language CD

By

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Abstract

By

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Vietnamese Language CD is an interactive, multimedia project designed to help Vietnamese children in America who lack knowledge of the Vietnamese language and those who are interested in learning the basics of the Vietnamese language through the use of interactive graphics, quizzes and games. The core of this CD is a graphics-based application, created with Macromedia Flash MX Pro 2004. This interactive CD was created to include educational activities and games, colorful interfaces, and easy navigation. The children will not have to have a lot of knowledge of computers because the application is designed with an intuitive graphical user interface that children should be able to understand and use easily while offering positive activities that accomplish several educational goals in a user-friendly interface suitable for young children.

Vietnamese Language CD

1. Statement of the Problem

Vietnamese kids born in America do not speak a lot of Vietnamese because their parents do not have enough time to teach their children. When those Vietnamese kids go to Vietnamese church, visit their grandparents or go back to Vietnam, they do not understand Vietnamese. Those kids will grow up and realize that they have missed something that is very important which is the cultural heritage of their native language.

Currently, there are not many books or Web sites that teach Vietnamese for Vietnamese children. The available sources are fail to motivate children or engage learn by them self. Children usually learn better when educational materials engage them and learning becomes interesting and fun.

2. Description of the Solution

So, Vietnamese children need an interactive CD with graphics and games that will help to motivate them in learning their heritage language. We created an interactive CD that will help the Vietnamese kids to be able to learn their native language. Also, this CD will save the parents of these children a lot of effort by minimizing the time they need to spend to teach their children Vietnamese. We aim to fulfill the need of all Vietnamese kids in learning and having a good understanding of their native language and the basic history of their native country. Due to a lack of books and resources for this purpose, there is a tremendous need to create a CD that will be easy to access and convenient for the Vietnamese kids to use.

Our product is user-friendly and provides an easy navigation interface suitable for children. It was implemented using Macromedia Flash MX Pro 2004, Acid Pro 4.0, MS Paint, and includes interactive educational games, and learning activities.

Our CD provided a basic introduction to Vietnamese history as well as the Vietnamese language. The history images are created in a whimsical cartoon style so that children will be engaged when by them. The CD also has lessons from kindergarten through fifth grade that teach alphabet, numbers, time, math, months, days, quizzes and vocabulary for a working base-level fluency with the language. All content includes audio in Vietnamese with English translation. The last element of our CD is the educational games section. It provides interactive activities that review and reinforce the educational content found in the lesson sections.

As Vietnamese children are one of the target audiences for our product, interactive games and activities are well suitable for them.

Project Description and Intended Uses

The goal of the Vietnamese Language CD is to teach Vietnamese children from kindergarten through fifth grade Vietnamese language skills and to familiarize them with the basic history of Viet Nam. In the United States, heritage speakers of most languages other than English have limited opportunities to develop their skills (2). Without active intervention or new immigration, heritage languages are lost over time both in the individuals who speak them and within the community, and they typically die out within three generations (2). “Many school-aged children and young adults in Vietnamese families are increasingly facing difficulties in speaking, reading and writing in Vietnamese. As a result, they often lack the knowledge in understanding Vietnamese

culture, from social behaviors among fellow Vietnamese to lifestyle in the family or socialization between relatives. They even lack the deep understanding of their parent's love, passion and thinking. They often face difficulties when socializing with Vietnamese communities due largely to lack of Vietnamese language skills. As a result, they tend to avoid socializing with Vietnamese people and prefer socializing with American friends instead in most cases (7).” The CD will be designed to help them to learn basic Vietnamese words that are equivalent to the English vocabulary they have learned in school. This application will help familiarize them with Vietnamese conversational language. Similarly, 80% of elementary and middle schoolers who spoke Vietnamese as a heritage language agreed that it is important to speak, read and write Vietnamese and 67% said they would like to study Vietnamese in school (3). “Many parents have expressed their deep concerns seeing their children growing up without adequate understanding of their heritage language. In fact, the children are reluctant to speak Vietnamese because of the lack of vocabulary, being afraid to be laughed at when speaking incorrectly, or having few opportunities to use the language (7).”

2.1 User Profile

Our CD is designed for two categories of users: children, especially Vietnamese children from kindergarten through fifth grade who know very little or no Vietnamese are the target users of the application, and adults who wish to learn basic Vietnamese will also be able to use the application.

The application is intended to be a user-friendly educational program for young children. The children will have minimal computer skills and the application is designed with an intuitive graphical user interface that children should be able to understand and

easily use. The only requirements are that they will need to be able to turn on the computer and insert the CD in the CD-ROM drive and to use the mouse and keyboard. Even though we try to make the interface as simple as possible for children, we hope that children from ages of five or under will get help from their parents or an adult to get help on any issues that they may have.

The next category of users should be able to go through the CD without any problem. Since the interface is simple and does not require any special skills as long as they learn what is provided in the CD in order to take the quizzes or play some of the interactive games.

2.2 Design Protocols

Organizational scheme

The organizational scheme is primarily designed to help Vietnamese children who do not know how to speak or read in Vietnamese. It can also be used by those adults who are interested in learning the basics of the Vietnamese language. The CD utilizes graphics and audio so that users can learn more effectively. The CD includes several distinct areas of focus:

- **History:** this section gives the user a basic history of Viet Nam by combining a slide show with audio to provide an introduction to the history of the country and the language.
- **Lessons:** this section has sub-sections for each grade level from kindergarten through fifth grade. Each sub-section will have its own theme. This is where the brunt of the language instruction takes place.

- **Quizzes:** this section will allow the users to test their knowledge of the language at certain grade level.
- **Games:** this section provides engaging, educational games aimed at teaching the Vietnamese language to children in a fun way. Though, they have to gain some knowledge from the lessons section in order to play some games.

Interface Design/Navigation

There are two designed interfaces: graphic user-interface (GUI) and audio interface. The GUI were created using Macromedia Flash MX Pro 2004. The interface design is simple and user-friendly which is particularly appropriate for use by young children. The interface is 700 x 600 pixels (See Figure 1). The navigation buttons for the individual activities are placed at the bottom of the screen and are always consistently rendered in order for children to easily use them.

The audio interfaces were created using Acid Pro 4.0. This product can record audio and make changes to the tempo of your voice and was used to simulate the voice of a young child to further engage the users of the application.



Figure 1: Welcome Page

Icons/Graphical Symbols

The icons in Figure 2 below are used consistently throughout the application for navigation. They are located at the bottom of the screen and allow users to navigate to home, back, next, exit or get help. There is no forward button because each individual lesson is designed with its own level and knowledge to be self-contained. Therefore, the users will not be able to proceed to a higher-grade level before they have completed the previous ones.

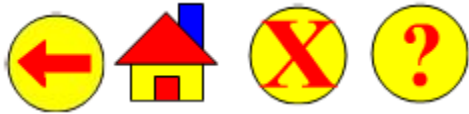


Figure 2: Icons

Color Scheme

We have chosen a color scheme that reflects the colors of the flag of Viet Nam as displayed on the main page of the application these are: green, blue, red, yellow, brown and purple. This color scheme is used consistently throughout the application to create a clear, understandable interface for the user.

The six colors vary in each section of the application, but each section has its own main color with the rest as a mixture of other colors. For example, the History page is mainly blue, yellow and red. Each grade level and the Games section have its own main color. So, Kindergarten is green, 1st grade is blue, 2nd grade is red, 3rd grade is yellow, 4th grade is brown, 5th grade is purple, and Games is multi color.

Help

The application will include a context-sensitive Help button that activates a pop up window at the bottom right hand corner which will provide a frequently answered questioned (FAQ) to the users based on their current location within the application.

3. Deliverables

1. A History page will show an XML-based slide show summarizing the general history of Viet Nam and its language.
 - a) Country
 - b) Language
2. Lessons section from Kindergarten through Fifth grade.
 - a) In Kindergarten there will be the following topics:
 - a. Alphabet

- b. Numbers
 - c. Colors
 - d. Body Parts
- b) In First Grade there will be the following topics:
- a. Shapes
 - b. Days of the week
 - c. Family Tree
 - d. Basic Vocabulary (using 2 syllable words)
- c) In Second Grade there will be the following topics:
- a. Weather
 - b. Time
 - c. Months
 - d. Basic arithmetic i.e. addition/subtraction
- d) In Third Grade there will be the following topics:
- a. Traffic signs
 - b. Arithmetic i.e. multiplication/division
 - c. More vocabulary (using 3 syllable words)
 - d. Quiz
- e) In Fourth Grade there will be the following topics:
- a. World Map
 - b. More vocabulary
 - c. Quiz
- f) In Fifth Grade there will be the following topics:
- a. More vocabulary
 - b. Quiz
3. Animated games:
- a) Color Me
 - b) Match Family Members
 - c) Memory Challenge
 - d) Drag & Drop

4. Development

In the next section, we are going to describe our project's timeline and budget.

4.1 Timeline

The project involved a lot of challenges, time management, patience, mistakes, and accomplishments.

Task	Start Date	End Date
Develop Final Project		
Definition	4/5/2004	6/16/2004
Develop Prototype 1	6/17/2004	10/1/2004
Test Prototype 1	10/2/2004	10/9/2004
Research Deficiencies	10/9/2004	11/15/2004
Revise Prototype 1	11/15/2004	11/18/2004
Test Prototype 2	11/19/2004	11/22/2004
Revise Prototype 2	11/22/2004	11/23/2004
Final Testing of Prototype	11/23/2004	11/24/2004
Final Revision of Prototype	11/24/2004	11/25/2004
Prepare Presentation	11/20/2004	11/23/2004
Documentation	6/16/2004	11/20/2004
Present Final Design Freeze	12/1/2004	12/8/2004
Build Beta Project	12/2/2004	1/1/2005
Test Beta Project	1/2/2005	2/1/2005
Revise Beta Project	2/1/2005	2/7/2005
Build Final Project	2/7/2005	2/12/2005
Test Final Project	2/12/2005	2/28/2005
Revise Final Project	2/16/2005	2/28/2005
Prepare Presentation	2/24/2005	3/2/2005
Documentation	12/25/2004	2/28/2005
Present Completed Project	2/28/2005	3/7/2005

Figure 3: Timeline

4.1.1 Senior Design I Accomplishments

During Senior Design I we accomplished the following:

- Analyzed the problem
- Research of client's needs
- Researched on Flash

- Began the development
- Developed the proposal and oral presentation

During our initial research and gathering of information we looked at many Web sites and library resources that addressed teaching Vietnamese language for children, but few provided educational games and activities, especially in Vietnamese. While researching, we tried to look for pedagogical methods that effectively motivate children in language learning. As a result of our research, we resolved to design and implement an interactive CD that teaches Vietnamese children their native language in a convenient, fun and interesting way of learning. We also spent hours in researching the Macromedia Flash MX Pro 2004 software. Since neither of us had any previous experience with Flash, we had to do a lot of work in order to learn how to use the tool for our project.

4.1.2 Senior Design II Accomplishments

During Senior Design II we accomplished the following:

- Research on Viet Nam's History
- Created user interface
- Developed an interactive game
- Developed Kindergarten grade
- Prepared Design Freeze documentation and oral presentation

During this quarter, we did some additional research focused on the history of our country. We found a lot of information on Viet Nam's history, which we had to condense and simplify so the children would not be overwhelmed. We also collected words and the necessary images to use later in the lessons.

4.1.3 Senior Design III Accomplishments

During Senior Design III we accomplished the following:

- Completed all interactive games
- Completed all grades level
- Completed History section
- Tested user interface
- Modified project as needed
- Presented the final project

During the implementation of our project, we found that ActionScript coding in Flash was more challenging than we had estimated. We had several initial problems with manipulating XML data and importing sounds as we developed our project. But through research and assistance from friends and our advisor, Professor Wulf, who had experience with Flash we overcame these problems.

4.2 Budget

The budget for this project is outlined in Figure 4 below.

	Item	Explanation	Cost
H A R D W A R E	AMD Athlon 2.2 GHz, 40 GB of hard drive, 512 of RAM	Own	\$2000.00
	Wacom (11)	Own	220.00
S O F T W A R E	Macromedia Flash MX 2004 Pro (9)	Own	699.00
	Sonic Foundry Acid Pro 4.0 (10)	Own	249.95
	MS Window XP Professional (12)	Own	200.00
	Total		\$3368.95

Figure 4: Hardware and Software List

5. Proof of Design

The section below shows in detail how we delivered the project.

5.1 Project Introduction

The first thing users will see on the project is the introduction page, which has the Learning Vietnamese title and three navigation buttons for the History, Lessons and Games sections of the CD (See Figure 5). The image visualizes the map of Viet Nam which is in red and yellow, the color of flag that highlights all the main cities in Viet Nam.



Figure 5: Main Page

5.2 History Section

In this section the user can choose Country history or Language history (See Figure 6.). We utilized XML data in our design for the slide show display engine that provides navigation buttons for the users to traverse back and forth between the dynamic pages. To increase engagement, we used cartoon images rather than actual historical images. We also provided the words that described the images in each slide (See Figure 7 & 8).



Figure 6: History Main Page

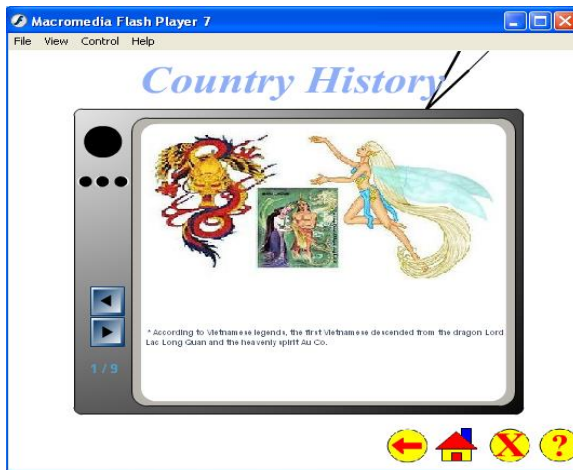


Figure 7: Country History



Figure 8: Language History

5.3 Lessons Section

The next section of the application is the Lessons section. In the Lessons section, there are grade levels that the users can choose which range from Kindergarten through Fifth grade (See Figure 9).



Figure 9: Lessons Main Page

5.3.1 Kindergarten Lesson

After selecting Kindergarten, the user will see a welcome page for Kindergarten (See Figure 10). In this section, the user can choose which lesson they want to learn which consists of The Alphabet, which is displayed as ABC (See Figure 11), Numbers, which is displayed as 123, (See Figure 12) and Colors (See Figure 13) and Body Parts (See Figure 14) which are displayed as text. Each page contains Home, Exit and Question navigation buttons that enable the users to go Home, which is the Main Page, or Exit out the application or access the help page respectively.



Figure 10: Welcome to Kindergarten Main Page

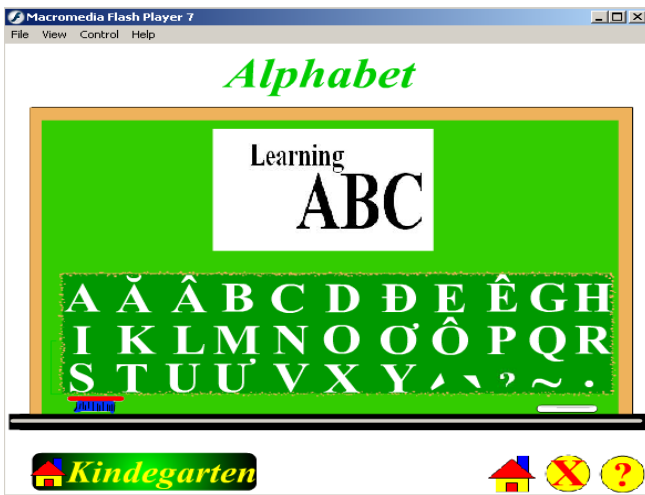


Figure 11: Alphabet

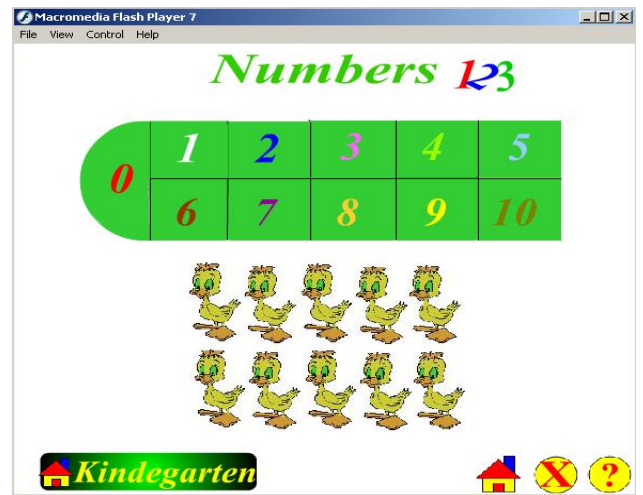


Figure 12: Numbers

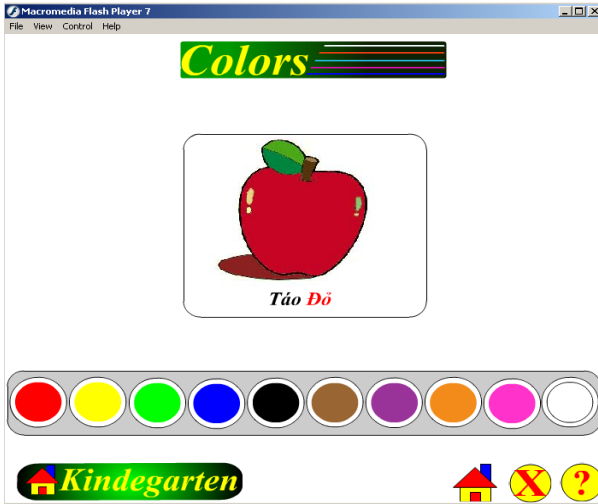


Figure 13: Colors

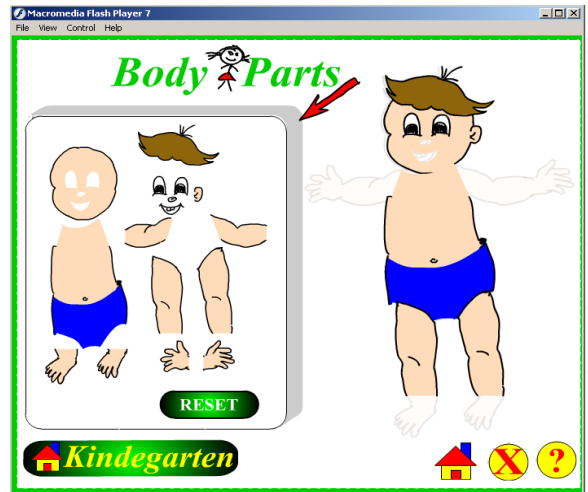


Figure 14: Body Parts

There is always audio in where ever the users click. The audio will sound in Vietnamese then in English so users can understand the meaning of that the Vietnamese word.

5.3.2 First Grade Lesson

By selecting the 1st grade button on the tree house of the Lessons Main Page, users will see the Welcome page of 1st grade lessons (See Figure 15) below. In this grade level, children will be able to learn Shapes (See Figure 16), Days of the week (See Figure 17), Family Tree (See Figure 18), and the two-syllable Basic Words Vocabulary (See Figure 19).



Figure 15: Welcome to 1st Grade Main Page

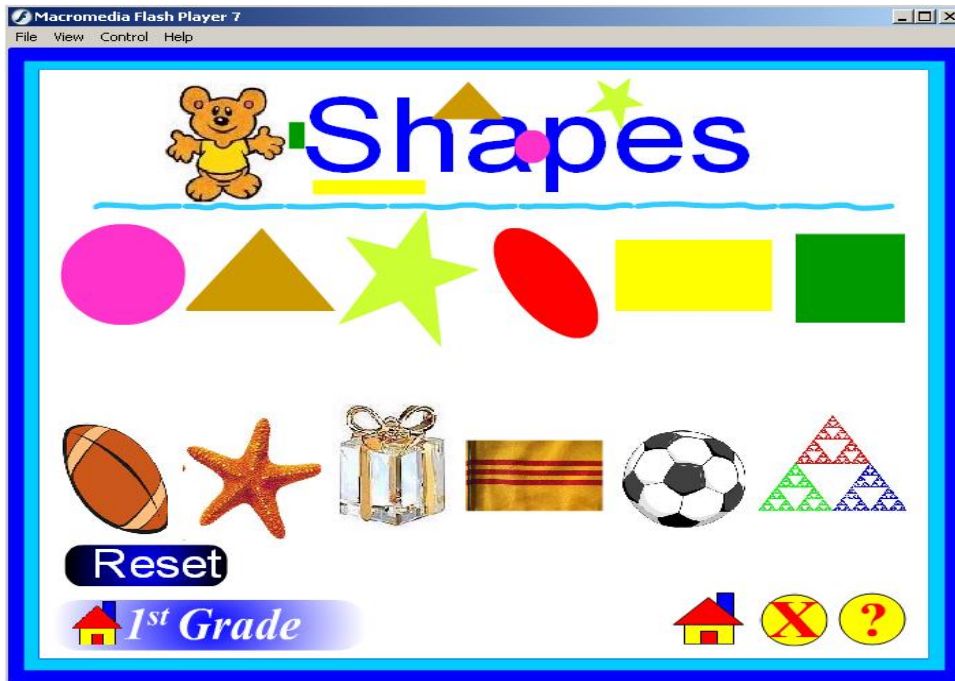


Figure 16: Shapes

In this lesson, users will hear the instruction audio asking the users to click on one of the shape and drag it to the appropriate matching shapes.



Figure 17: Weekly Calendar

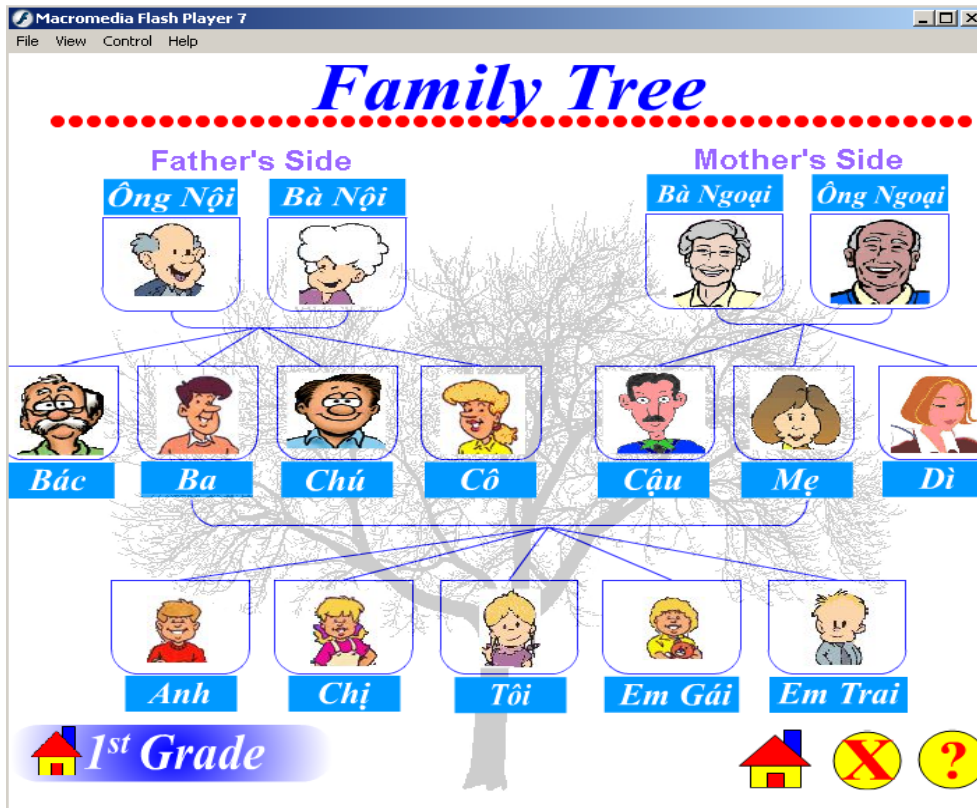


Figure 18: Family Tree

Users will be instructed to click on one of the images to learn what the images represented. Unlike English, the Vietnamese language has a lot of specific and different noun forms for referring to relatives and these are differentiated for maternal and paternal relatives. For example: Grandfather in English can be a maternal or paternal Grandfather, but in Vietnamese, there is a specific for each of these, which is Ông Nội, or Ông Ngoại.

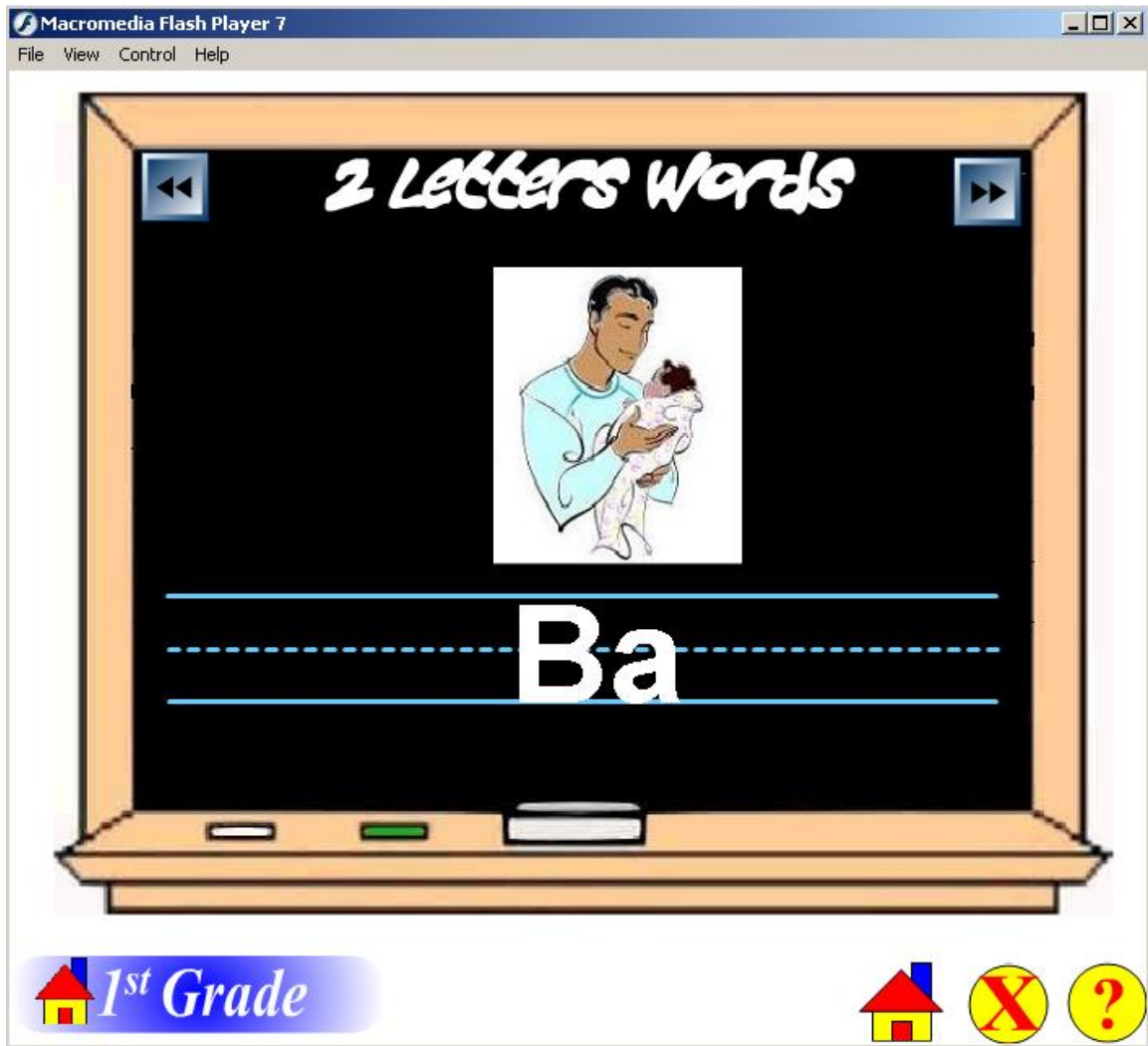


Figure 19: 2 Letters Words

We used XML data to create this lesson. In this lesson, we have two-syllable words paired with an image that represented the meaning of the word. Also, audio of the Vietnamese pronunciation is consistently provided throughout all the lessons.

5.3.3 Second Grade Lesson

Now we get into the 2nd grade lessons. The theme of this color is red. In this grade level, we did not provide the vocabulary lesson alone, because we wanted the children to have a break from learning the vocabulary and a new environment of learning (See Figures 20, 21, 22, 23, 24) below.

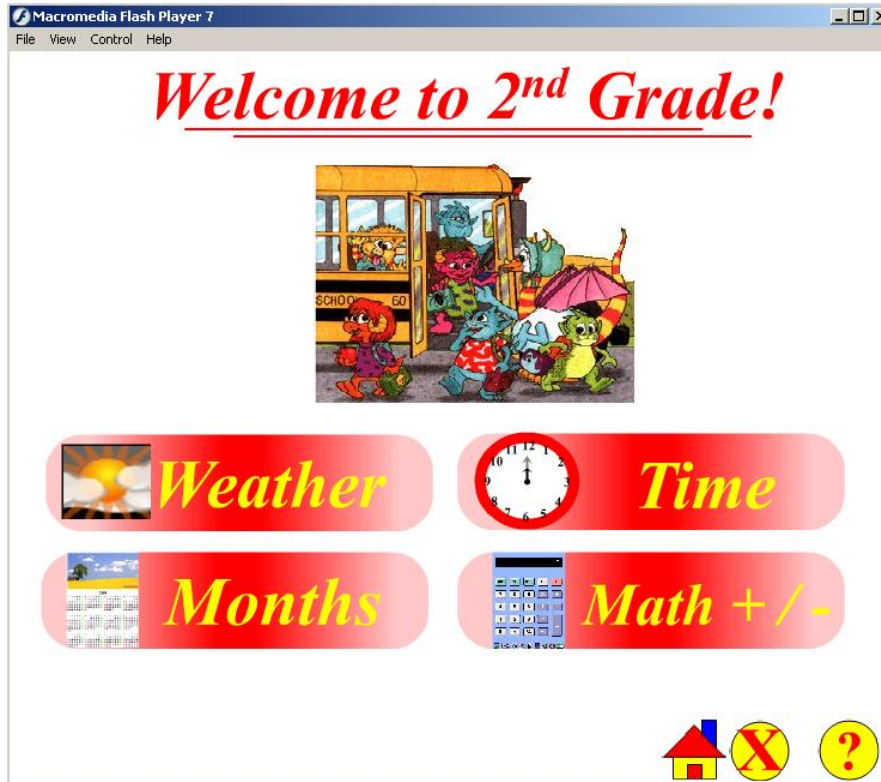


Figure 20: Welcome to 2nd Grade Main Page

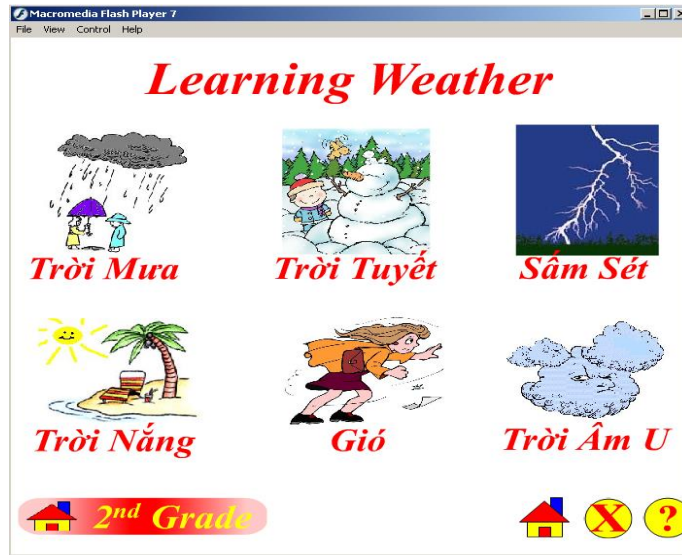


Figure 21: Learning Weather

The user clicks on one of the images and an audio file plays and pronounces the word in Vietnamese and English. The button on the right will take the user back to the Welcome to 2nd Grade Main Page.

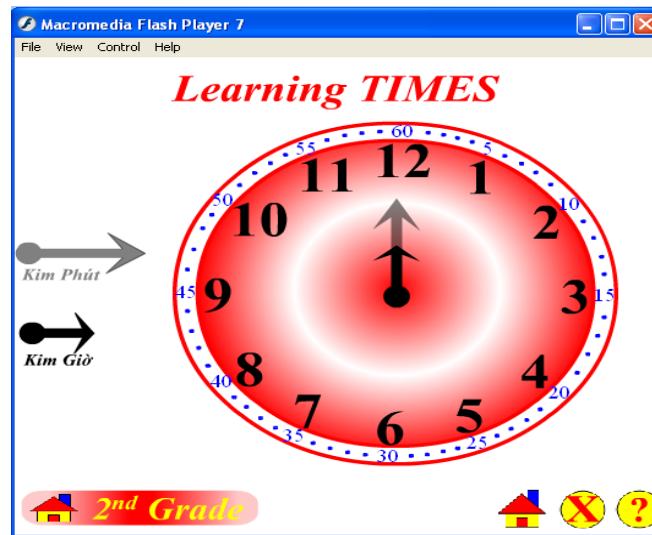


Figure 22: Learning Times

Users will be able to click on one of the numbers on the clock face and a random time will display on the clock as an audio file is played to tell the users in Vietnamese what time the clock is showing.



Figure 23: Learning Months

We provided a main holiday or event from each month so that the user can see the images as image association should improve learning.

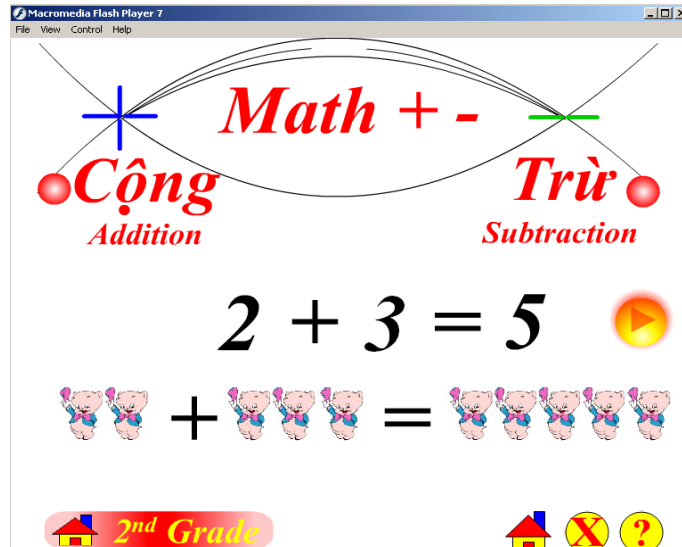


Figure 24: Math

We only provide two animations on each of the math subjects. Our intention here is just for the children to understand how some basic math operations are pronounced in Vietnamese.

5.3.4 Third Grade Lesson

A Welcome to 3rd Grade title screen appears to the user when they click on the 3rd Grade buttons. In this grade level, we teach the children the common traffic signs in Viet Nam, Multiplication/Division, more Vocabulary, and incorporate Quizzes on the material that they have learned throughout the CD. Starting at this grade level, a quiz page is provided (See Figures 25, 26, 27, 28, 29 and 30) below.



Figure 25: Welcome to 3rd Grade Main Page

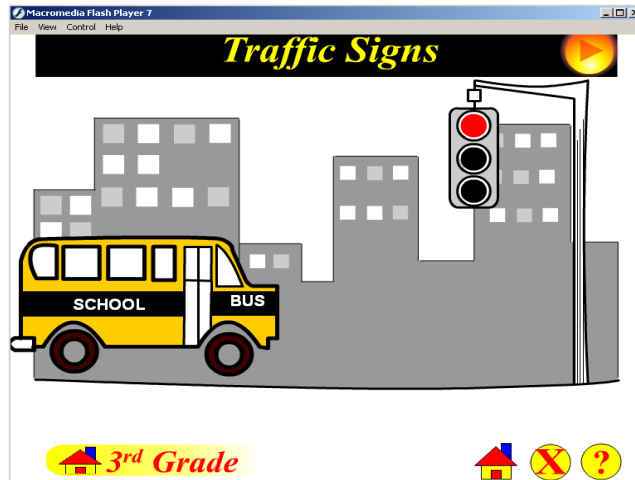


Figure 26: Traffic Signs

In the Traffic Signs lesson, users click on one of the traffic lights to be able to listen to the audio pronunciation of the traffic light names in Vietnamese. Or they can click on the next button to learn a different traffic sign. The button on the right will take the user back to the Welcome to 3rd Grade Main Page.

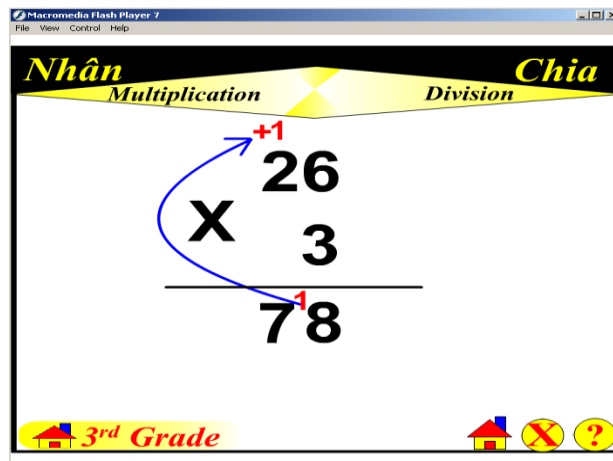


Figure 27: Multiplication/Division

Only one animation is shown for multiplication and division operations. We also provided the multiplication and division table. These tables are only there as a reference source for the children, so there is no audio on this part.

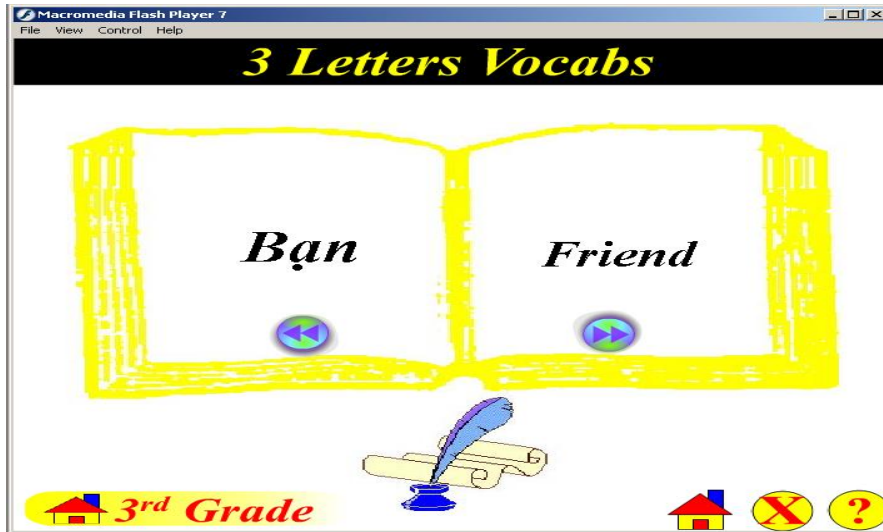


Figure 28: 2 Letters Vocabs

Users will be able to learn more vocabulary consisting of three-syllable words. At this grade level, there will not be images provided, since we feel that children at this age should understand these basic words. Audio is still provided throughout the lesson to reinforce proper pronunciation as well as retention of the Vietnamese language.

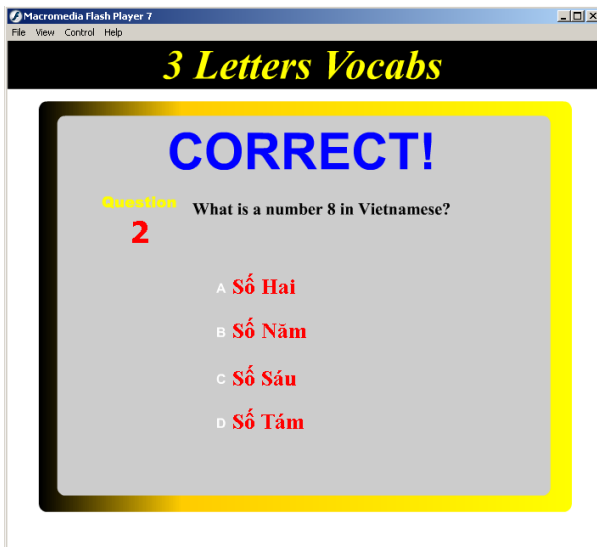


Figure 29: Quiz



Figure 30: Quiz Finished

5.3.5 Fourth Grade Lesson

Now we come to 4th Grade level. As you can see below (Figure 31), the color theme for this grade level is brown. In this grade, we teach the children World Map, which focuses on the five continents of the world (See Figure 32), more Vocabulary (See Figure 34), and Quizzes (See Figure 35).

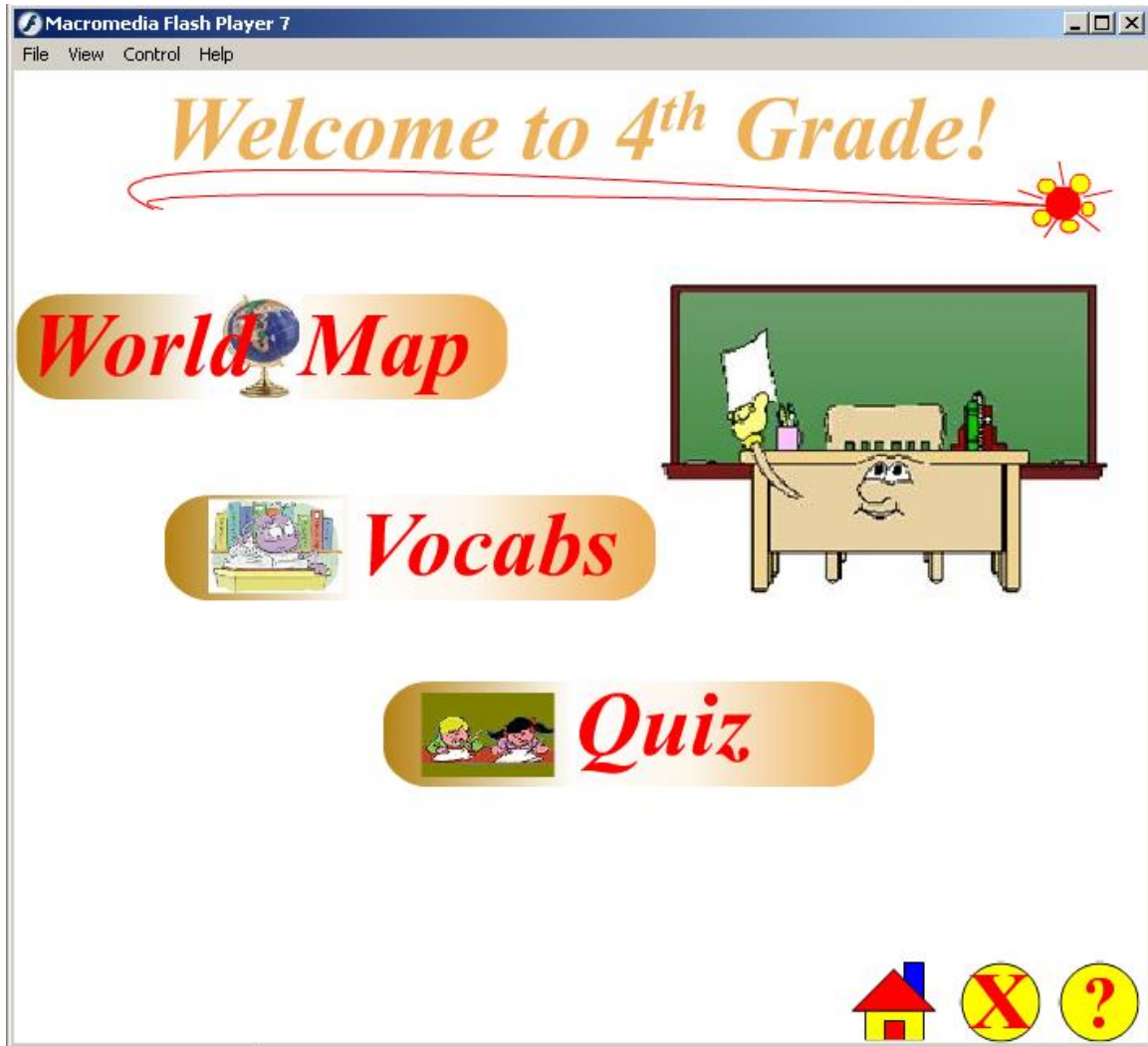


Figure 31: Welcome to 4th Grade Main Page

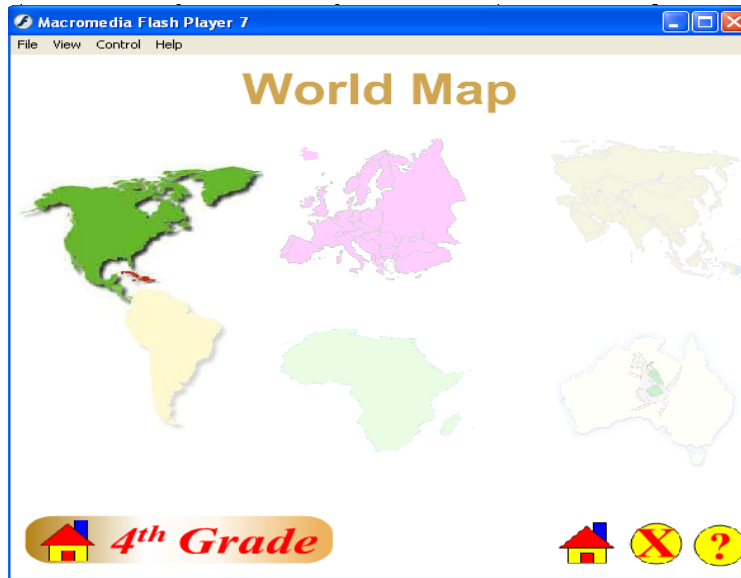


Figure 32: World Map

When the user move the mouse pointer over any of the continent, that continent will light up and if the users click on that continent, another page come up showing only the continent that is being clicked and an audio will pronounce that continent in Vietnamese and English (See Figure 33). The button on the right will take the user back to the Welcome to 4th Grade Main Page.



Figure 33: World Map Continue



Figure 34: 4th Grade Dictionary

Above is the two-syllable word vocabulary which is more advanced than the 1st through 3rd grade levels. This lesson will not provided any images for vocabulary, but audio will be provided as before.

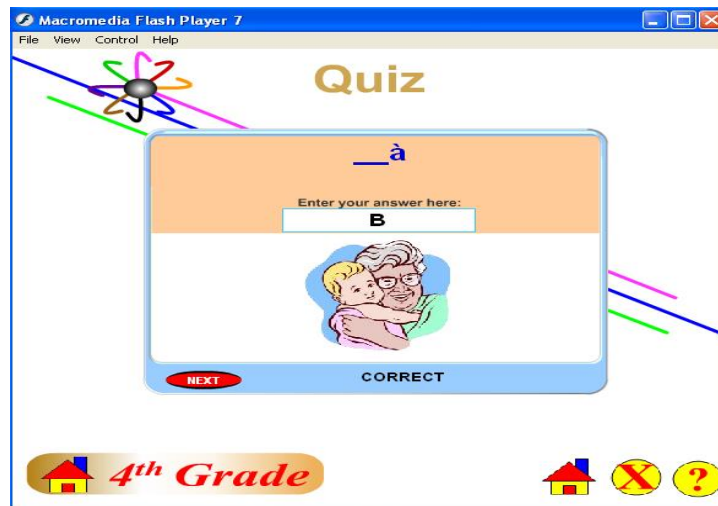


Figure 35: Quiz

This quiz is a fill-in the missing letter type in which an image representing the word is presented as a hint to the user.

5.3.6 Fifth Grade Lesson

Fifth grade lessons are not as complicated as the previous lessons. We only teach the children more Vocabulary and have a Quiz page that allows them to test the knowledge they learned from the CD (See Figures 36, 37, and 38) below.



Figure 36: Welcome to 5th Grade Main Page

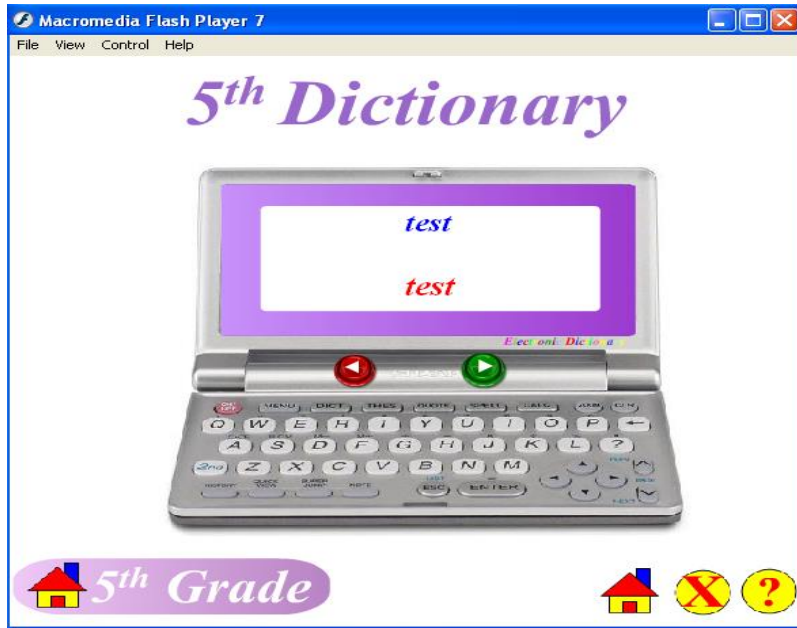


Figure 37: Dictionary

The button on the right will take the user back to the Welcome to 5th Grade Main Page.

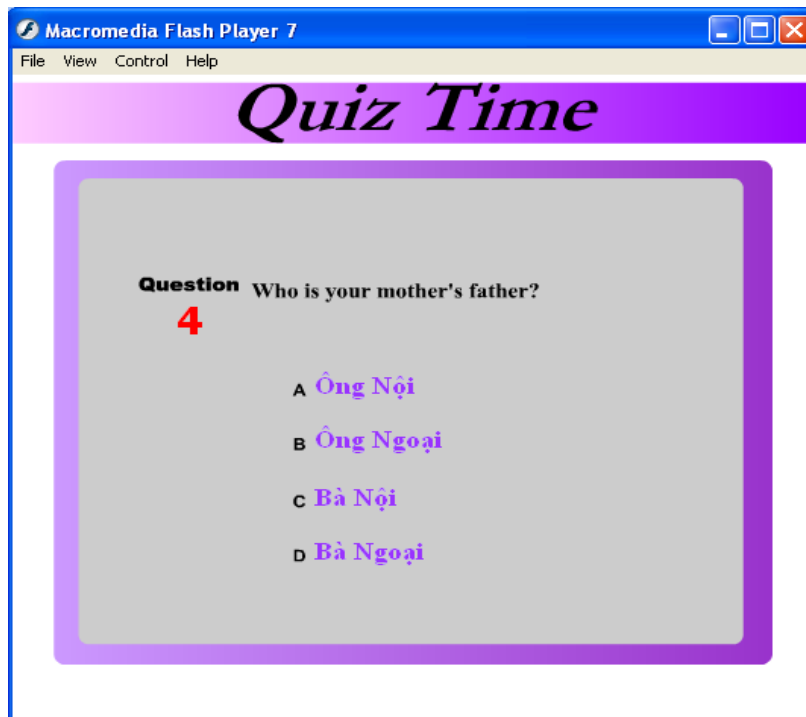


Figure 38: Quiz questions

5.4 Games Section

There are four games in the Games Section. The color scheme of this section is multi color. Below is the title page of Games section which is accessed when the user clicks on the Games button from the Main Page (See Figure 39) below.



Figure 39: Games Main Page

5.4.1 Color Me

Color Me is the first game in our list of Games section. It is targeted at kindergarten and 1st grader to help them learn the color names (See Figure 40 and 41).

The button on the right will take the user back to the Games Main Page.



Figure 40: Color Me



Figure 41: Color Me Finished

5.4.2 Match Family Members

The next game in our deliverable is Match Family Members. Children have to know which word on the left-hand side to match with the images. After the users are done with matching the correct family members, a pop up button will show to ask the users if he/she would like to play again (See Figure 42 and 43) below.

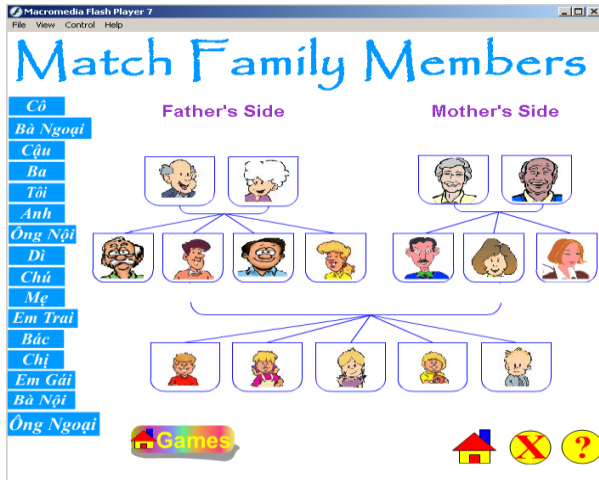


Figure 42: Match Family Members

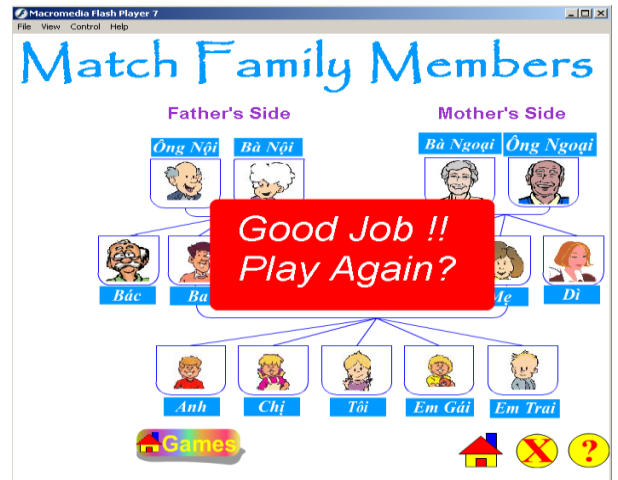


Figure 43: Match Family Members

5.4.3 Memory Challenge

Another game we have is Memory Challenge. In this game, users will click one of the squares and a word or image will be revealed, then users will have to pick another square to try and match the word or image to the first square. (A correct pair consists of a Vietnamese word in text and a corresponding image.) The Reset button can be used to randomly reset the game board (See Figure 44 and 45) below.



Figure 44: Memory Challenge



Figure 45: Memory Challenge

5.4.4 Drag and Drop

Next we have a Drag and Drop game. In this game, users see images and words. Then users must drag a word to a correspondent image. When the word matches the correct image, that image and that word will disappear. After everything is matched together, two buttons will pop up to ask if users would like to play again (the same game configuration) or play a different game configuration (See Figures 46, 47, 48) below.

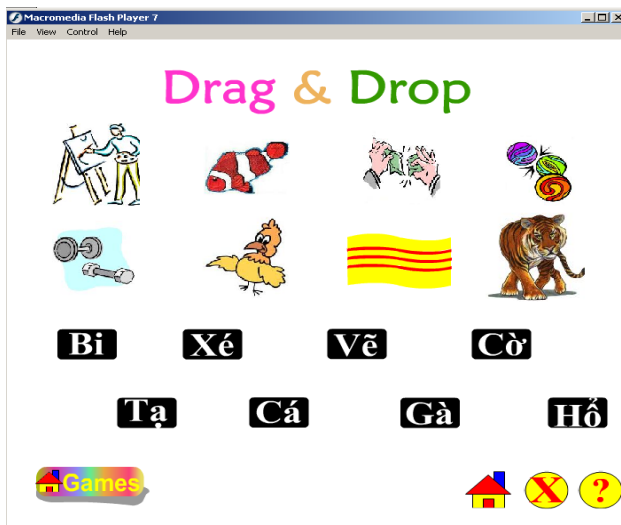


Figure 46: Drag and Drop

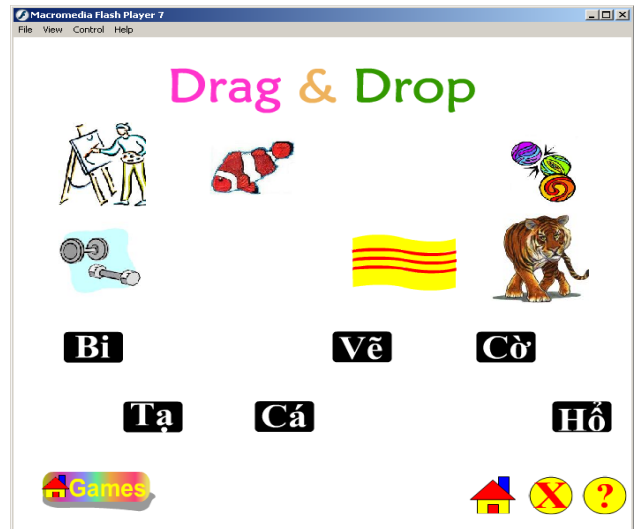


Figure 47: Drag and Drop Cont.



Figure 48: Drag and Drop Continue

When users click on the Play More button, a similar layout like the previous drag and drop game appears. But this time, the words used are more challenging. This increase in the level of challenge holds for the next (3rd) drag and drop game as well (See Figures 49, 50, and 51) below.

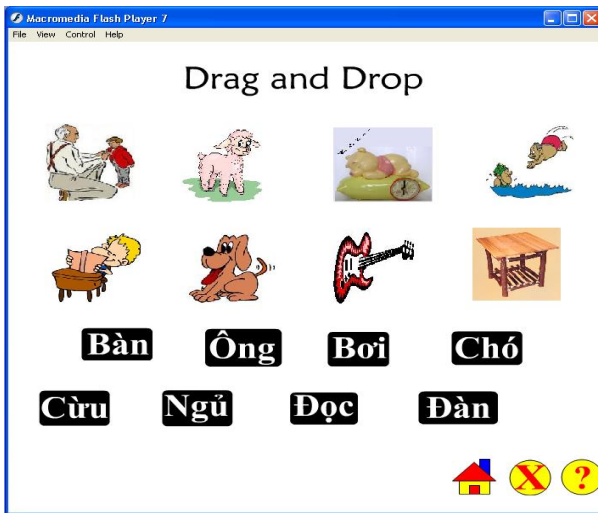


Figure 49: Drag and Drop 2nd Game



Figure 50: Drag and Drop Continue



Figure 51: Drag and Drop Continue

6. Testing Procedures

System testing was completed on Windows 98, 2000 and XP. We tested our project throughout the implementation of the development phase. We also let our friends and children at our Vietnamese church test each level of the lessons. Children of intended user age groups also tested the lessons and games. A couple of five-years old users played with the Color Me game for a while and were very happy to be able to change the color of the image in the game. First and second grade groups were very interested in the images and the graphics in the lessons. They even tried to pronounce the words as they hear the audio played. There were no technical problems during the tests and the speed of the CD-ROM drive was not an issue.

Early testing of the CD returned promising results and it appears that it will be an effective tool for teaching young children the Vietnamese language.

7. Conclusions and Recommendations

7.1 Conclusions

This project was created for those Vietnamese children who lack knowledge of their heritage language as well as anyone who is interested in learning the language. We created a fun and interactive CD with interesting information to learn. We used Macromedia Flash MX 2004 Professional version, Sonic Foundry Acid Pro 4.0, Microsoft Paint and a Wacom drawing tablet. The project was developed over the course of a year as part of our Senior Design course sequence. Our budget is approximately \$3,500 but does not include the considerable amount of time that we put in to the project. As mentioned above, we fulfilled all of the deliverables for our project. Testing was performed throughout the implementation of the project.

7.2 Recommendations

While working on this CD, we encountered a lot of challenges. A good understanding and more experienced with Flash programming is always helpful. We feel that taking a course or spending one to two months of time in learning Flash are necessary to start using the tool proficiently.

Sounds are the big challenge as well. A good-quality microphone is needed in order to record clear audio narration and eliminate the time required to edit out noise in the audio.

Another challenging problem we encountered was using ActionScripts to manipulate and read XML data sources within Flash. This can be tricky and very complicated. We used a variety of reference books to become familiar with and build confidence in using ActionScripts with XML.

Appendix A.

A1. Memory Challenge Game Snippet

The codes below are used to randomize the cards on the stage when frame is loaded or click on the reset button. In this game, users will click one of the squares and a word or image will be revealed, then users will have to pick another square to try and match the word or image to the first square. Then an audio will sound the verified if the matching cards are correct or incorrect.

```
//Do something if match
function evalMe() {
    if ((_root.flip1 != "") && (_root.flip2 != "")){
        if (_root.flip1.substr(1, _root.flip1.length) != _root.flip2.substr(1,
        _root.flip2.length)) {
            _root.flipback1();
        } else {
            _root.playSound("right");
            _root.checkMe._visible = false;
        }
    }
    _root.flip1 = "";
    _root.flip2 = "";
}
```

```
//Do something if not match
function flipback1(){
    _root.playSound("wrong");
    eval(flip2).gotoAndPlay(3);
    eval(flip1).gotoAndPlay(3);
    _root.checkMe._visible = false;
}
```

A2. Loading XML Fragment

In order to load the XML dataset into our project, we used the codes below to succeed it. Using the XML helps save the running time of the project, and also easy to update.

```
function loadXML(loaded) {
```

```

    if (loaded) {
        xmlNode = this.firstChild;
        Vietletters = [];
        Anhletters = [];
        voice = []
        total = xmlNode.childNodes.length;
        for (i=0; i<total; i++) {
            Vietletters[i] = xmlNode.childNodes[i].childNodes[0].firstChild.nodeValue;
            Anhletters[i] = xmlNode.childNodes[i].childNodes[1].firstChild.nodeValue;
            voice[i] = xmlNode.childNodes[i].childNodes[2].firstChild.nodeValue;
        }
        firstImage();
    } else {
        content = "file not loaded!";
    }
}
xmlData = new XML();
xmlData.ignoreWhite = true;
xmlData.onLoad = loadXML;
xmlData.load("vocab3rdgrade.xml");

```

XML Dataset

```

<vocab>
    <pic>
    <caption> Bàn</caption>
    <anh> Table</anh>
    <voice>HistoryAudio/Language/history2.mp3</voice>
    </pic>
    ...
    ...
    <pic>
    <caption> Bà</caption>
    <anh> sister</anh>
    <voice>HistoryAudio/Language/history3.mp3</voice>
    </pic>
</vocab>

```

A3. Navigation Buttons Codes

Below are codes that allow users to navigate throughout the project. Whenever users release the mouse of the button, it will take the user to the frame assigned.

```

on (release) {

```

```

        gotoAndStop(1);
        stopAllSounds();
    }

    //Quit command
    on (release) {
        fscommand("quit");
        stopAllSounds();
    }

```

A4. Drag and Drop Game Snippet

The Drag and Drop function allows users to drag and drop a word to a corresponding images.

```

//Drag and Drop Circle shape
origX = ballmc._x;
origY = ballmc._y;
ballmc.onPress = function() {
    stopAllSounds();
    CircleSound = new Sound(this);
    CircleSound.attachSound("circle");
    CircleSound.start(0,1);
    this.startDrag();
};
ballmc.onRelease = function() {
    this.stopDrag();
    if (eval(this._droptarget) == soccerball) {
        this._visible = false;
    } else {
        this._x = origX;
        this._y = origY;
    }
};

```

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12. <http://buy-software.biz/?page=winxppro&pid=350&cart=>