I'm Listening with Dabdoop

A Phonological Stimulation App for Arabic Preschoolers

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Thesis submitted in partial fulfillment of all the requirements for the degree of Masters of Fine Arts in Visual Communication Design

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Acknowledgments

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Abstract

Recognizing the sounds around us is the first step humans take to develop reading skills. Children who are at risk of dyslexia have a weakness in differentiating between sounds that make up our language. Testing for phonological awareness, a crucial part of reading development, can aid in detecting dyslexia.

English speaking children have the luxury of being able to access varied programs designed to promote phonological awareness, knowledge of which, in turn, can assist as an early intervention instrument for dyslexia. In Saudi Arabia there are no programs that exist to detect dyslexia in children at an early age. The current lack of such programs in Arabic encouraged me to design an application to serve Arabic-speaking preschool children who may be at risk of dyslexia. Therefore, the focus of my thesis is to:

- Help promote reading skills for children in Saudi Arabia by designing a variety of games that stimulate listening and hearing skills.

- Select appropriate words and phrases that will appeal to Arabic preschoolers who are at risk of dyslexia.

- Define and illustrate an appropriate visual style for Arabic children aged 4-6 years who are at risk for dyslexia.

http://manalalyaba.com/I%27m%20Listening%20with%20Dabdoop.html

Introduction

Humans develop reading skills in multiple, successive stages. In order for children to recognize and read written language, they must be able to recognize and understand sounds that form words. Phonological awareness is the ability to understand the different sounds that make up words. It is the first step for humans to develop basic reading skills at an early age by recognizing the sounds of the speech. Children in kindergarten who have low levels of phonological awareness usually are at risk of being dyslexic when they grow up. Those children are not able to recognize the sounds of letters, rhyme words, distinguish between the beginning or the ending of sounds, and recognize words that sound the same.

In English, there are many programs designed to promote phonological awareness for children. These programs use a combination of graphic elements and audio. The ultimate aim of these programs is to prevent children from struggling with reading and falling behind their classmates.

In contrast, there is a lack of programs that stimulate phonological awareness designed for Arabic speakers. This lowers the chances that Arabic preschool students can get an early intervention similar to those which English-speaking students receive.

Previous research published by Canadian Center of Science and Education on "Phonological Awareness and Working Memory in Arabic-Speaking Egyptian Preschool Children at Risk for Dyslexia" shows the important impact of phonological awareness on improving reading skills at an early age for Arabic-speaking children (Zayed, Roehrig, Arrastia-Lloyd and Gilgil 2013.)

Introduction

For this reason, I researched phonological awareness methods with the goal of designing an application to stimulate the listening and hearing skills of Arabic preschool children at risk of dyslexia. This application includes a variety of activities and games that could assist in determining if any phonological weaknesses exist.

In order to design this application I researched user interfaces and user-experience designs related to my target audience. Also, I studied educational games used in preschool in the United States. I used Adobe Photoshop, Adobe Illustrator, and Adobe After Effects software to create my final design. The final thesis consists of a complete motion graphics demo that illustrates how the application will look and function. Although there are many programs in English designed to stimulate children's phonological awareness, this application will not be a direct English translation to Arabic. It will be modified to fit the Arabic language and the Arabic culture.

The goal of this thesis was to answer the following questions:

- Is there a need to design a program that combines Arabic phonemic and graphic images to help children develop phonological awareness?

- What kinds of sounds would be effective in determining any phonological weaknesses?

- What colors are most effective for capturing Arabic children's attention?

- What typeface used for this design will appeal to the target audience?

- What visual style is appropriate for Arabic children?

- How can children be encouraged to experiment and use this program?

Review of Literature

Recently, educational apps (applications) for children have become prevalent in every child's life. However, there is a lack of apps that target kindergarten children who are at risk of dyslexia and help them improve their reading and listening skills. Therefore, this review focuses on understanding the way my target audience learns in order to design an effective, fun educational app for them.

Subject Matter

Fredericks, Anthony D
Published: November 2001
Publisher: Rigby Best Teachers Press
The Complete Phonemic Awareness Handbook
Date: August, 2014

This book provides children with a variety of activities to promote successful reading. The aim of these activities is to help children to recognize how spoken language is comprised of multiple individual sounds. The book includes literature, nursery rhymes, and song activities. This book helps me in finding examples of my subject mater to build a good dialog and activities for my games.

Design

Hart, Christopher
Published: June 2000
Publisher: Paperback
Cartooning for the Beginner
Date: February 2014

Cartooning for the Beginner by Christopher Hart reveals a wide range of animation techniques for beginners. It covers the basic cartoon drawing of the body shapes and facial features. It also offers many ways to draw different characters' facial and body expressions. This book benefits me in creating my characters for my games. Its outstanding directions help me in developing my own cartoon style.

Review of Literature

Schell, Jesse
Published: 2008
Publisher: Focal Press
The Art of Game Design: A Book of Lenses
Date: April 2014

The Art of Game Design: A Book of Lenses provides the readers with the basic principles to build a successful video game. It also explained the different perspectives on game design. The book includes a hundred sets of questions to ask before starting to design your game. From going through this book I learned how to create a better design that speaks to my target audience.

Jackson, Chris
Published: January 2010
Publisher: Focal Press
Flash Cinematic Techniques: Enhancing Animated Shorts and Interactive Storytelling
Date: December, 2013

This book by Chris Jackson presents cinematic techniques that can be applied to any Flash project in order to refine storytelling. The book provides the readers with step-by-step instructions and tips that deliver better flash projects whether they are used for advertising, educational media or just for entertainment. This book helps in understanding the best techniques for character animation so I can apply them into my game design.

Review of Literature

Reichenstein, Oliver
Published: April 2010
Publisher: ia.net
Designing for iPad: Reality Check
Date: November 2013

This article reveals tips and challenges of designing for tablets. It shows the differences between web design and iPad design. The article is beneficial in presenting the right typography and UI design for iPad.

Polson, Tod / Jones, Chuck / Noble, Maurice
Published: October 2013
Publisher: Hardcover
The Noble Approach: Maurice Noble and the Zen of Animation Design
Date: February 2014

The writers of the Noble Approach: Maurice Noble and the Zen of Animation Design explore the life and animation philosophy of the American designer and animation artist Maurice Noble. The book illustrates his process and style of animation design from basic sketches to the final results. It shows original artwork that Noble created throughout his career. This book is a great reference for any designer that wants to present better artwork.

Review of Literature

Technology

Perkins, Todd
Published: February 2011
Publisher: Lynda.com
Flash Professional CS5: Creating a Simple Game for iOS Devices
Date: November 2013

This course by Todd Perkins explains how to use Flash Professional CS5 to build an iOS game. This course includes the development of the game from start to finish. It also covers character and background animation, adding sound effects and many other aspects of game design. Watching this course on game design in Flash helped me to understand Flash design when developing my own game.

The Design Process

Thesis Parameters

Children's Games Design

Nowadays, children are using technology in their everyday lives. The availability of children's apps and games in Arabic has increased dramatically. Despite the widespread use of these apps, none have been designed to help children's listening and reading problems. This project will be one of the few programs that are designed for Arabic speaking children without using any dubbing or translation. All of the content will be in Arabic only.

This application has five main games that cover letters sounds, animal sounds, rhyme words, and following instructions in the right order. Each game has different levels of difficulty. The level of difficulty will be based on the child's performance on the first level. The game records the child's accomplishment, and moves him/her to the next level each time he/she comes back. With every successful performance the child gets compliments and awarded medals which can be printed and colored to motivate him /her to keep playing. The application can be used by many users, but they need to register the first time they use the program. The application's main character is Dabdoop, which means teddy bear in English. In each game, Dabdoop wears the appropriate outfit to fit the environment.

The Design Process

**Design
Considerations**

Children's Interface Design

Since this project is designed for children, the focus was to capture
and retain children's attention for long periods of time. Bright colors
visually stimulate and make impression on children's minds. So in order
to stir children's interest to play on this app, an appealing, effective user
interface with different attractive bright colors was used.

A simple and flat, cartoon-style design was the chosen visual style for
all the games. To make it easier for the target audience to go through
the application without any help, clear voice instructions were used.

Motion Graphics/ Interactive Design

As I wanted to focus more on the design rather than the development,
I simulated the games I designed in a motion graphics movie.
The final piece of the thesis project is five small videos that present
the functionality of the application and each game. Also, it includes
an interactive intro for the game's main user interface. I used Adobe
After Effects to animate the application's user interface elements,
the characters and images. Also, in order to test the games on the target
audience one of the games was developed in Flash using HTML5 Canvas
and Javascript.

The Design Process

The Beginning

The original idea of the application was to create a main mascot character that will introduce the games and their instructions. This mascot character is a bear that owns a farm. The bear wants the children's help in collecting animals and other items for his farm. At the completion of each level, the player wins a reward for the farm, and the bear compliments the child on his/her progress.

The Original Games

Ambient Sounds
The child is going to hear sounds that exist on the farm: birds, cows, chickens, trucks, etc. The first level will start with one sound, and after four correct answers the sounds will increase to two and so on. Children must remember the sounds in the same order as they heard them. In the last level of the game, music will be added in order to create some background sounds, which will help the children to focus.

Alphabet Sounds
The bear keeps feeding letters that he hears to his chicks. When children answer correctly the chicks receive food and they grow bigger.

Words Sounds
The child has to choose the item or the animal he/she hears by name. Same as the ambient sounds game, the background will be the farm, and the item will appear while the camera moves across the farm.

Numbers Sounds
The bear is fishing for the numbers in the order he/she hears them.

Rhyming Sounds
The bear goes to the animal store to purchase animals that rhyme with a given word.

The Design Process

I started with sketching my characters, the bear and the animals. The idea was to create characters with small straight bodies, small legs, small hands and big heads. Once the style was chosen, I used Adobe Illustrator to finalize the characters. The bear was created with a smiling face, and neutral face to create different facial expressions. Also, there are 13 different animal characters that can be found in any farm, which include the following: mouse, horse, bird, dog, donkey, cat, rabbit, goat, cow, chicken, owl, chick and duck. Once all the animals were finalized I started working on the background environments. I choose a 2D style with depth to create an illusion of three-dimensional space.
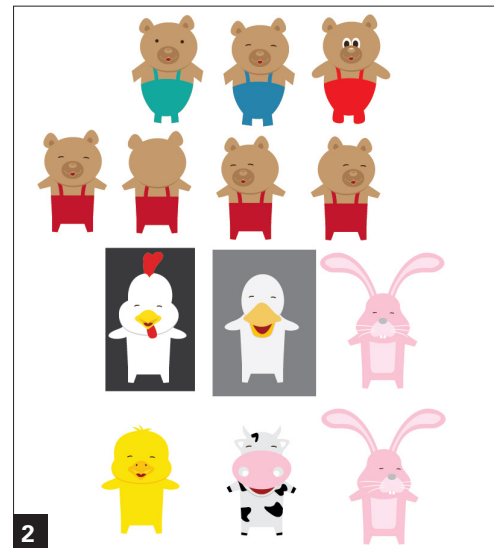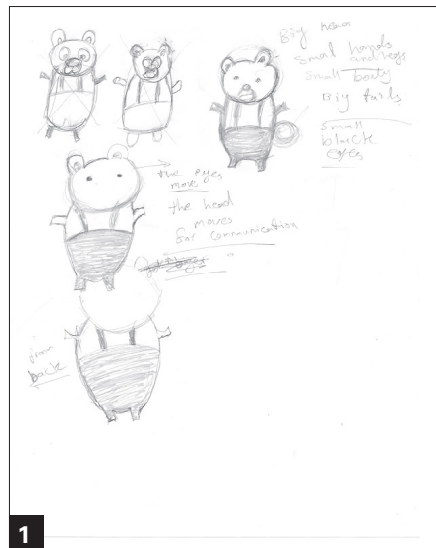
Characters Development

Fig. 1. Manal Alyaba, Character sketch, 2014. Pencil, 8.5in x 11in.

Fig. 2. Manal Alyaba, Characters Development, 2014. Illustrator CC, 8.5in x 11in.

The Design Process

**Characters
Development**

Final Bear

Fig. 3. Manal Alyaba,
Character
Development, 2014.
Illustrator CC,
8.5in x 11in.

Fig. 4. Manal Alyaba,
Final Character, 2014.
Illustrator CC,
8.5in x 11in.

The Design Process

**Final
Characters**

Fig. 5. Manal Alyaba,
Final Characters, 2014.
Illustrator CC,
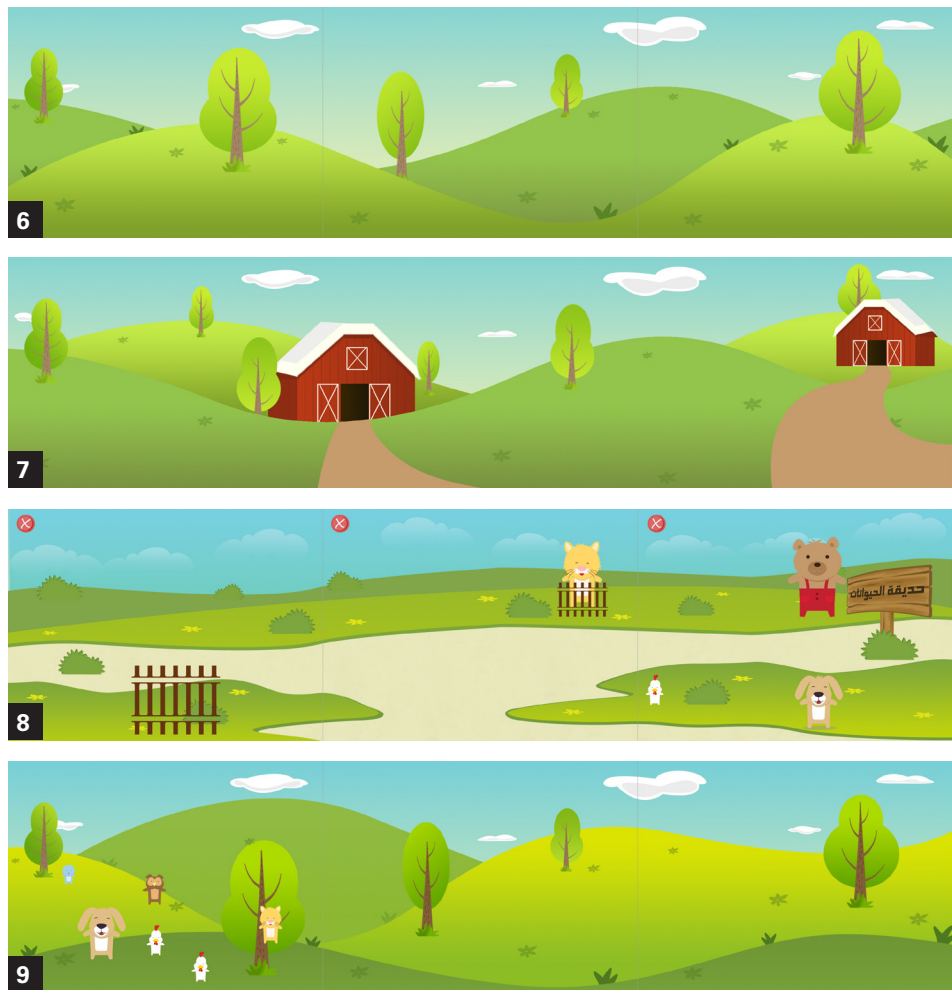8.5in x 11in.

The Design Process

**The Original
Environments**

Fig. 6. Fig. 7. Fig. 8.
Fig. 9. Manal Alyaba,
Environments
Development, 2014.
Photoshop CC,
3072px x 768px.

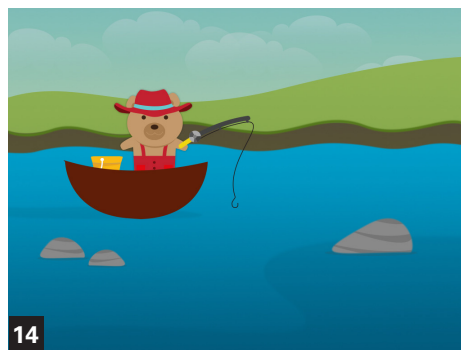# The Design Process

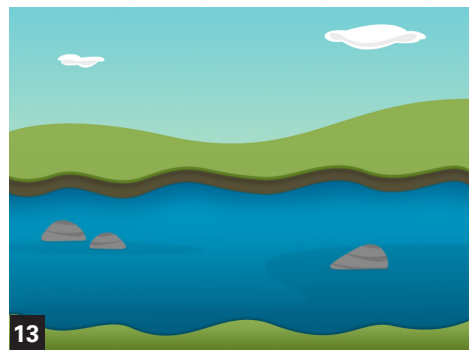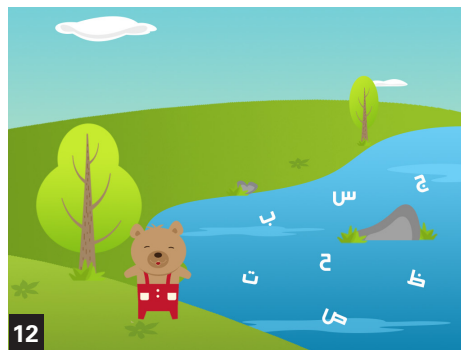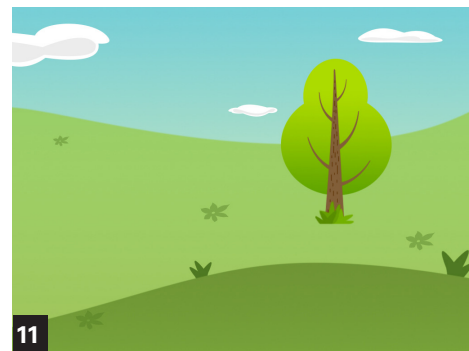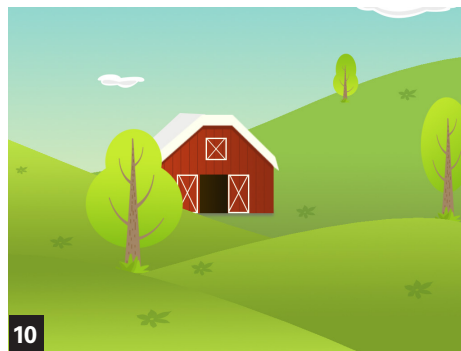## The Original Environments

Fig.10. Fig. 11. Fig.12. Fig.13. Fig.14. Manal Alyaba, Environments Development, 2014. Photoshop CC, 1024px x 768px.

The Design Process

Technical Issues

Name Revision
The first name I choose for the project was "Bear the Listener."
The Arabic translation of this name had an odd sentence structure. It would have the same meaning, but for Arabic speakers it would sound like a weird sentence. So, in order to have the correct Arabic structure, I had to modify the name to fit both languages, Arabic and English.

While moving forward with this design and idea I found out that:

- As the application is based on being in a farm green was the only color used to represent the grass and the farm environment, which creates a lack of fun colors.

- Due to the shortage of colors, the design was boring.

- Illustrations are the same with green planting in every environment.

- Since this project is designed for children, the visuals did not encourage the children to play.

Troubleshooting Results

In order to troubleshoot my issues, I had to answer these questions:

What is this app about?
It's an application that promotes listening skills for Arabic preschoolers through listening activities.

What are those activities?
- Recognizing animal sounds.
- Recognizing alphabet sounds.
- Matching rhyming words.
- Following orders and instructions.

The Design Process

What do I want it to be?
• Make it fun.
• Make it colorful.
• Make it different.
• Make it diverse with different storylines.
• Make it simple.

**The New
Design**

I changed the original idea of the farm games, in order to have variety in the design and make it more interesting and appealing to children. This app has five games, but each game has different environments and situations. The bear wears different styles of clothing to match each environment.

The five games are:
• Dabdoop at School
• Dabdoop at the Kitchen
• Dabdoop at the Supermarket
• Dabdoop at Fishing Trip
• Dabdoop at the Farm

The Design Process

The Colors Choice

The Farm Game

The Kitchen Game

The Fishing Game

The School Game

The Supermarket Game

The Main UI

The Design Process

Dabdoop at School

This game focuses on letter sounds. The aim of this game is to recognize the phonics of the alphabet. The child will hear the first vowel of the letter then he/she has to choose the right letter. After three correct answers the award medal will be given. In this game the main character – Dabdoop – is playing a teacher role. He has glasses and is holding a teacher's pointer stick that points to the green board. The bear is asking the child to choose the one right letter of the vowel he/she heard from the three letters he/she was given. If the answer is right the bear will give a compliment, a smiley face and a star will show up on the screen. If the answer is wrong, the bear will ask the child to try again.
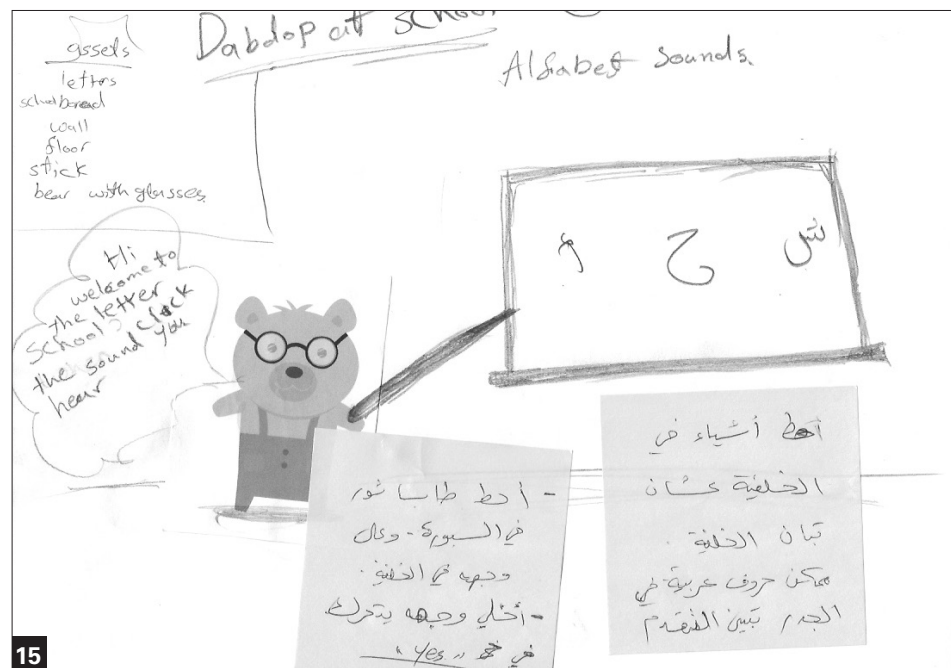

Fig. 15. Manal Alyaba,
Dabdoop at School
Game Sketch, 2014.
Pencil, 8.5in x 11in.

The Design Process
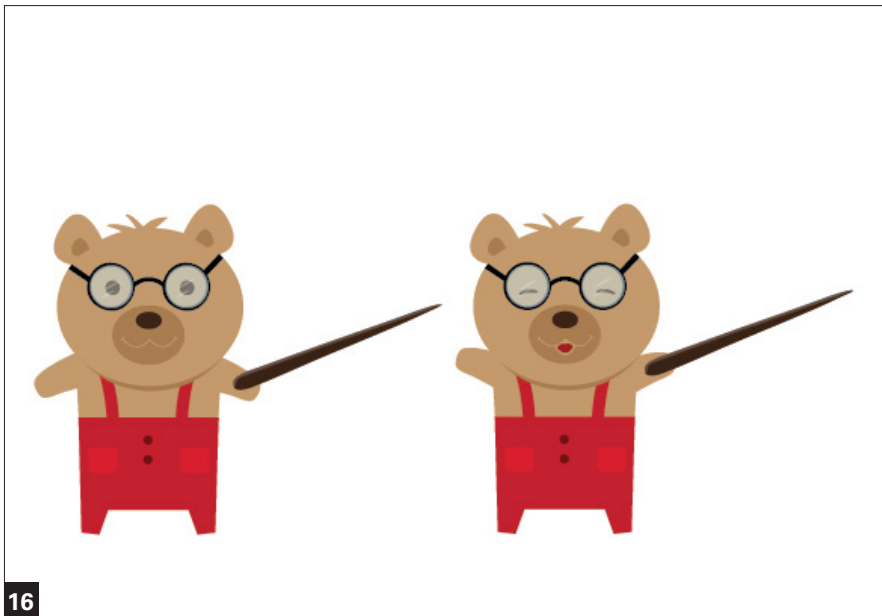
Dabdoop at School

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Fig. 16. Manal Alyaba, Teacher Character, 2014.Illustrator CC, 8.5in x 11in.

Fig. 17. Manal Alyaba, Dabdoop at School Background, 2014. Photoshop CC, 1024px x 768px.

The Design Process

Dabdoop at School Assets

Fig. 18. Fig. 19. Fig. 20. Fig. 21 Fig. 22. Manal Alyaba, School Assets, 2014. Photoshop CC, 1024px x 768px.

Fig. 23. Manal Alyaba, School Reward Medal, 2014.Illustrator CC, 8.5in x 11in.

The Design Process

**Dabdoop at
School**

Fig. 24. Fig. 25. Manal
Alyaba, Screenshot of
the School Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

Dabdoop at School

Fig. 26. Manal Alyaba,
Screenshot of
the School Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

**Interactive
Version**

This game also has an interactive version designed in Adobe Flash using HTML5 Canvas and JavaScript in order to test the game on the target audience. This version has simple basic codes so the children can play with less difficulty. It is a bit different than the motion graphics piece, as there are no stars given to the child when the right answer is selected. In addition they have to click the play button each time the round ends whether the answer is right or wrong.

Fig. 27. Manal Alyaba,
Screenshot of
the Interactive Version
of the School Game,
2014. Flash CC,
1024 x 768px

The Design Process

**Dabdoop
at the Kitchen**

This game focuses on listening and following the right orders and the right instructions. The child will be given three food choices to make a cake, a pizza or a sandwich. In this given example he/she chooses to make the cake. The cake ingredients appear one by one, which are flour, sugar, oil, water and eggs. The ingredients will stay on the paper at the wall as a list for the child to use them for feedback, and also they will appear on the kitchen counter too. In the first round, the child has to put two ingredients in a pot in the order in which the bear asked for them. If the child gets the order and ingredients right, he/she will get a cake. If the answer is wrong, the item will not go into the pot and will be returned to the kitchen counter and the child will be given another chance to choose the correct answer. In the next round, the number of ingredients that the child has to put in is increased by one ingredient. In order to get the award medal, the child has to go through the third round, which requires putting all five ingredients of the cake in the correct order. In this game the main character – Dabdoop – is playing a chef role with a chef hat. The bear is giving the instructions and he is engaged with the player.

The Design Process
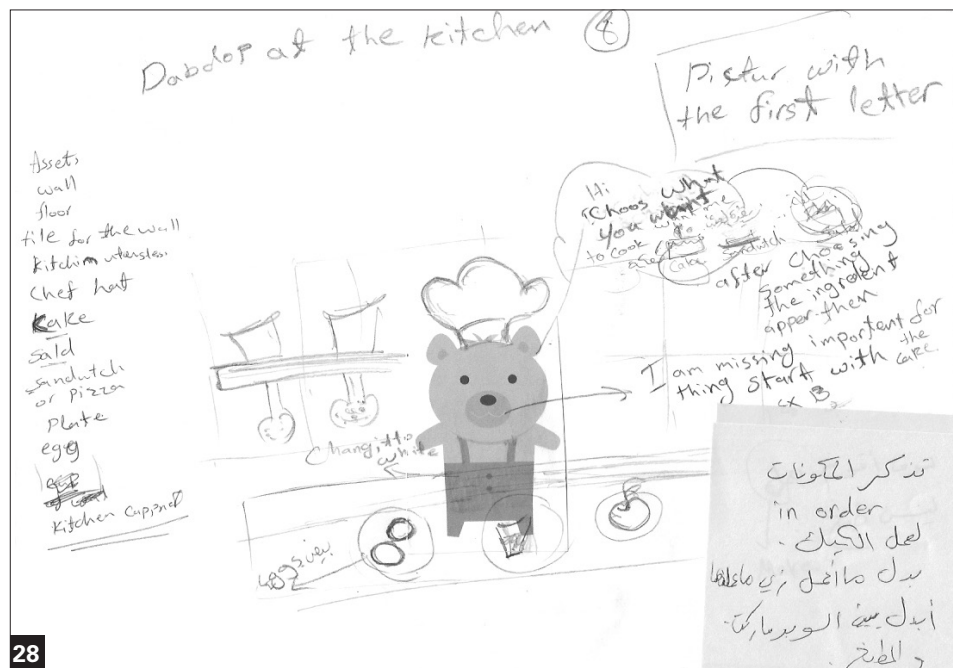
**Dabdoop
at the Kitchen**

Fig. 28. Manal Alyaba,
Dabdoop at the Kitchen
Game Sketch, 2014.
Pencil, 8.5in x 11in.

The Design Process

**Dabdoop
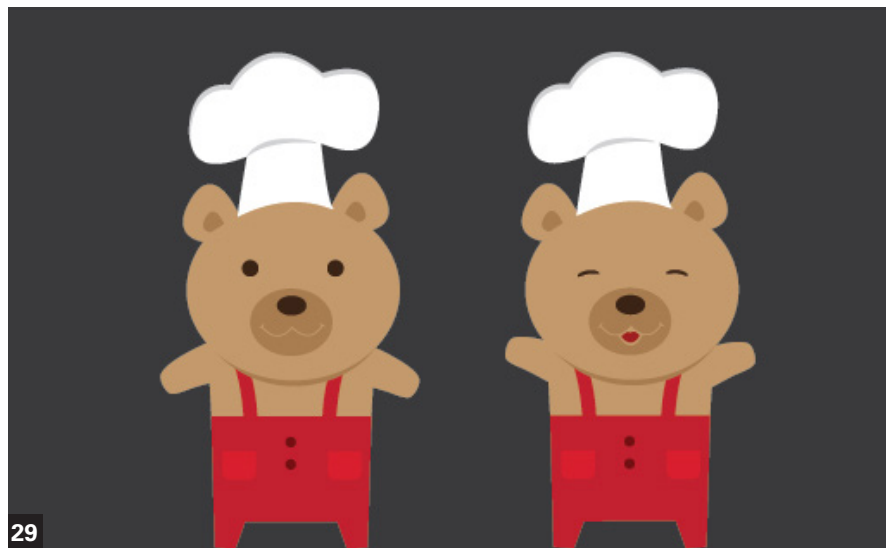at the Kitchen**

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Fig. 29. Manal Alyaba,
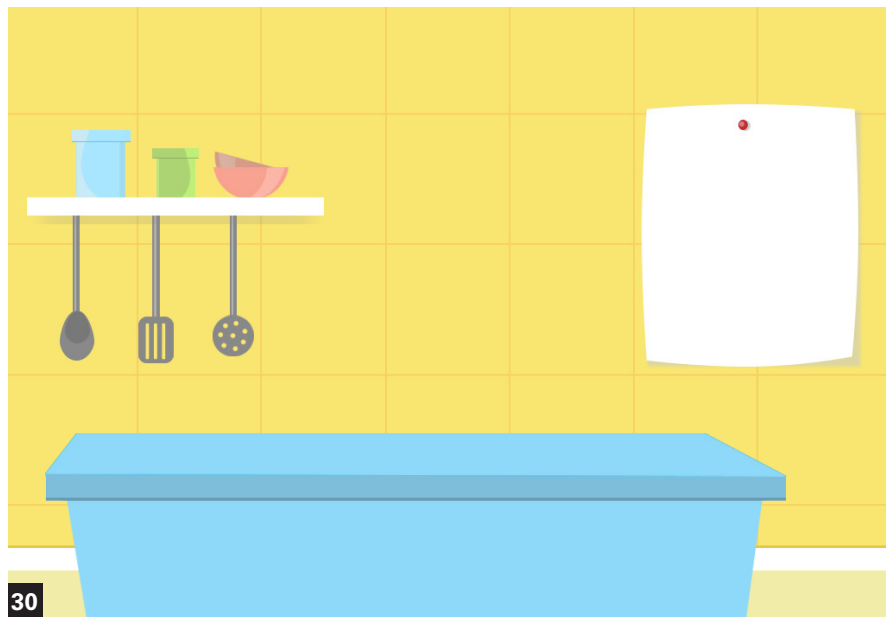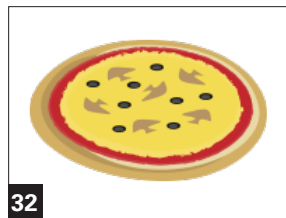Chef Character, 2014.
Illustrator CC,
8.5in x 11in.

Fig. 30. Manal Alyaba,
Kitchen Background,
2014. Photoshop CC,
1024px x 768px.
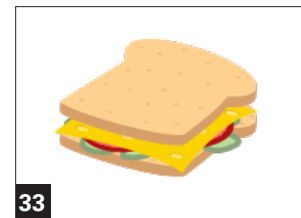
The Design Process

**Dabdoop
at the Kitchen
Assets**

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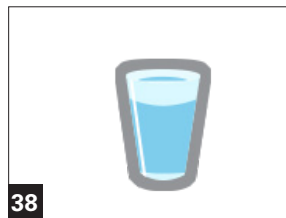
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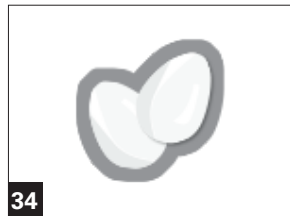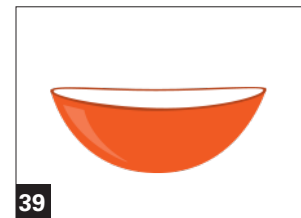

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Fig. 31. Fig. 32. Fig. 33.
Fig. 34. Fig. 35. Fig. 36.
Fig. 37. Fig. 38. Fig. 39.
Manal Alyaba,
Kitchen Assets, 2014.
Illustrator CC,
8.5in x 11in.

Fig. 40. Manal Alyaba,
Kitchen Reward Medal,
2014.Illustrator CC,
8.5in x 11in.

The Design Process

**Dabdoop
at the Kitchen**

Fig. 41. Fig. 42. Manal
Alyaba, Screenshot of
the Kitchen Game,
2014. After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop
at the Kitchen**

Fig. 43. Fig. 44. Manal
Alyaba, Screenshot of
the Kitchen Game,
2014. After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop
at the Kitchen**

Fig. 45. Fig. 46. Manal
Alyaba, Screenshot of
the Kitchen Game,
2014. After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop
at the Kitchen**
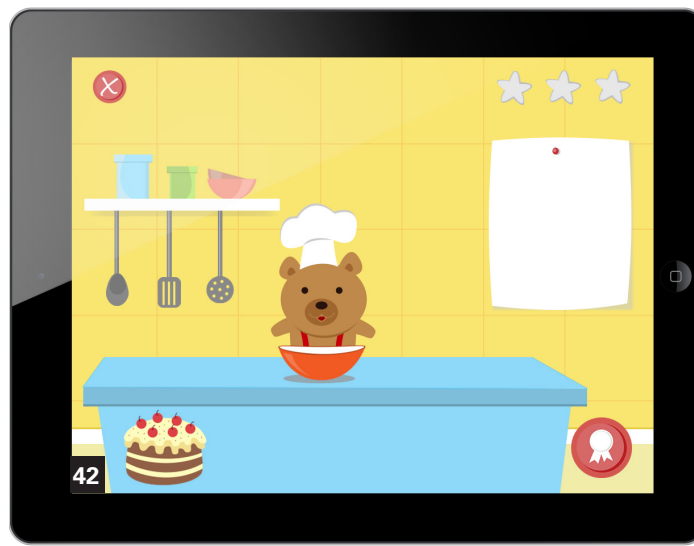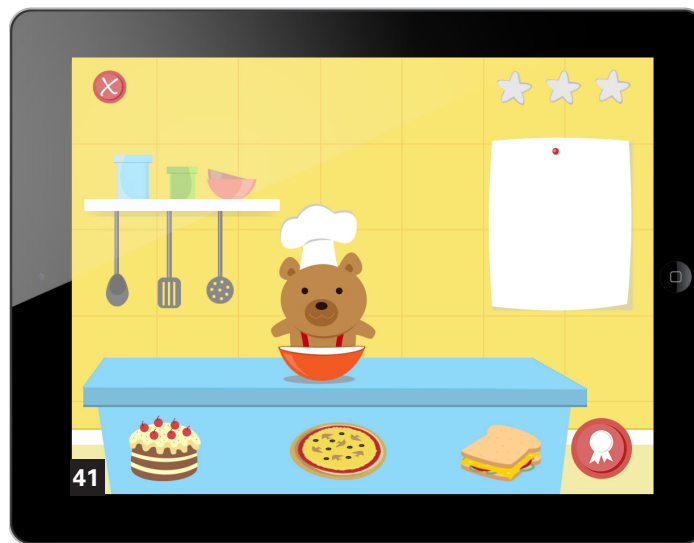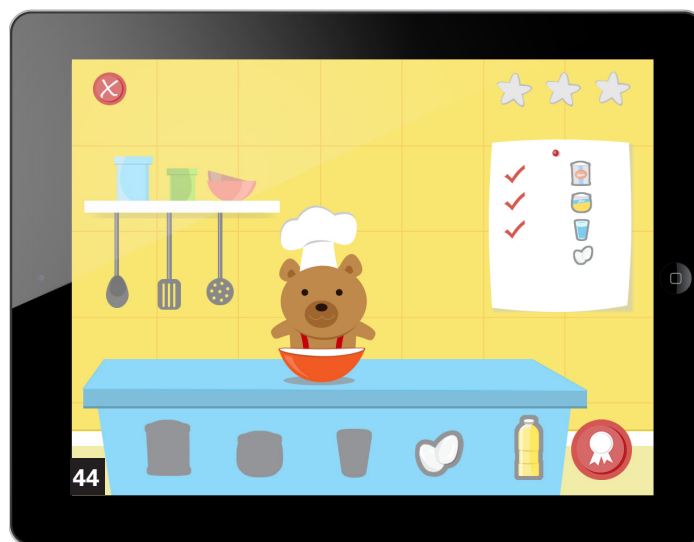

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Fig. 47. Manal Alyaba,
Screenshot of
the Kitchen Game,
2014. After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop at
the Supermarket**

This game focuses on listening to the specific order of a food-shopping list. Dabdoop is at the supermarket buying a list of fruits and vegetables he needs. The first round asks for an apple and the child has to put the entire apple he/she sees in the basket. The second round asks for an orange, and the third asks for a lemon. After passing the third round the award medal will be given. When the child gets the right answer the bear will smile and give a compliment. If the answer is wrong, the fruit will go back to its place and the bear will say again what he is asking for. In this game the main character does not wear any accessories but he is standing behind a shopping basket.
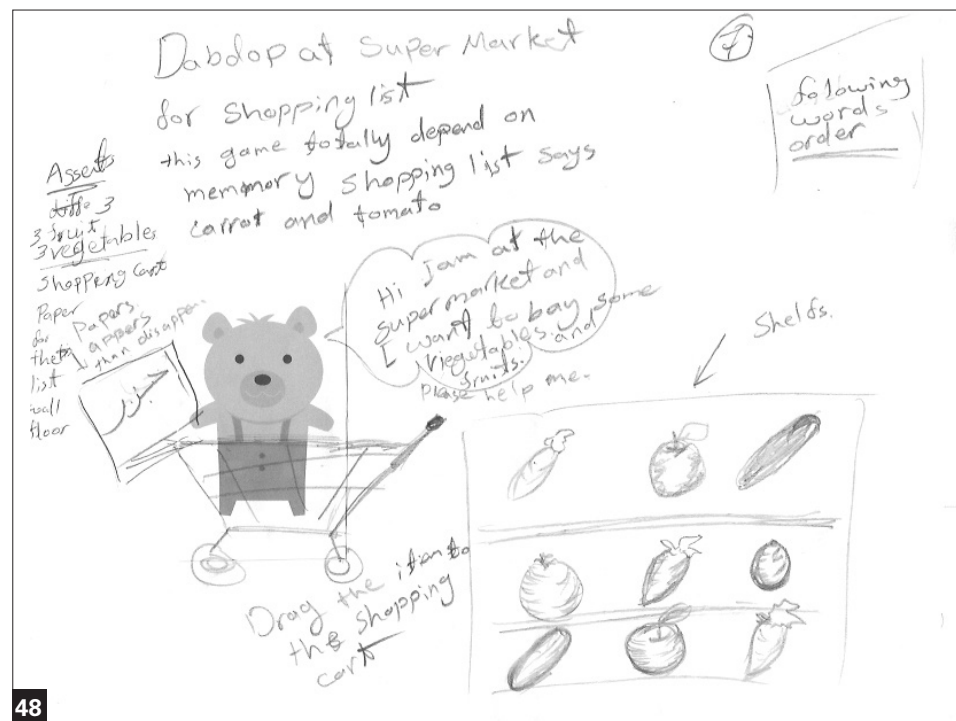
Fig. 48. Manal Alyaba,
Dabdoop at
the Supermarket Game
Sketch, 2014. Pencil,
8.5in x 11in.

The Design Process

**Dabdoop at
the Supermarket**

Fig. 49. Manal Alyaba,
Supermarket Character,
2014.Illustrator CC,
8.5in x 11in.

Fig. 50. Manal Alyaba,
Supermarket
Background, 2014.
Photoshop CC,
1024px x 768px.

The Design Process

Dabdoop at the Supermarket Assets
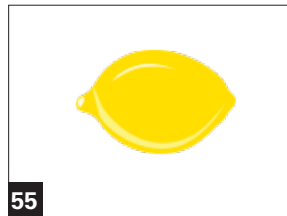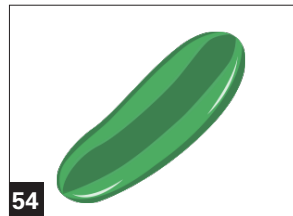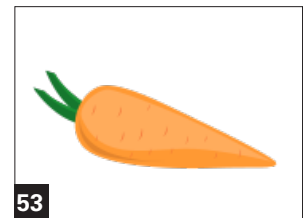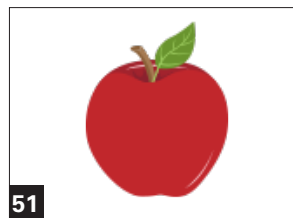
Fig. 51. Fig. 52. Fig. 53.
Fig. 54. Fig. 55. Fig. 56.
Manal Alyaba,
Supermarket Assets,
2014.Illustrator CC,
8.5in x 11in.

Fig. 57. Manal Alyaba,
Supermarket Reward
Medal, 2014.Illustrator
CC, 8.5in x 11in.

The Design Process

**Dabdoop at
the Supermarket**

Fig. 58. Fig. 59. Manal
Alyaba, Screenshot of
the Supermarket
Game, 2014.
After Effect CC,
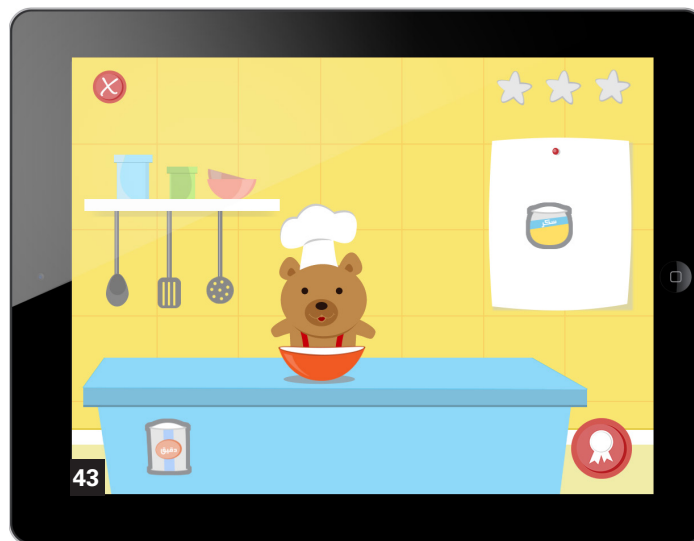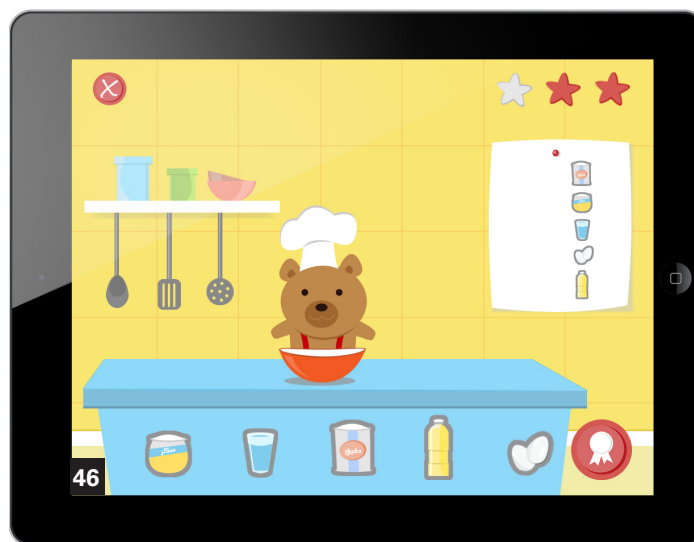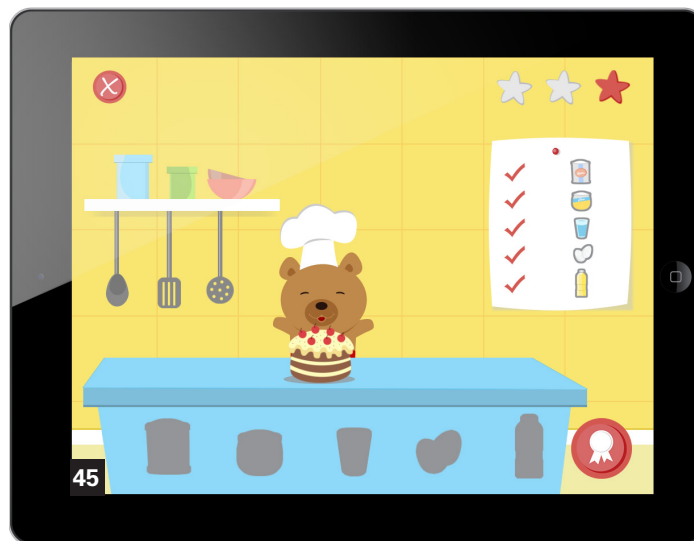1920 x 1080 dpi

The Design Process

**Dabdoop at
the Supermarket**
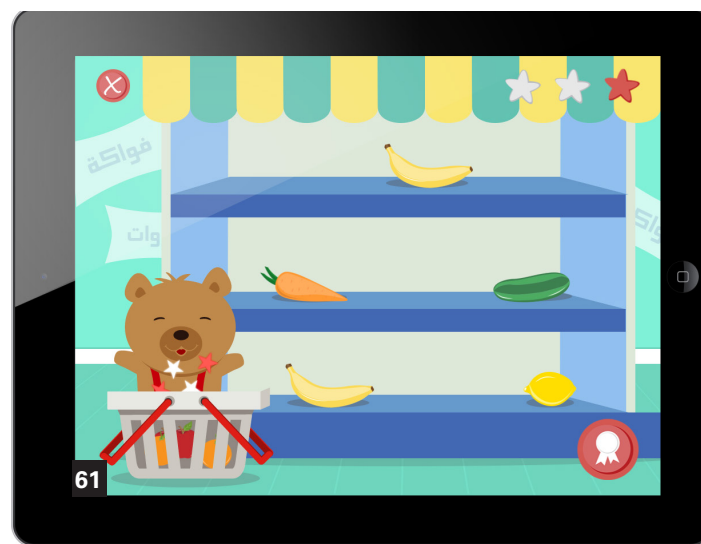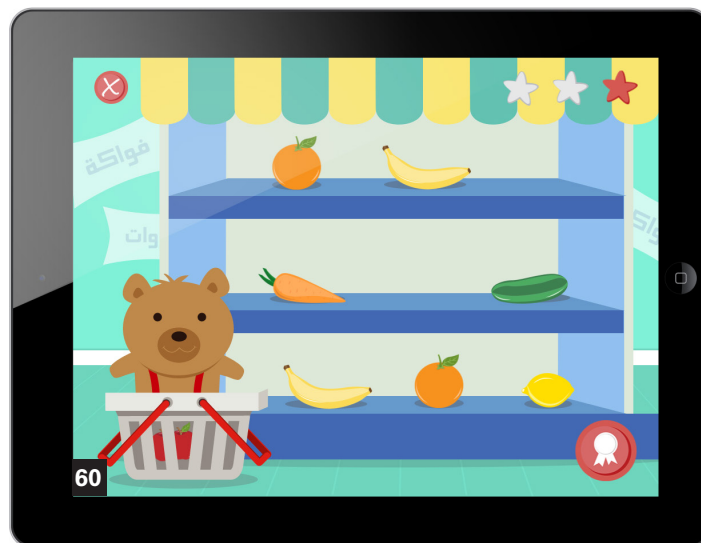
Fig. 60. Fig. 61. Manal
Alyaba, Screenshot of
the Supermarket
Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop at
the Supermarket**

Fig. 62. Fig. 63. Manal
Alyaba, Screenshot of
the Supermarket
Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

Dabdoop at Fishing Trip

This game focuses on rhyming words. Dabdoop is on a fishing trip for rhyming words. Instead of making the words appear on the screen, graphic images appear floating on the water across the screen and the bear asks for the matching images. In all three rounds, the child was asked to fish for different items that rhyme with lamp (Misbah). The award medal will be given after the child picks all the available items that rhyme with the lamp image, and puts them in the fishing bucket. The rhyming words are apple (Tofah), key (Moftah), and alligator (Temsah). Whenever the child gets the right answer the bear will smile and stars will appear. In this game, Dabdoop is a fisherman, sailing in a boat with a fishing pole and wearing a fishing hat.
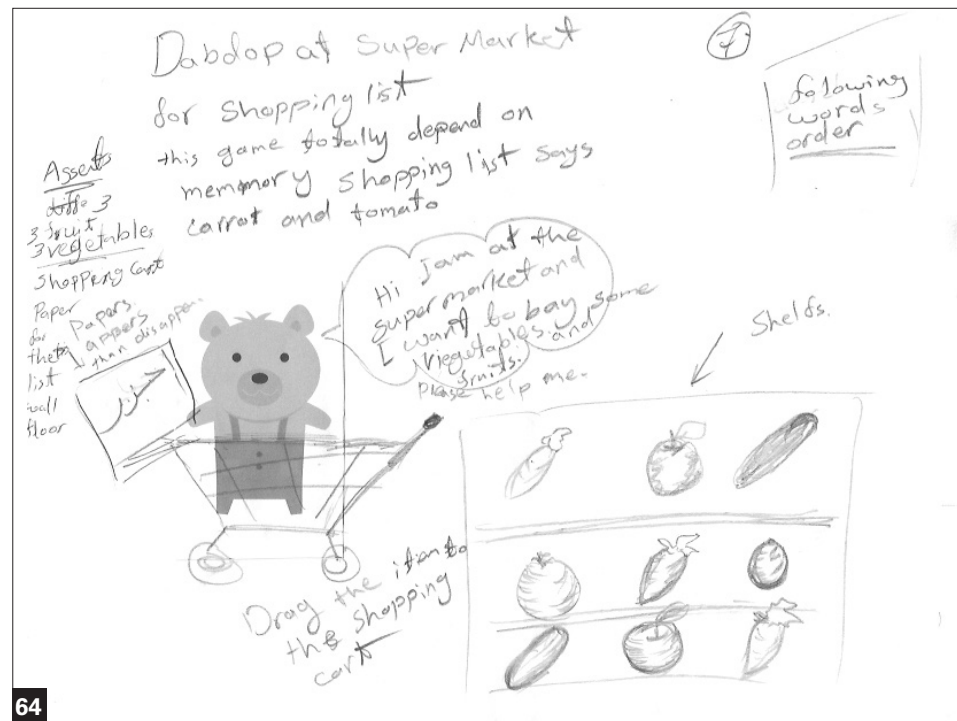
Fig. 64. Manal Alyaba,
Dabdoop at Fishing Trip
Game Sketch, 2014.
Pencil, 8.5in x 11in.

The Design Process

Dabdoop at Fishing Trip
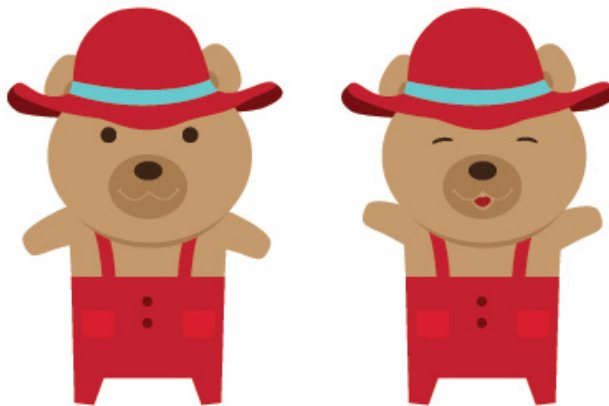
Fig. 65. Manal Alyaba, Fisherman Character, 2014.Illustrator CC, 8.5in x 11in.

Fig. 66. Manal Alyaba, Fishing Trip Background, 2014. Photoshop CC, 1024px x 768px.

The Design Process

**Dabdoop at
Fishing Trip
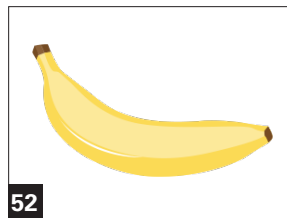Assets**
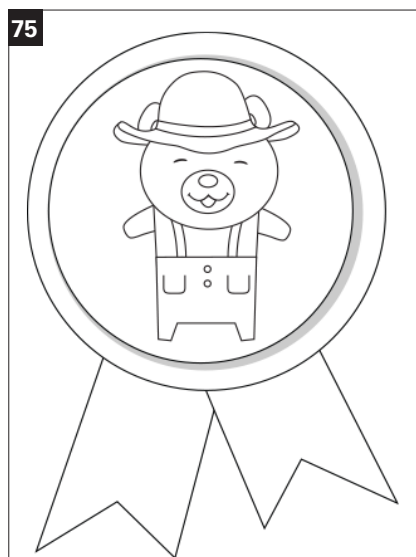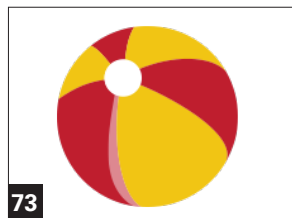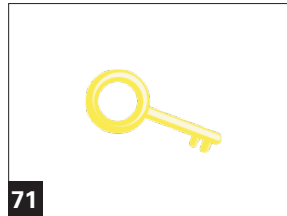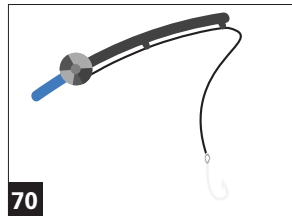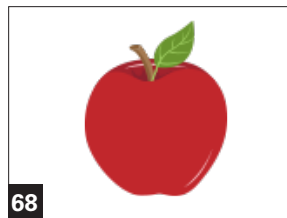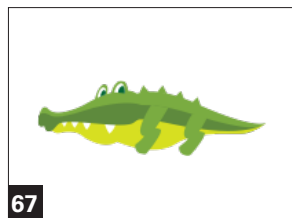
Fig. 67. Fig. 68. Fig. 69.
Fig. 70. Fig. 71. Fig. 72.
Fig. 73. Fig. 74. Fig. 76.
Manal Alyaba,
Fishing Trip Assets,
2014.Illustrator CC,
8.5in x 11in.

Fig.75. Manal Alyaba,
Fishing Trip Reward
Medal, 2014.Illustrator
CC, 8.5in x 11in.

The Design Process

Dabdoop at Fishing Trip
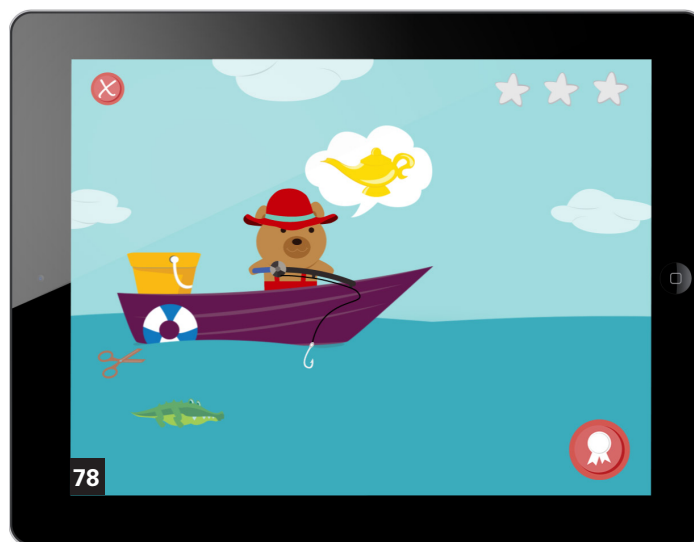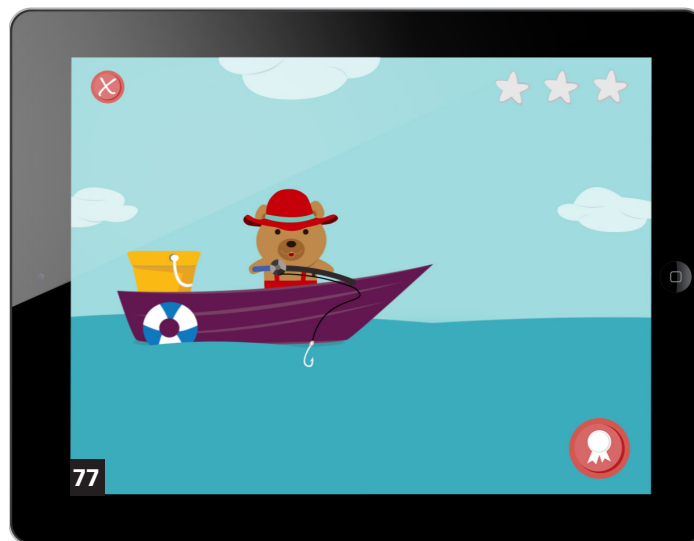
Fig. 77. Fig. 78. Manal Alyaba, Screenshot of the Fishing Trip Game, 2014. After Effect CC, 1920 x 1080 dpi

The Design Process

Dabdoop at Fishing Trip
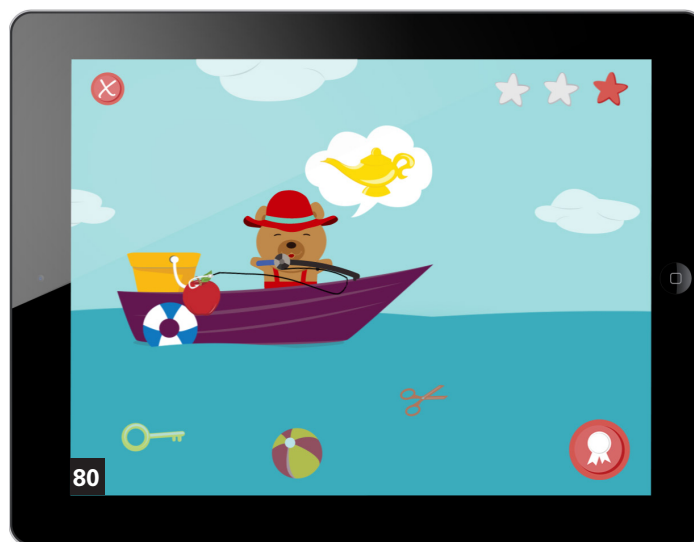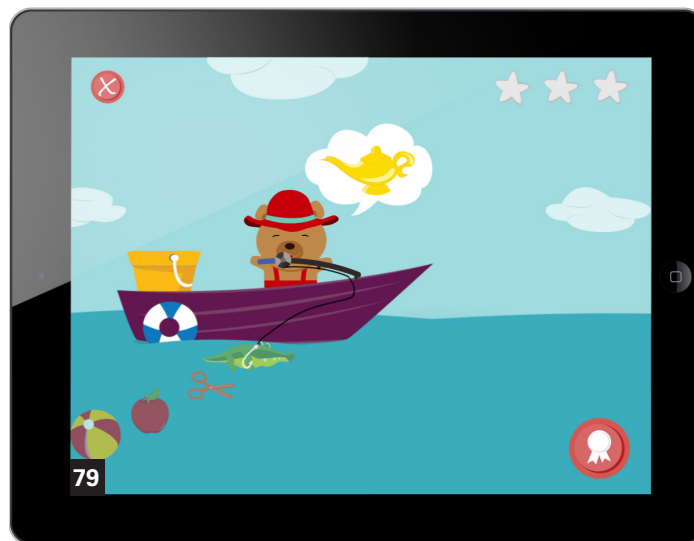
Fig. 79. Fig. 80. Manal Alyaba, Screenshot of the Fishing Trip Game, 2014. After Effect CC, 1920 x 1080 dpi

The Design Process

Dabdoop at Fishing Trip
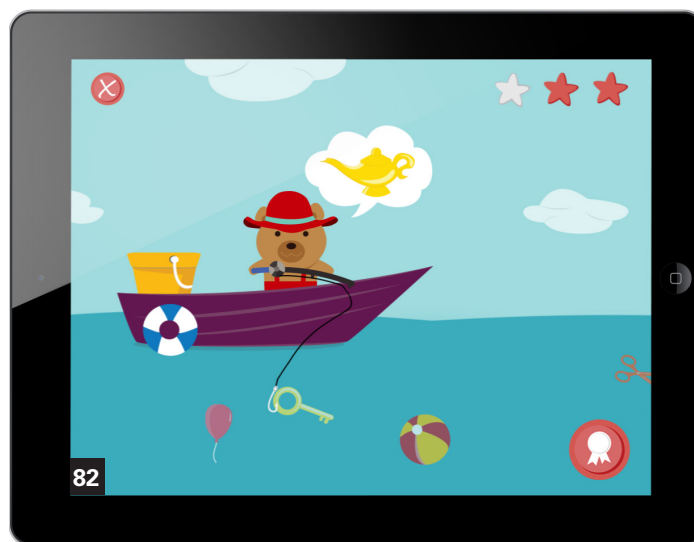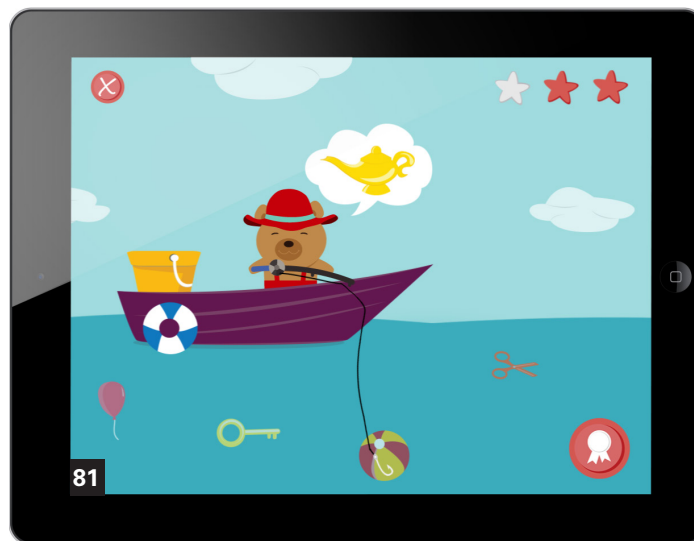
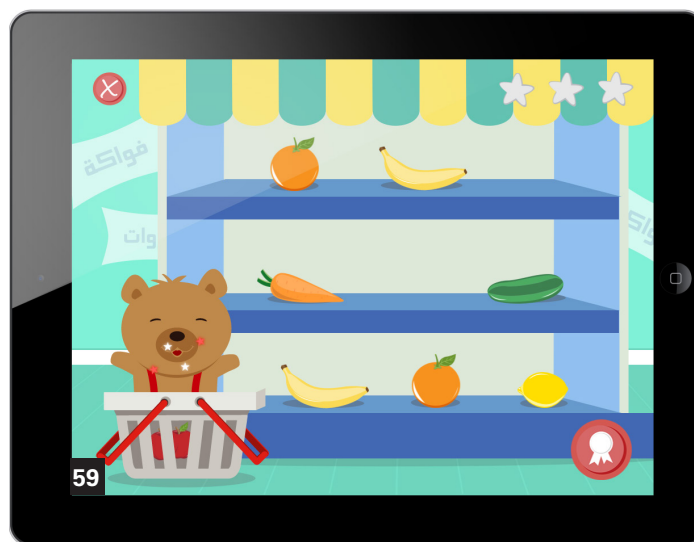

Fig. 81. Fig. 82. Manal Alyaba, Screenshot of the Fishing Trip Game, 2014. After Effect CC, 1920 x 1080 dpi

The Design Process

Dabdoop at Fishing Trip

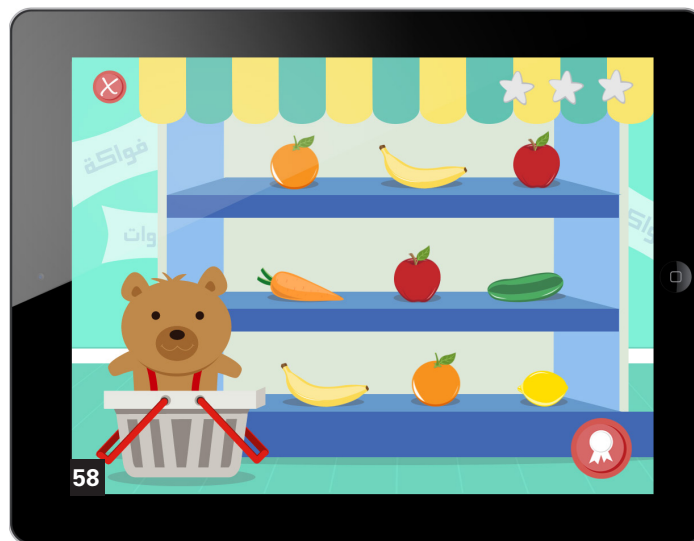

Fig. 83. Manal Alyaba, Screenshot of the Fishing Trip Game, 2014. After Effect CC, 1920 x 1080 dpi

The Design Process

**Dabdoop
at the Farm**

This game focuses on animal sounds. Dabdoop is at the farm. He is wearing a straw hat and carrying a pitchfork. Five animals appear each round and the bear asks if the child can recognize the sound heard. After the animal makes a sound, the child chooses the right animal image that was heard. If the answer is wrong the bear will say this animal has a different sound. After correctly choosing/matching three animal sounds, the award medal will be given.

Fig. 84. Manal Alyaba,
Dabdoop at the farm
Game Sketch, 2014.
Pencil, 8.5in x 11in.

The Design Process

**Dabdoop
at the Farm**

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Fig. 85. Manal Alyaba,
Farmer Character,
2014.Illustrator CC,
8.5in x 11in.

Fig. 86. Manal Alyaba,
Farm Background,
2014. Photoshop CC,
1024px x 768px.

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The Design Process

Dabdoop at the Farm Assets
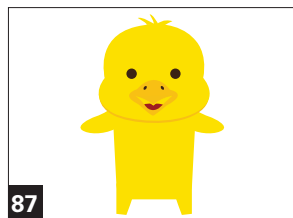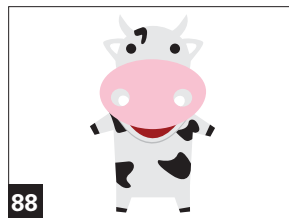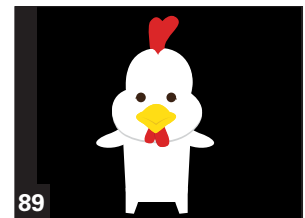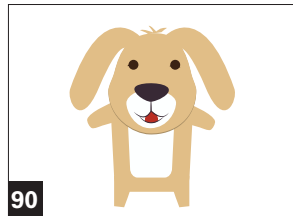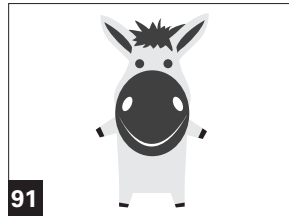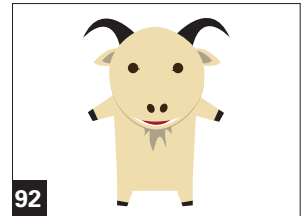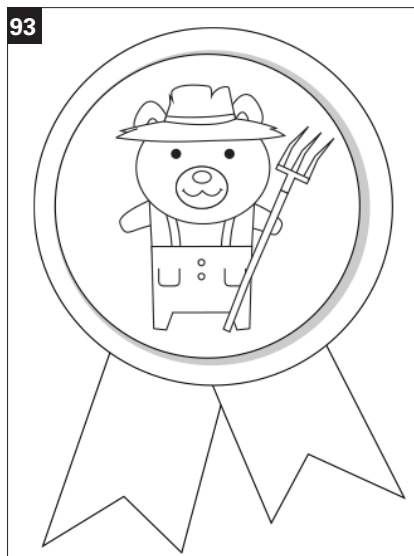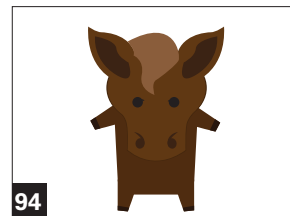
Fig. 87. Fig. 88. Fig. 89.
Fig. 90. Fig. 91. Fig. 92.
Fig. 94. Manal Alyaba,
Farm Assets, 2014.
Illustrator CC,
8.5in x 11in.

Fig.93. Manal Alyaba,
Farm Reward Medal,
2014.Illustrator CC,
8.5in x 11in.

The Design Process

**Dabdoop
at the Farm**

95

96
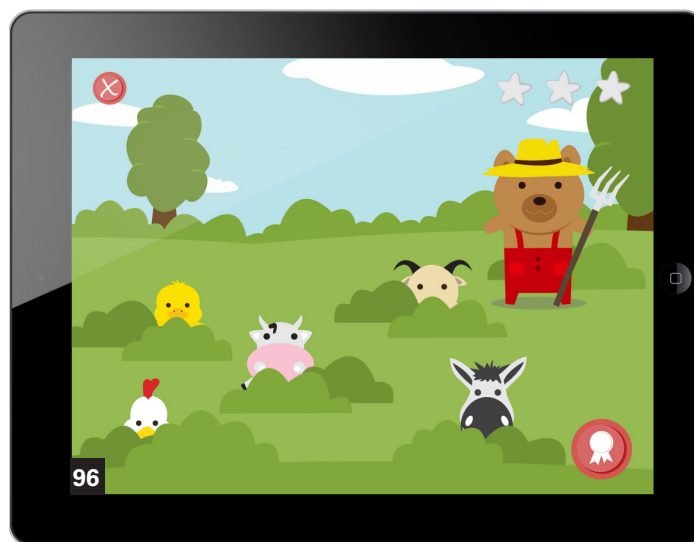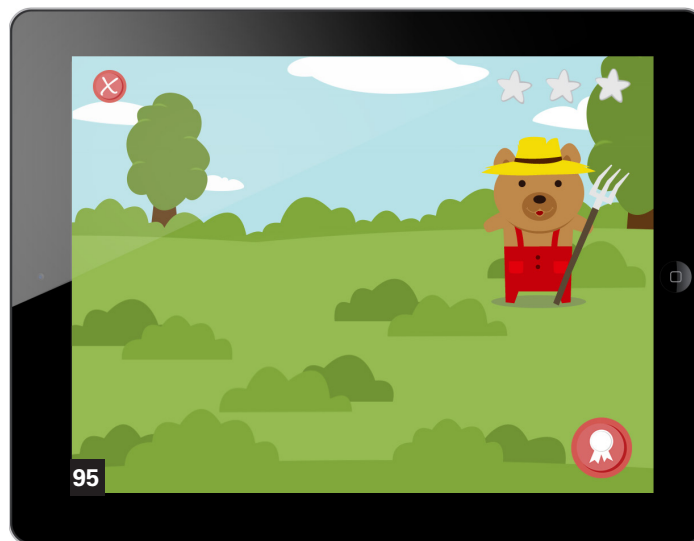
Fig. 95. Fig. 96. Manal
Alyaba, Screenshot of
the Farm Game, 2014.
After Effect CC,
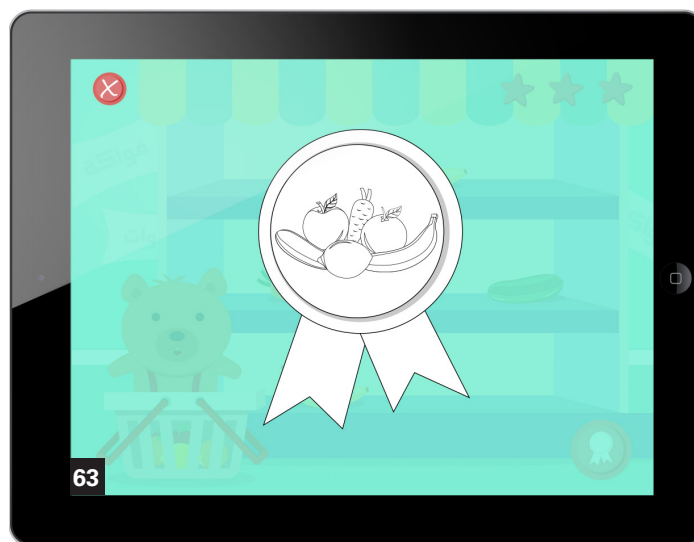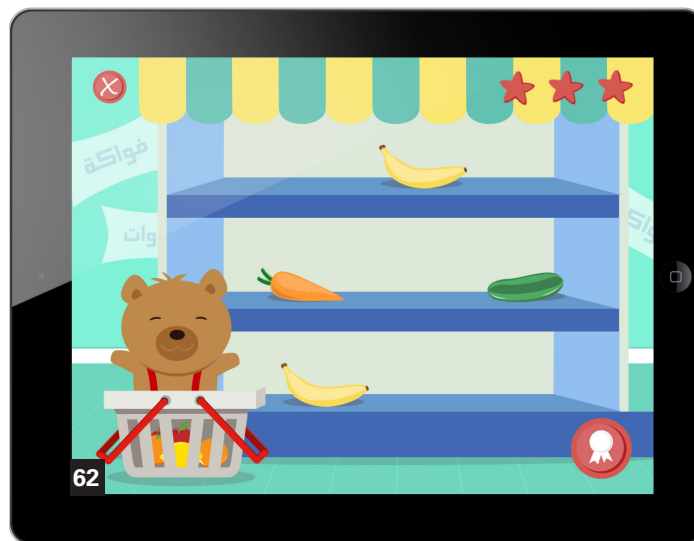1920 x 1080 dpi

The Design Process

**Dabdoop
at the Farm**

97

98
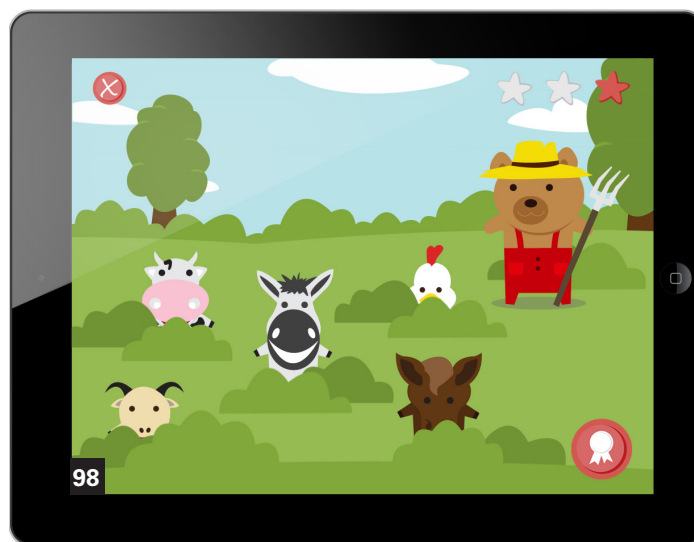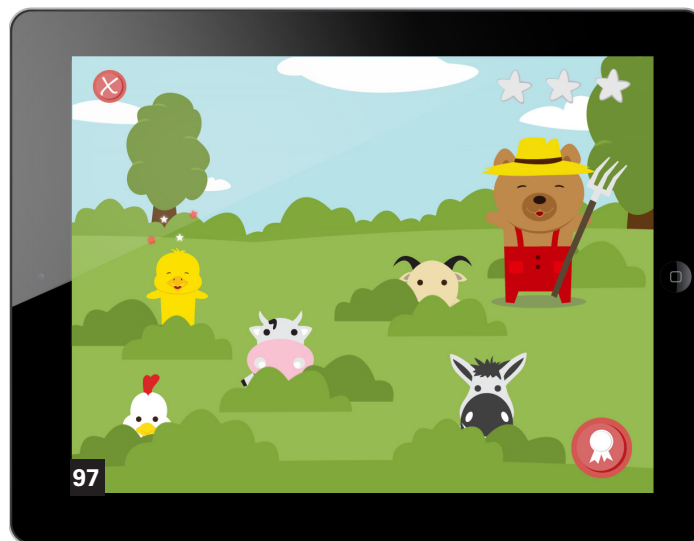
Fig. 97. Fig. 98. Manal
Alyaba, Screenshot of
the Farm Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

**Dabdoop
at the Farm**
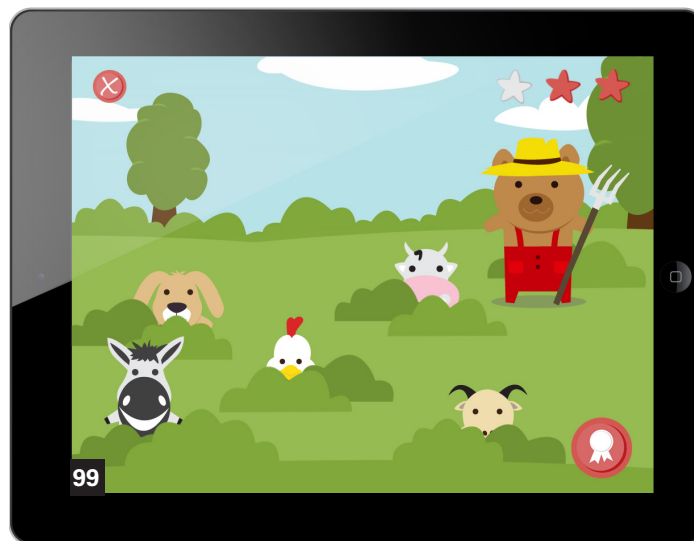
Fig. 100. Manal Alyaba,
Screenshot of
the Farm Game, 2014.
After Effect CC,
1920 x 1080 dpi

The Design Process

I used Adobe After Effects for the animation, along with Photoshop and Illustrator to create all the graphics. The illustration used a flat, cartoon style that is simple with bright color choices. The audio was recorded by an Arabic speaker as simple directions for the children to understand.

Design the Main User Interface

The idea was to have an indoor environment with different doors; each door leads to a game. At the top of each door there are small signs with the game names written on them. As the child swipes over the doors, the one in the middle gets larger and when the child rolls over it the door opens and the bear smiles and says the name of the game. When it is clicked the game will open and the UI disappears. There is an exit button in each game that takes the child back to the main UI. There is a registration button for the parents so they can register an account in order to save the child's progress. Another button is created for the parents, for following up with the child's progress and presenting chart reports. A reward button was also created for the child to keep up with his/her reward medals. The medals that have not been obtained by the child yet are grayed, and if the child clicks on any of them he/she will hear that they need to win the game first in order to get the medal.

The Design Process

User Interface

Fig. 101. Fig. 102.
Manal Alyaba,
Main User Interface,
2014. Photoshop CC,
1024px x 768px.

The Design Process

User Interface

Fig. 103. Fig. 104.
Manal Alyaba,
Main User Interface
on Hover, 2014.
Photoshop CC,
1024px x 768px.

The Design Process

User Interface

Fig. 105. Manal Alyaba,
Screenshot of the User
Interface, 2014.
Flash CC,
1024px x 768px.

The Design Process

Registration
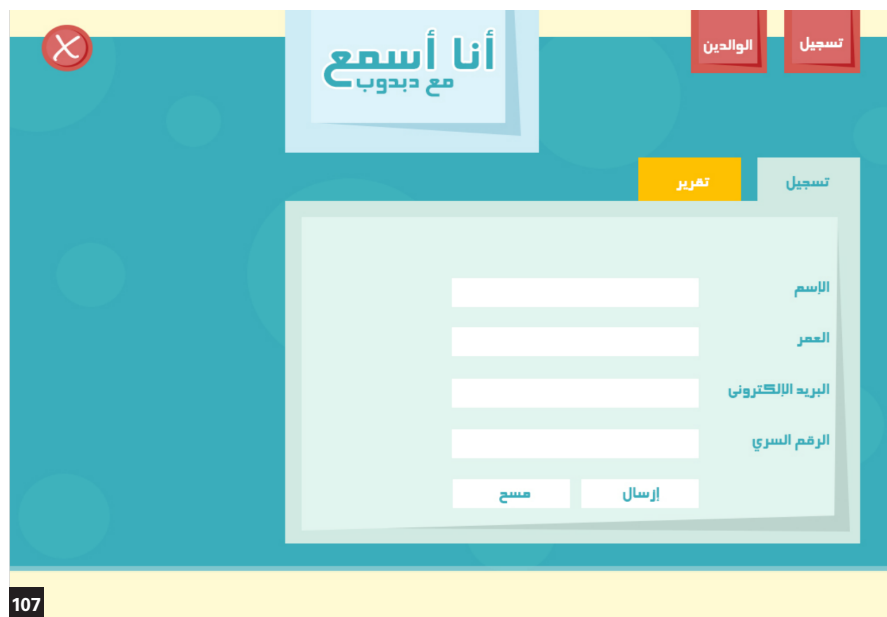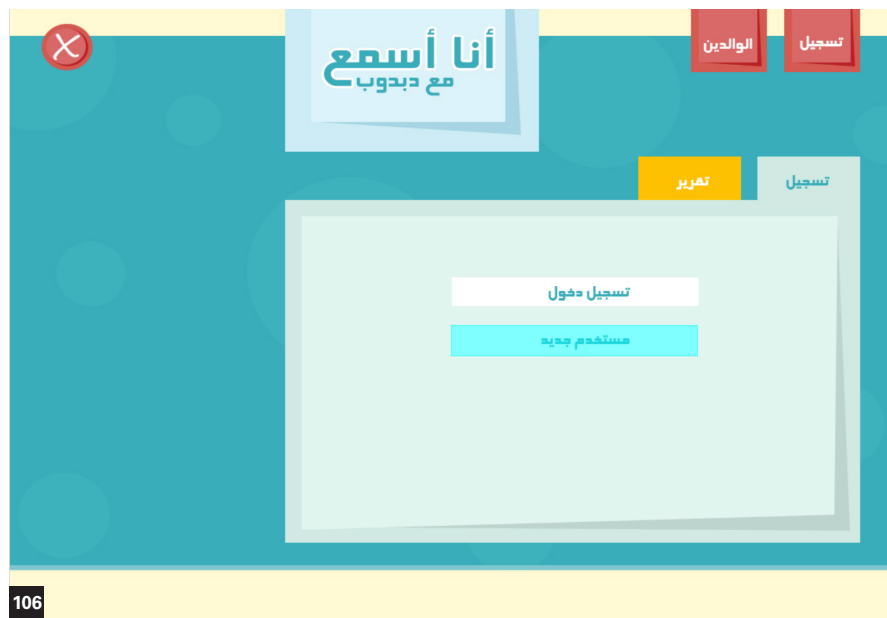
Fig.106. Fig.107.
Manal Alyaba,
Registration, 2014.
Photoshop CC,
1024px x 768px.

The Design Process

Reports

108

Rewards

Fig.108.
Manal Alyaba,
Reports, 2014.
Photoshop CC,
1024px x 768px.

Fig.109.
Manal Alyaba,
Rewards, 2014.
Photoshop CC,
1024px x 768px.

109

The Design Process

The Logo

Is a simple box with the name of the application (I'm Listening with Dabdoop) on it. On the opening logo screen the logo was animated to the right and left in Adobe Flash.

Fig.110. Manal Alyaba,
the Logo, 2014.
Photoshop CC,
1024px x 768px.

The Design Process

The Logo Animation

Fig.111. Fig.112.
Manal Alyaba,
Screenshot of the Logo
Animation, 2014.
Flash CC,
1024px x 768px.

The Design Process

Typography

I tried a couple of Arabic typefaces that were suitable with the illustrated style. The typeface I used is called Elham; it has a round curve that makes it easy to read. The problem I faced with the typeface is that the Adobe CC and CS6 do not recognize the Arabic language. The only program that recognizes the Arabic text is Photoshop, so to resolve this issue I rendered the typography as images from Photoshop.

Testing Fonts

Elham Typeface

Usability Testing

The day of Imagine RIT I showcased my illustrations of the animals, the Dabdoop at the kitchen game and the Dabdoop at school game. I did a survey for the children to pick their favorite animal and the best style of the bear that they liked. In addition to the children's survey, I surveyed the parents and asked how they felt about the whole design idea. Included in this survey the children were given a chance to play on the interactive game.

Although, most of Imagine RIT attendees were not considered my target audience, I received a great deal of user feedback. Interesting, to say the least, was the children's reactions towards the game while playing; despite the lack of knowledge of the Arabic Language, they walked away with a new language skill in Arabic. By chance, or just by luck, there were a few children who had an Arabic language background and they engaged the game with no problem.

Due to the basic codes I used to design the interactive version, I noticed during the usability testing how hard it was for the children to click on the correct letters, because there was no guide or highlight on the letter being clicked. As there was no clue given to which answer was correct when hovering the mouse over the correct answer, this confused the children into thinking they had chosen the incorrect answer. I solved this problem in my motion graphic piece by making the letter bigger as soon as the child rolled over the letter.

Usability Testing

Users Testing

Fig.113. Fig.114.
Shehzil Malik
Shot of the Users
Teasting, 2014.
Flash CC, 960 × 640px.

Usability Testing

**Examples of
Users Feedback**

☐ **Character Design**
☑ Creative
☑ Appropriate
☐ Average
   Needs Improvement

Is the visual style appeal to children?
☑ Yes
☐ No

More Comments

make a transparent layer inside
movie clip for the letters. It should be
the top layer so that the entire space
of the letter is clickable.

More Comments
_____
_____
_____

115

☑ Creative
☐ Appropriate
☐ Average
☐ Needs Improvement

☑ Creative
☐ Appropriate
☐ Average
☐ Needs Improvement

More Comments
Sweet
Nice graphics

More Comments
_____
_____
_____

☐ **Character Design**
☑ Creative
☐ Appropriate
☐ Average
   Needs Improvement

Is the visual style appeal to children?
☑ Yes
☐ No

More Comments
Simple, I Like it

More Comments
_____
_____
_____

116

Fig.115. Fig.116.
Manal Alyaba,
Scan of Users
Feedback, 2014.
Deskjet 3050A.
8.5in x 11in.

Usability Testing

Examples of Users Feedback

□ **Character Design**
☒ Creative
□ Appropriate
□ Average
   Needs Improvement

More Comments
_____
_____
_____

Is the visual style appeal to children?
☒ Yes
□ No

More Comments
My children came right over because of the character!

`117`

□ **Character Design**
☒ Creative
□ Appropriate
□ Average
   Needs Improvement

More Comments
good job
_____
_____

Is the visual style appeal to children?
☒ Yes
□ No

More Comments
my daughter loved it
_____
_____

`118`

Visual Style
☒ Creative
□ Appropriate
□ Average
□ Needs Improvement

More Comments
cheerful, positive & engaging!
_____
_____

Main Character (Dabdop)
☒ Creative
□ Appropriate
□ Average
□ Needs Improvement

More Comments
very lovely
_____
_____

`119`

Fig.117. Fig.118.
Fig.119. Manal Alyaba,
Scan of Users
Feedback, 2014.
Deskjet 3050A.
8.5in x 11in.

Usability Testing

Suggestions for Improvements
- Adding a progress bar indicating the time left for the game to end.
- Make the voice of the instructions clearer.
- Make the letters more clickable for the school game.

Overall Feedback
- The visual design is creative and appropriate for children.
- The characters are cute, simple and appropriate for children.
- The design overall is welcoming and child friendly.

Conclusion

Digital game-based learning is becoming widespread around the world. The enormous implications of delivering well-designed games for children have become common knowledge. The lack of educational games being done in Arabic for children that provide advantages of this learning tool to Arabic children has inspired me to be part of a new revolution of game development. Also, it has been my motivation to direct a well-designed game to serve children's education specifically the one that addresses early reading and listening.

Throughout the process of this project, I am assured that I have gained a strong knowledge in digital design for children. Clear goals were set for this project from the start despite adjustments that were needed to combat the real world interactions in its test phases, finding accomplishment in the end result. The aim of this project was to point out a gap that is present in Arabic children games and interactive applications. I propose highlighting the importance of this gap and encouraging more people to get involved and increase the amount of digital games in this area of educating children rather than using games for pleasure alone.

As I came from an education background, my focus was to develop a project that would merge education and digital design for children whose primary language is Arabic. I came to RIT to expand my design knowledge using it as a tool to stimulate children and the way they learn through media. I was very interested in learning more about 2D graphics and animation. In my plan, I obtained new design techniques that have been applied into my thesis project. As a designer I have grown and developed the necessary tools needed to demonstrate the completion of a project from the sketch on the page to the final results.

Appendix

Appendix

**Original
 Thesis Proposal**

Bear the Listener

A Phonological Stimulation Application for Arabic Preschoolers

Manal Alyaba

Thesis Proposal for the Master of Fine Arts Degree

Rochester Institute of Technology

College of Imaging Arts and Sciences

School of Design

Visual Communication Design

October 21, 2013

Appendix

Thesis Committee Approval

Chief Thesis Adviser
Professor Nancy Ciolek
Graphic Design Program

Signature   Date

Associate Thesis Adviser
Professor Chris Jackson
Visual Communication Design Program

Signature   Date

Associate Thesis Adviser
Professor Tywanquila Walker
Department of Psychology

Signature   Date

Consulate Thesis Adviser
Professor Ayad Kadhim
Department of Modern Languages

MFA Thesis Candidate
Manal Alyaba

Signature   Date

Appendix

Abstract

Recognizing the sounds around us is the first step in a human's life to developing reading skills. Children who are at risk of dyslexia have a weakness in differentiating between sounds that make up our language. Thus, phonological awareness is a crucial part of reading development.

English speaking children have the luxury of having many programs designed to promote phonological awareness, which, in turn, assist as an early intervention for dyslexia. In Saudi Arabia there are no programs that exist to detect dyslexia in children at an early age. The lack of these programs in Arabic language encouraged me to design an application that serves Arabic children in preschool who are at risk of being dyslexic. Therefore, the focus of my thesis is to:

- Design a variety of games that stimulate listening and hearing skills and help promote reading skills for children in Saudi Arabia.
- Choose the appropriate words and phrases that appeal to my target audience.
- Define and illustrate an appropriate visual style for Arabic children aged 4–6 years who are at risk for dyslexia.

Appendix

Problem Statement

Phonological awareness is the ability to understand the different sounds that make up words. It is the way humans develop reading skills at an early age. Children in kindergarten who have low levels of phonological awareness usually are at risk of being dyslexic when they grow up. Those children are not able to recognize the sounds of the letters, rhyme words, distinguish between the beginning or the ending of sounds, or recognize words that have the same sounds. In English, there are many programs designed to promote phonological awareness for children. These programs use a combination of graphic elements and audio. The ultimate aim of these programs is to prevent children from struggling with reading and falling behind their classmates.

There is a lack of programs that stimulate phonological awareness designed for Arabic speakers. This lowers the chance for Arabic preschool students to get an early intervention similar to what English-speaking students receive. Previous research published by Canadian Center of Science and Education on "Phonological Awareness and Working Memory in Arabic-Speaking Egyptian Preschool Children at Risk for Dyslexia" shows the important impact of phonological awareness on improving reading skills at an early age for Arabic speakers children (Zayed, Roehrig, Arrastia-Lloyd and Gilgil 2013.)

For this reason, I will research phonological awareness methods to design an application to stimulate listening and hearing skills for Arabic preschool children at risk of dyslexia. This application includes a variety of activities and games that could assist in determining if any phonological weaknesses exist.

Appendix

Problem Statement

To design this application I will research user interface and user experience design for my target audience. Also, I will study educational games used in preschool in the US. I will use Adobe Photoshop, Illustrator, and After Effects to create my designs. The final result will be a complete motion graphics demo that illustrates how the application will look and function. As there are many programs in English designed to stimulate children's phonological awareness, this application will not be a direct English translation to Arabic. It will be modified to fit the Arabic language and the Arabic culture.

The goal of this study is to answer these design questions

- Is there a need to design a program that combines Arabic phonemic and graphic images to help children develop phonological awareness?
- What kinds of sounds would be effective in determining any phonological weaknesses?
- What colors are most effective for capturing Arabic children's attention?
- What typeface should be used for this design to appeal to the target audience?
- What visual style is appropriate for Arabic children?
- How to encourage children to experiment and use this program?

Appendix

Survey of Literature

Recently, educational apps (applications) for children have become prevalent in every child's life. However, there is a lack of apps that target kindergarten children who are at risk of dyslexia and apps that help them improve their reading and listening skills. Therefore, this review focuses on understanding the way my target audience learns in order to design an effective, fun educational app.

Design

Heller, Steven / Guarnaccia, Steven
Published: 1994
Publisher: Watson-Guptill Publications
Designing for children
Date: September 2013
This book tracks the art of graphic design in children's books, toys, games, television, magazines, posters, and museums through the years. The authors share with designers different ideas from products that were designed for kids. This book will be useful to study how kids products have been designed in the past and how I can use this information to create a digital environment for my thesis.

Fishel, Catharine
Published: 2001
Publisher: Rockport; Hove: RotoVision
Designing for children: marketing design that speaks to kids
Date: September 2013
This book reveals a wide range of successful campaigns for a variety of famous products for children. In this book the author speaks to designers who are interested in creating designs that relate to children's interests. "Designing for Children" describes the design clues for different age groups.
This book will be very helpful in understanding my demographic audience in order to develop my design.

Appendix

Survey of Literature

Fox, Brent
Published: December 2005
Publisher: Course Technology / Cengage Learning
Game interface design
Date: September 2013
This book was written to provide game designers with the basic knowledge on interface design and the video game industry. This book explains the game interface design principles and concepts that every game designer must know. It also shows how to create an Interactive game mock-up. I believe this book is going to be really helpful in establishing my design interface.

Eckert, Vicky
Published: 2009
Publisher: Index Book
Growing graphics: design for kids
Date: September 2013
This book is also for designers who are interested in designing for children. It shows different graphic styles that have been used for children's products. This book is a collection of inspirational graphics that appeals to the kids and their parents. This book gives me an idea about what style and theme works for my thesis project.

Appendix

Survey of Literature

Park, Nick
Published: 2010
Publisher: Thames & Hudson
3rd edition
Cracking animation
Date: September 2013
This book focuses on Aardman Studios' accomplishment in 3D animation. It lists the successful ways and techniques to create powerful characters and effective storyboards for an animation project. This book will be effective in developing my characters for my thesis.

Technology

Howard, Dane / Hernandez, Richard Koci
Published: December, 2010
Publisher: www.lynda.com
Pitching projects and products to executives
Date: September 2013
"Pitching Projects and Products to Executives" reveals effective techniques and communication methods to promote ideas through interviews with leaders and product managers. These interviews were translated to interesting visual narratives to communicate information to people who want to launch a successful proposal. This resource will help me to build effective prototype presentation for my thesis.

Appendix

Survey of Literature

Taylor, Angie
Published: February, 2011
Publisher: www.lynda.com
2D character animation with After Effects
Date: September 2013
This course shows animators and motion graphic designers the ways of animating Illustrator artwork in After Effects. These videos expand my knowledge about using the puppet tool, creating a grouping structure for character body parts, and different animation styles.

Perkins, Chad
Published: March, 2012
Publisher: www.lynda.com
After Effects: rigging a character arm for animation
Date: September 2013
This course offers animators the knowledge needed for rigging and animating a character's arm, using a combination of layers, parenting, and expressions in After Effects. This course will help in understanding smooth ways of moving a character.

Maestri, George
Published: Jun, 2013
Publisher: www.lynda.com
Foundations of animation
Date: September 2013
This course provides basic animation information for animators and motion graphics designers. It will help me understand how to create better motion during the final stage of my thesis project.

Appendix

Survey of Literature

Williamson, James
Published: August, 2013
Publisher: www.lynda.com
Foundations of UX: prototyping
Date: September 2013
This course introduces designers to prototyping and the importance of using prototyping as a first step in creating a project. "Foundations of UX: Prototyping" teaches me the best way to define a prototype and how I can test and evaluate my prototype.

Subject Matter

Sprecher, John
published 1989
Http://www.special-kids.com
Date: September 2013
These videos were made by a dedicated parent for his autistic 2-year- old son. These videos reveal the effectiveness of visuals speech, and motion in teaching children with learning disabilities. According to their website, these videos had a "breakthrough in teaching many children with autism spectrum disorder and other visually receptive learners with developmental, cognitive and learning needs." I must watch these videos before I start working on my thesis because they are one of the few things that are addressed to children with disabilities. It is useful to take a look on what has been done for children with learning disabilities.

Appendix

Survey of Literature

Fisher Gary L
Published: 1990
Publisher: Free Spirit Pub
The survival guide for kids with LD: learning differences
Date: September 2013
This book answers children with learning disabilities' questions about their learning problems. "The survival guide for kids with LD" explains and suggests new ways and methods for children to overcome their learning disabilities or learning differences. This book point's out the difference between dyslexia and learning disabilities, although it's helping me to understand the content that can be used for my thesis project.

Snow, Catherine E. / Burns, M. Susan
Published: May 1998
Publisher: National Academies Press
Preventing reading difficulties in young children
Date: September 2013
Preventing Reading Difficulties in Young Children introduces a study about the effectiveness of interventions for young children who are at risk of having dyslexia. The aim of this study was to provide parents and teachers with the tools that help children with reading difficulties in early childhood. I believe that this book about learning strategies for Kindergarten children will enrich my thesis project with the needed information about how dyslexic children learn.

Appendix

Survey of Literature

Anthony, Jason L. / Francis, David J.
Published: Oct 2005
Publisher: SAGE
Development of phonological awareness
Date: September 2013
In this article the auteurs illustrate the development of phonological awareness and it effects on written language. This article will help me understand what linguistic content can be used in my thesis.

Yopp, Hallie Kay / Yopp, Ruth Helen
Published: Jan 2009
Publisher: Social Sciences Premium Collection
Phonological awareness is child's play!
Date: September 2013
This article talks about the experiment of two different teachers who used different activities that stimulate phonological awareness, which is an important part of reading development. This article will help me choose the material of my thesis project.

Appendix

Survey of Literature

Fisher, Jennifer Engel and Janet Price.
Published: 2012
Publisher: Prufrock Press Inc.
Take control of dyslexia and other reading difficulties: the ultimate guide for kids
Date: September 2013
In this book, the authors declare a brief guide for dyslexic children to control their reading problems. This book illustrates the different ways people learn and reading techniques for children. It is a helpful book to read. It is going to help me understand the strategies used for teaching children with dyslexia in order to develop my thesis content.

Dunson, Walter E
Published: 2013
Publisher: Prufrock Press Inc
School success for kids with dyslexia and other reading difficulties
Date: September 2013
"School success for kids With dyslexia and other reading difficulties" provides teachers and parents with tools and methods necessary for children who have reading difficulties. This book reveals techniques that ensure developing successful reading skills. This book will help me understand how dyslexic children learn, and what strategies can be used to build an educational app for them.

After going through all these resources, the importance of having an app for children at risk of being dyslexic becomes clear. Understanding the learning methods that help children in reading as well as the principles of design for children with using the right tools are the perfect combination to create an application for the target audience.

Appendix

Survey of Literature

Books list that could be helpful for my thesis project
Date: September 2013

Baine, David
Published: 1982
Publisher: Educational Technology Publications
Instructional design for special education

S. Cunningham, R.J. Hubbold
Published: 1992
Publisher: Springer-Verlag
Interactive learning through visualization : the impact of computer graphics in education

Swarny, Nanu
Published: 2006
Publisher: Charles River Media
Basic game design and creation for fun & learning

Pamela Pease
Published: 2009
Publisher: Paintbox Press
Design dossier : graphic design for kids

Zichermann, Gabe
Published: 2011
1st edition
Publisher: O'Reilly Media
Gamification by design: implementing game mechanics in web and mobile apps

Appendix

Design Ideation

Inspiration

Figure 1, 4
Artist's name: Duck Duck Moose Inc
Title of work: Duck Duck
Moose reading
Date: December 2012
Medium: NA
Dimensions: iPad
Collection: duckduckmoose.com

Figure 2,5
Artist's name: Earobics & Houghton
Mifflin Harcourt Learning Technology
Title of work: Earobics Foundations
Date: NA
Medium: NA
Dimensions:NA
Collection: earobics.com

Figure 3
Artist's name: Lola Panda Ltd
Title of work: Lola's alphabet train
Date: July 2010
Medium: NA
Dimensions: NA
Collection: lolapanda.com
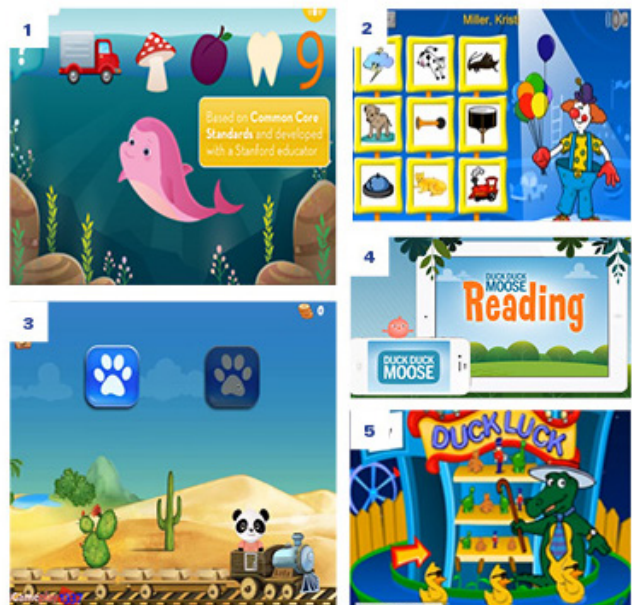
Appendix

Design Ideation

Inspiration

Figure 1, 3
Artist's name: Earobics & Houghton Mifflin Harcourt Learning Technology
Title of work: Earobics Foundations
Date: NA
Medium: NA
Dimensions:NA
Collection: earobics.com

Figure 2
Artist's name: Lexia learning
Title of work: Lexia reading
Date: NA
Medium: NA
Dimensions: NA
Collection: lexialearning.com

Figure 4,5
Artist's name: Hassan Abu Shaerah, Nejdet Anzor
Title of Work: Al Manahel
Date: 1987
Medium: NA
Dimensions: Created for TV
Collection: Jordan TV

Appendix

Design Ideation

Inspiration

Figure 1
Artist's name: Lexia learning
Title of work: Lexia reading
Date: NA
Medium: NA
Dimensions: NA
Collection: lexialearning.com

Figure 2, 3
Artist's name: Duck Duck Moose Inc
Title of work: Duck Duck
Moose reading
Date: December 5, 2012
Medium: NA
Dimensions: iPad
Collection: duckduckmoose.com

Appendix

Design Ideation

Personal Work

Figure 1
Artist's name: Manal Alyaba
Title of work: Suicide Note
Date: 2012-13 Spring
Medium: NA
Dimensions: 1280*720
Collection: Production Pipeline
This video was done in Adobe
After effects and Adobe Illustrator.

Appendix

Personal Style

Personal Work

Figure 1,2
Artist's name: Manal Alyaba
Title of work: The Hungry Bunny
Date: 2012-13 Winter
Medium: NA
Dimensions: width: 768*512
Collection: Production Pipeline
The hungry Bunny game was done
in HTML, Javascript
and Adobe Illustrator.
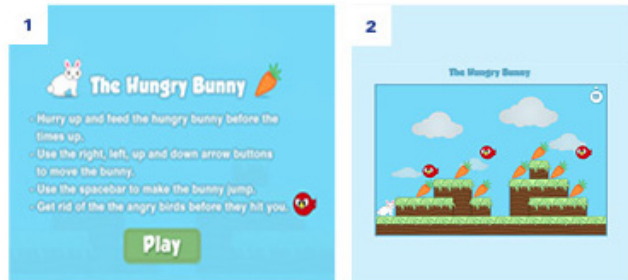
Figure 3, 4
Artist's name: Manal Alyaba
Title of work: Get the Golden Fish
Date: 2012-13 Winter
Medium: NA
Dimensions: 800*600
Collection: Authoring Multimedia
The math game was also done in
HTML, Javascript
and Adobe Illustrator.

Appendix

Personal Style

Personal Work

Figure 1,2
Artist's name: Manal Alyaba
Title of work: The Giant carrot
Date: 2012-13 Fall
Medium: NA
Dimensions: 800*600
Collection: 2d Computer Animation
The Giant carrot was done in
Adobe Flash.

they all pull

Appendix

Design Ideation

Brainstorming

Appendix

Design Ideation

Brainstorming

Appendix

Design Ideation

Flowchart

```
                    ┌─────────┬─────────┐
                    │New user │  Name   │
                    └─────────┴─────────┘
         ┌──────────────────┬──────────────────┐
         │Register Information│ Welcome Back    │
         │                    │ Screen          │
         └──────────────────┴──────────────────┘
              ┌─────────────────────────────┐
              │ Game 1   Game 2   Game 3     │
              │ Game 4   Game 5   Rewards    │
              └─────────────────────────────┘
                            ┌──────────────────┐
                            │Reports for Parents│
                            └──────────────────┘
```
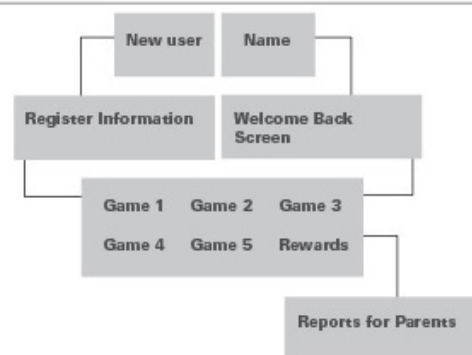
Appendix

Design Ideation

Sketches

Appendix

Design Ideation

Sketches

Alyaba

Appendix

Methodological Design

Objective	Nowadays, children are using technology in their everyday lives. The availability of children's apps and games in Arabic have increased dramatically. Despite the widespread use of these apps, none have been designed to help children's listening and reading problems. This project will be one of the few programs that are designed for Arabic speaking children without using any dubbing or translation. All of the content will be in Arabic only. **This project focuses on three things:**
Children's Games Design	This application will have 5 main games that cover animal sounds, ambient sounds letters, numbers, words and rhyme. Each game will have different levels of difficulty. Level of difficult will be based on the child's performance on the first level. The game will record the child's accomplishment, and give him a harder level each time he/she comes back. If the child failed more than twice on a level the program will go back automatically to a lower level. With every successful performance the child gets compliments and awards to motivate him /her to keep playing. The application can be used by many users, but they need to register the first time they use the program.
Children's Interface Design	Since this project is designed for children, it needs to have an appealing, effective user interface. This interface must be attractive with good color choices. Simple and clear design is important; plus, added voice instructions will make it easier for the target audience to go through the application without help.

Appendix

Methodological Design

Motion Graphics

As I want to focus more on the design rather than the development, I will simulate the games I designed in a motion graphics movie. This will be the final piece of the thesis project, a 2 – 3 minute motion graphics demonstration to present the functionality of the application. I will use Adobe After Effects to animate the application's user interface elements, the characters and images. One game will be developed using Javascript and HTML in order to be tested.

Appendix

Methodological Design

Software	Adobe Illustrator Adobe Photoshop Adobe After Effects HTML Javascript Apple iMac
Target audience	This application will be for Arabic speaking preschoolers who are at risk of dyslexia. The target audience will include both males and females, aged of 4-6
Dimensions	1024*768 72 dpi
Target Computer	iPad Android tablet Audio capability

Appendix

Implementation Strategies

I plan to implement my user interface and user experience designs into a video demonstration of the proposed application. This thesis requires research on designing for children. In order to design my application I will study children's games, and the reading topics that are covered in kindergarten in Saudi Arabia.

Here are the basic elements to my implementation

I will have a main mascot character that will introduce the games and their instructions. This character will be a bear that owns a farm. The bear wants the children's help in collecting animals and other items for his farm. At the completion of each level, the player wins a reward for the farm, and the bear compliments the child on his/her progress.

Asset list:

Animals
Shovel, plow, pitchfork
Trucks, Wagon
Barn, Field
Lake, Fishing tool
Fruits, vegetables
Sky, Baskets
Trees, Flowers
Stable, Housing, Coral for animals
Recorded sounds for letters, numbers, words, and compliments

I am going to connect this to Saudi Arabia by using the Arabic language and only using animals that exist in Saudi Arabia.

Appendix

Implementation Strategies

Color Choice

Appendix

Lessons

Ambient Sounds	The child is going to hear sounds that exist on the farm: birds, cows, chickens, trucks, etc. The first level will start with one sound, and after four correct answers the sounds will increase to two and so on. Children must remember the sounds in the same order as they heard them. The last level of the game music will be added in order to create some noises, which help the children to focus.
Alphabet Sounds	The bear keeps feeding letters that he hears to his chicks. When children answer correctly the chicks receive food and they grow bigger.
Words Sounds	The child has to choose the item or the animal he/she hears by name. Same as the ambient sounds game, the background will be the farm, and the item will appear while the camera moves across the farm.
Numbers Sounds	The bear is fishing for the numbers in the order he/she hears them.
Rhyming Sounds	The bear goes to the animal store to purchase animals that rhyme with a given word.

Appendix

Dissemination

To promote my thesis project, I will post it on Vimeo and upload it online to my website blog. I will also submit my finished project to major companies that create learning programs for children such as Lexia, Earobics, HearBuilder and Vtech. For design competitions, I will submit my thesis project to the Adobe Design Achievement Awards competition.

Appendix

Evaluation Plan

One of the games will be done in HTML, Javascript and tested in Saudi Arabia at Jeddah hearing and speech institute. I will use the feedback of the parents, specialists and children to modify and alter my application. The parents feedback will focus on the design. Specialists feedback will focus on the content and subject mater, and the children feedback will focus on the games.

Appendix

Pragmatic Considerations

Budget

Thesis Show	$500
Print Materials, Promotional Posters, Business Cards	
Publishing	$100
VCDE, library, and myself	
Travel expenses	$1600
Total	$2200

Appendix

Timeline

MONTHS	October	November	December	January	February	March	April	May
DATES	7-13, 14-20, 21-27, 28-3	4-10, 11-17, 18-24, 25-1	2-8, 9-15, 16-22, 23-29	30-5, 6-12, 13-19, 20-26	27-2, 3-9, 10-16, 17-23	24-1, 2-8, 9-15, 16-22	23-29, 30-5, 6-12, 13-19	20-26, 27-3, 4-10, 11-17

___ Proposal accepted — Document

___ Flow chart finished — Literature Review

___ Web site started — Research Content

___ 1st committee meeting — Develop Working Prototype

___ Content finalized — Final Proposal — Develop Content Outline — Complete Beta Version of Project

___ Storyboards done

___ 2nd committee meeting — Finalize Committee — Create Storyboards — Testing/Feedback

___ 1st prototype done — Flow Chart — Finish Final Project

___ 3rd committee meeting

___ Pass thesis defense — Write Abstract — Show Prep

___ Beta prototype done — Thesis Report

___ 4th committee meeting — Thesis Web site — Report Revisions

___ Complete final project

___ Thesis report online — Defense Prep — Publish Report

___ Last committee meeting

___ Thesis show — Committee Meeting — Committee Meeting — Committee Meeting

___ Graduation

End of Fall Semester — **Beginning of Spring Semester** — **Thesis Defense** — **Graduation**

Graduation - May 24, 2014

Appendix

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Appendix

School Game Codes

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Dabdop at School</title>
<link rel="stylesheet"  href="styles.css">

<script src="http://code.createjs.com/easeljs-0.7.0.min.js"></script>
<script src="http://code.createjs.com/tweenjs-0.5.0.min.js"></script>
<script src="http://code.createjs.com/movieclip-0.7.0.min.js"></script>
<script src="http://code.createjs.com/preloadjs-0.4.0.min.js"></script>
<script src="http://code.createjs.com/soundjs-0.5.0.min.js"></script>
<script src="school_game_New_3.js"></script>

<script>
var canvas, stage, exportRoot;

function init() {
        canvas = document.getElementById("canvas");
        images = images||{};

        var loader = new createjs.LoadQueue(false);
        loader.installPlugin(createjs.Sound);
        loader.addEventListener("fileload", handleFileLoad);
        loader.addEventListener("complete", handleComplete);
        loader.loadManifest(lib.properties.manifest);
}

function handleFileLoad(evt) {
        if (evt.item.type == "image") { images[evt.item.id] = evt.result; }
}

function handleComplete() {
        exportRoot = new lib.school_game_New_3();

        stage = new createjs.Stage(canvas);
```

Appendix

```
stage.addChild(exportRoot);
stage.update();

createjs.Ticker.setFPS(lib.properties.fps);
        createjs.Ticker.addEventListener("tick", stage);
}

function playSound(id, loop) {
        createjs.Sound.play(id, createjs.Sound.INTERRUPT_EARLY, 0, 0,
loop);
}
</script>
</head>

<body onload="init();" style="background-color:##FFFFFF">
        <canvas id="canvas" width="1024" height="768" style="back-
ground-color:#000000"></canvas>
</body>
</html>


@charset "UTF-8";
/* CSS Document */


#canvas {

        width:auto;
        height:auto;
        display: block;
    margin: 0 auto;

}
```

Appendix

UI Codes

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>I'm Listening with Dabdoop</title>
<link rel="stylesheet"  href="styles.css">

<script src="http://code.createjs.com/easeljs-0.7.1.min.js"></script>
<script src="http://code.createjs.com/tweenjs-0.5.1.min.js"></script>
<script src="http://code.createjs.com/movieclip-0.7.1.min.js"></script>
<script src="http://code.createjs.com/preloadjs-0.4.1.min.js"></script>
<script src="http://code.createjs.com/soundjs-0.5.2.min.js"></script>
<script src="script.js"></script>

<script>
var canvas, stage, exportRoot;

function init() {
        canvas = document.getElementById("canvas");
        images = images||{};

        var loader = new createjs.LoadQueue(false);
        loader.installPlugin(createjs.Sound);
        loader.addEventListener("fileload", handleFileLoad);
        loader.addEventListener("complete", handleComplete);
        loader.loadManifest(lib.properties.manifest);
}

function handleFileLoad(evt) {
        if (evt.item.type == "image") { images[evt.item.id] = evt.result; }
}

function handleComplete() {
        exportRoot = new lib.intro_smallersize();
        stage = new createjs.Stage(canvas);
        stage.addChild(exportRoot);
```

Appendix

UI Codes

```
            stage.update();
            stage.enableMouseOver();
            createjs.Ticker.setFPS(lib.properties.fps);
            createjs.Ticker.addEventListener("tick", stage);
}

function playSound(id, loop) {
            createjs.Sound.play(id, createjs.Sound.INTERRUPT_EARLY, 0, 0,
loop);
}
</script>
</head>

<body onload="init();">
            <canvas id="canvas" width="1024" height="768" style="back-
ground-color:#FFFFFF"></canvas>
</body>
</html>


@charset "UTF-8";
/* CSS Document */

body {
   background: #FFFFFF;
}

#canvas {

            width:auto;
            height:auto;
            display: block;
   margin: 0 auto;
}
```

Appendix

Parents Survey

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the different sounds that make up words. It is the way humans develop reading skills at an early age.

Children in kindergarten who have low levels of phonological awareness usually are at risk of being dyslexic when they grow up. They are not able to recognize the sounds of the letters, rhyme words, distinguish between the beginning or the ending of sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening and hearing skills for Arabic preschool children at risk of dyslexia.

Visual Style
- ☑ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments

Sweet
Nice graphics

Main Character (Dabdop)
- ☑ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments

Character Design
- ☐
- ☑ Creative
- ☐ Appropriate
- ☐ Average
- Needs Improvement

More Comments

Simple, I Like it

Is the visual style appeal to children?
- ☑ Yes
- ☐ No

More Comments

Appendix

Parents Survey

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the different sounds that make up words. It is the way humans develop reading skills at an early age.

Children in kindergarten who have low levels of phonological awareness usually are at risk of being dyslexic when they grow up. They are not able to recognize the sounds of the letters, rhyme words, distinguish between the beginning or the ending of sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening and hearing skills for Arabic preschool children at risk of dyslexia.

Visual Style
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

Main Character (Dabdop)
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

Character Design
- ☒ Creative
- ☒ Appropriate
- ☐ Average
- Needs Improvement

More Comments
_____
_____
_____

Is the visual style appeal to children?
- ☒ Yes
- ☐ No

More Comments
Schools need this!
_____
_____

Appendix

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the
different sounds that make up words. It is the way humans
develop reading skills at an early age.

Children in kindergarten who have low levels of
phonological awareness usually are at risk of being
dyslexic when they grow up. They are not able to
recognize the sounds of the letters, rhyme words,
distinguish between the beginning or the ending of
sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening
and hearing skills for Arabic preschool children at risk
of dyslexia.

Visual Style
- ☑ Creative
- ☑ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

Main Character (Dabdop)
- ☐ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

☐ **Character Design**
- ☑ Creative
- ☑ Appropriate
- ☐ Average
-   Needs Improvement

More Comments
make a transparent layer inside
movie clip for the letters. It should be
the top layer so that the entire space
of the letter is clickable.

Is the visual style appeal to children?
- ☑ Yes
- ☐ No

More Comments
_____
_____
_____

Appendix

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the
different sounds that make up words. It is the way humans
develop reading skills at an early age.

Children in kindergarten who have low levels of
phonological awareness usually are at risk of being
dyslexic when they grow up. They are not able to
recognize the sounds of the letters, rhyme words,
distinguish between the beginning or the ending of
sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening
and hearing skills for Arabic preschool children at risk
of dyslexia.

Visual Style
- ☐ Creative
- ☑ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

Main Character (Dabdop)
- ☐ Creative
- ☑ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
_____
_____
_____

- ☐ **Character Design**
- ☐ Creative
- ☑ Appropriate
- ☐ Average
  Needs Improvement

More Comments
_____
the sound word be more clare
_____

Is the visual style appeal to children?
- ☑ Yes
- ☐ No

More Comments
_____
_____
_____

Appendix

Hanan :)

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the
different sounds that make up words. It is the way humans
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distinguish between the beginning or the ending of
sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening
and hearing skills for Arabic preschool children at risk
of dyslexia.

Visual Style
- ☐ Creative
- ☒ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
There are some apps that have the same design & style

Main Character (Dabdop)
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
likeed it :)

Character Design
- ☐
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- Needs Improvement

More Comments
good job

Is the visual style appeal to children?
- ☒ Yes
- ☐ No

More Comments
my daughter loved it

Appendix

Parents Survey

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the different sounds that make up words. It is the way humans develop reading skills at an early age.

Children in kindergarten who have low levels of phonological awareness usually are at risk of being dyslexic when they grow up. They are not able to recognize the sounds of the letters, rhyme words, distinguish between the beginning or the ending of sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening and hearing skills for Arabic preschool children at risk of dyslexia.

Visual Style
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments

The style is very appealing to young children

Main Character (Dabdop)
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments

Character Design
- ☐ Character Design
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- Needs Improvement

More Comments

Great Characters ☺

Is the visual style appeal to children?
- ☒ Yes
- ☐ No

More Comments

Appendix

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the different sounds that make up words. It is the way humans develop reading skills at an early age.

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The I'm listening app is designed to stimulate listening and hearing skills for Arabic preschool children at risk of dyslexia.

Visual Style
☒ Creative
☒ Appropriate
☐ Average
☐ Needs Improvement

More Comments
_____
_____
_____

☐ **Character Design**
☒ Creative
☐ Appropriate
☐ Average
   Needs Improvement

More Comments
_____
_____
_____

Main Character (Dabdop)
☒ Creative
☐ Appropriate
☐ Average
☐ Needs Improvement

More Comments
_____
_____
_____

Is the visual style appeal to children?
☒ Yes
☐ No

More Comments
My children came right over
because of the character!
_____

Appendix

I'm Listining
With Dabdop

Manal Alyaba
May 3. 2014
Imagin RIT

Objectives of the Project

Phonological awareness is the ability to understand the
different sounds that make up words. It is the way humans
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sounds, or recognize words that have the same sounds.

The I'm listening app is designed to stimulate listening
and hearing skills for Arabic preschool children at risk
of dyslexia.

Visual Style
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
cheerful, positive & engaging!

Main Character (Dabdop)
- ☒ Creative
- ☐ Appropriate
- ☐ Average
- ☐ Needs Improvement

More Comments
very lovely

Character Design
- ☐
- ☒ Creative
- ☐ Appropriate
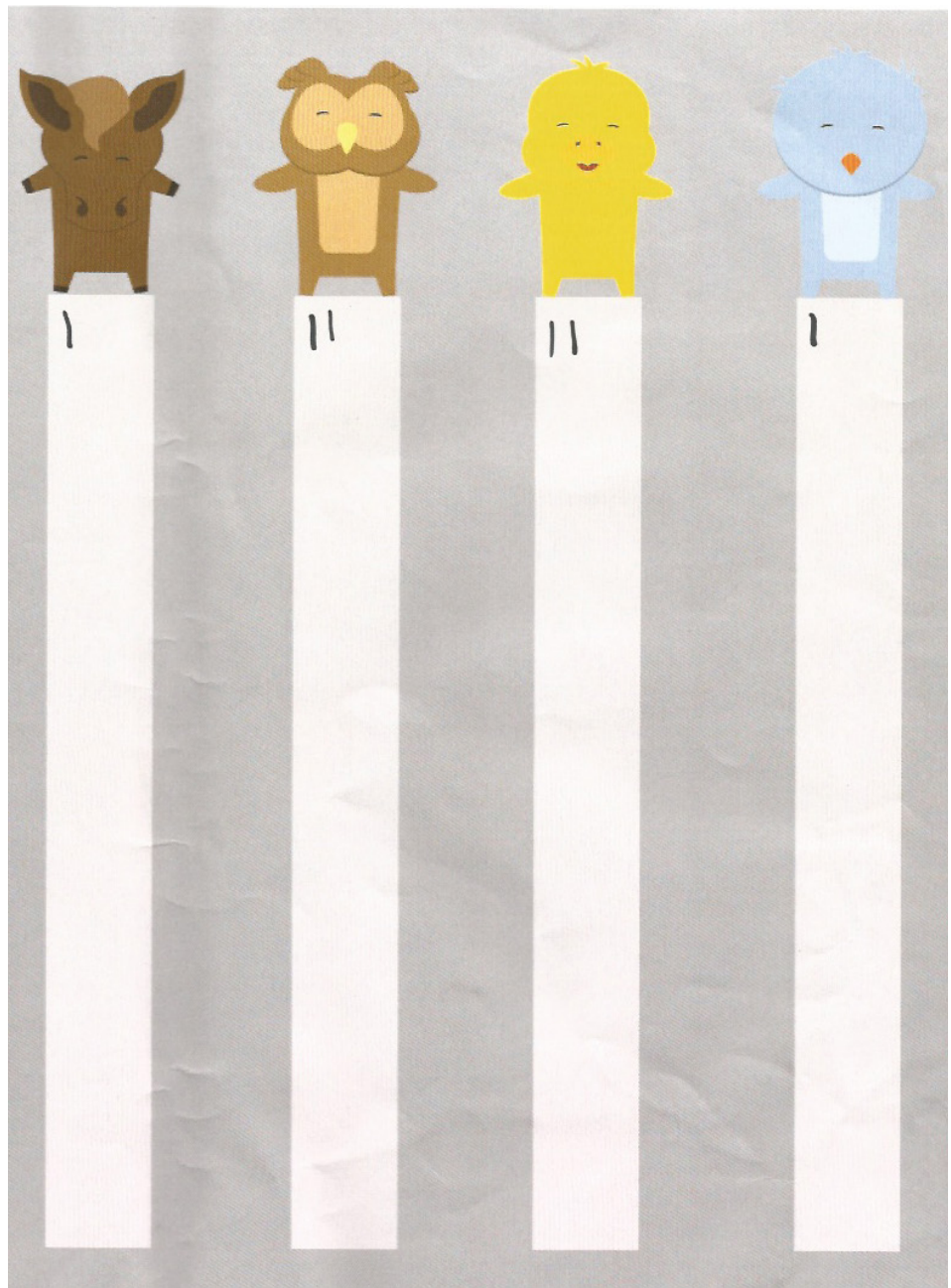- ☐ Average
- Needs Improvement

More Comments

Is the visual style appeal to children?
- ☒ Yes
- ☐ No

More Comments
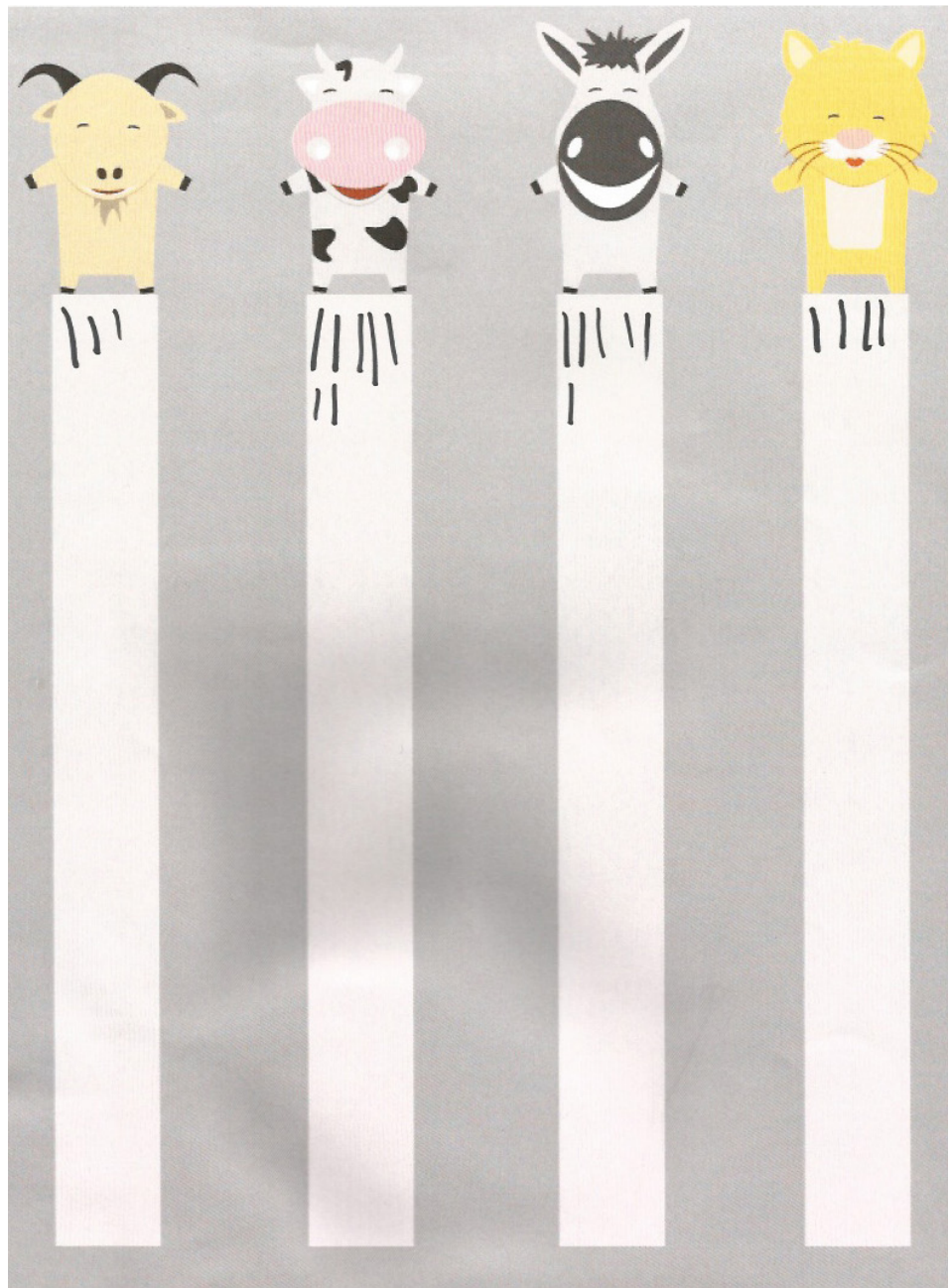
Appendix

Children Survey

Appendix

Children Survey

Appendix

Children Survey

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