

**IMPLEMENTING THOMAS MALONE'S FRAMEWORK FOR A THEORY OF
INTRINSICALLY MOTIVATING INSTRUCTION IN A GAME-BASED LEARNING
TOOL FOR TODDLERS**



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TOOL FOR TODDLERS**

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Implementing Thomas Malone's Framework for a Theory of Intrinsically Motivating Instruction in a Game-Based Learning Tool for Toddlers

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Nowadays, many technological applications are flooding the market most especially applications providing game-based learning or the so-called educational learning most especially for toddlers. GBL is a type of game play that has defined learning outcomes. Some applications provide same kind of concepts in their learning tool games.

The main purpose of this research paper is to provide a Game-Based Learning (GBL) tool using a casual game approach, which is ideal for knowledge recalling. This GBL tool will be based on the syllabus of the Little Champ Schoolhouse – a toddler school located at Doña Candelaria St., Ecoland Subdivision, Davao City.

The key characteristics of an engaging Game-Based Learning was derived from Thomas Malone's Intrinsically Motivating Instruction Framework, which dwells with the following: challenge, fantasy, and curiosity. Corona Software Development Kit and Lua scripting language will be used in the development of this game-based learning application in Android.

Keywords:

Game-Based Learning, Corona SDK, Lua, Toddlers, Intrinsically Motivating Instruction, Thomas Malone

1. INTRODUCTION

1.1 Background of the Study

Toddlers nowadays are exposed in using tablets or smartphones may it be Android-based or iOS-based. With this being said, a Game-Based Learning (GBL) tool in an Android gadget will be of help in teaching toddlers in a creative manner. This will also allow the toddlers to be familiar with the emerging technologies that there is.

The motivation for this study is to ease the method of learning for toddlers and presenting it in a creative manner and not just sticking with the traditional ones such as activity books/ worksheets. GBL is also a current trend with respect to education reform. The proponents try to integrate a psychological framework into a game-based learning tool that might help in enhancing the way kids learn through an Android application. Toddlers will not only have fun with this application but also learn at the same time.

1.2 Technology Application Context

Nowadays, there are many Android applications flooding the market that is categorized to be a Game-Based Learning. Game-Based Learning (GBL) is a new trend in education reform. Games are now being used to learn and teach and not just plainly for enjoyment. The proposed project will be an Android game that will be created using a casual game approach, which is ideal for knowledge recalling. With casual games, it can be easily used with its simple rules. This GBL tool will be based on the syllabus of the Little Champ Schoolhouse. The key characteristics of an engaging Game-Based

Learning, which was derived from Thomas Malone's Intrinsically Motivating Instruction, are as follows: challenge, fantasy, and curiosity. Positive words give them self-esteem especially when they are being acknowledged when they do something well. As the game progresses, there will be more rewards and recognition.

In creating this learning tool, Corona SDK will be used integrated with Lua in building it. This will be accompanied with Adobe Photoshop for designing the GUI.

1.3 Objectives of the Study

The objectives of this study are to implement the guidelines of Thomas Malone's framework toward a Theory of an Intrinsically Motivating Instruction in creating a game-based learning tool for toddlers. After creating the necessary guidelines, it will be implemented using Corona SDK integrated with Lua and Adobe Photoshop for its graphics. The games that will be used in the learning tool will be based on the working curriculum that was given by the Little Champ Schoolhouse. The whole application will also be in a bilingual mode: English and Filipino. In this manner, the players will also have an overview on the basic Filipino instructions as for games like this.

1.4 Significance of the Study

This study will be significant for developing an Android Application using Corona SDK. Corona SDK was just released last January 2012 making this SDK very fresh. This will also be helpful in presenting a Game-Based Learning tool in an interactive manner, in a way hitting two birds with one stone by making an enjoyable game at the same time helping the kids learn. It was mentioned before that toddlers are exposed in the different gadgets that are available in the market such as smartphones, tablets and laptops. So, the proponents have decided to create a GBL tool for toddlers in an Android-based gadget. This study will improve the way game developers create a Game-Based Learning Tool the implementation of the Thomas Malone's framework. With this study, guidelines in an effective game-based learning tool will be accomplished.

1.5 Scope and Limitations of the Study

The scope of this study will be on creating a Game-Based Learning tool that will be based on the curriculum of Little Champ Schoolhouse and with the help of the heuristics based on the framework of Thomas Malone. The curriculum of the schoolhouse is about shapes, colors, sizes, alphabets and numbers (See Appendix A). This tool is only applicable for gadgets powered by Android and this tool does not have to be connected in the Internet in order to use it.

Since this learning tool is dedicated for toddlers that are 3-5 years of age, it is to be expected that the games are for their age level and that it is more on repetition for the exercise of the memory retention. The exercises provided would also be limited on what was provided by the Little Champ Schoolhouse for the working year of this project unless it will be updated for some new installments for new exercises to be provided.

2. REVIEW OF RELATED LITERATURE AND WORKS

2.1 A Place Called Childhood

This paper talks about how children are affected with the new multimedia computer environments present in games nowadays. Over the years, the perspective of children has changed especially in the things that they do. Since the world is changing, the user interface designer must adapt these changes so that they will be able to keep up with the current trend.

It was discussed in this paper that how user interface designers design for adults is not the same as how they should design for children. The designers will not expect that the children will find designs for adult appealing since it does not cater for their wants, likes, and needs. These

wants, likes, and needs may also not be the same from young children (three to seven years of age) to preteen children (eight to twelve years of age). So, it is really a must for designers to observe and listen to children of all ages so that they may be able to deliver the best design that is appropriate for children. But since the designers can still recall exactly what they liked twenty or thirty years ago, they assume that what they liked before will still be applicable for this generation. This is the stuff that myths were made of.

User Interface designers believe that children love bright colors but in fact these young users are difficult to please by simply adding bright colors to a computer screen. Interesting visualization with dynamic screen layouts, intelligent font choices, and quality imagery is what the user interface designers should really consider. They also believed that sounds are a must with every tool for kids and even thought that the louder it is, the better it will be. The designers must consider these questions: Does sound add to the meaning of the application? Does sound make the experience more fun? If the answer for these two questions is yes, then the sound is an integral part of the design. As designers, they should find something and offer children the hours of enjoyment and learning they have the energy and attention span for. It is important that user interface designers collaborate and listen to the children when designing computer environments for them since they will be the one who'll use it anyway.

2.2 Effective Use of Color and Graphics in Applications for Children, Part I: Toddlers and Preschoolers

In this article, it was stated that younger children in the range of two to three years old would generally prefer bold, primary colors, and high contrasts in graphic layouts that evoke exploration and discovery. Children's attraction to bold colors and high contrasts extends all the way to their fifth year. However, recently this tolerance has increased because of the now very common use of computer-animated, 3D graphics in movies, and TV shows for young audiences.

Generally, the age of the users you would want to cater, the theme for the application, and the types of activities you want users to perform should determine the look and feel for your applications. Toddlers and preschoolers are very literal in their interpretations of the icons and images that provide calls to action in interactive applications. So this means that if the icon will help let you play a game, then you will have to create an icon that has to do with games say a controller for a video game.

The effective use of color and graphics in children's media is one of the most important aspects of design to ensure that you deliver optimal content and a memorable user experience to young users.

2.3 LeapFrog Explorer Learning Game: Letter Factory

This is a preschool learning game tied in to the LeapFrog video of the same name. This game targets kids in the 3-5 age range, although a few may need some adult assistance. Kids can learn letters, their sounds, and how to draw them. This game is fun for kids, especially those for whom reading is just starting to "click," but with only three main activities, it's not quite as sticky as it could be. The learning activities work well for teaching letters, sounds, and how to write them. This game makes good use of the touchscreen to draw letters. Parents can also track their child's progress in the LeapFrog Learning Path online. They can also find activities, worksheets, and games on the LeapFrog website.

2.4 Team Umizoomi Math: Zoom into Numbers HD

This is an educational math game aimed at toddlers and preschoolers for the iPad. The application contains five mini-games: Toy Store Counting, Number Bubbles, Rolling Toy Parade, Race Around Umi City, and Up! Up! And Balloons. Kids must unlock the last four games by

completing at least one round of the game before it. When a round of a game is complete, kids earn a reward. After eight rewards in one game, they can earn a trophy. Earning trophies on all five games unlocks the "Key to the City." The city itself also has objects to interact with.

2.5 Toward a Theory of Intrinsically Motivating Instruction

This paper is the main basis of this study. It discusses the components needed in creating an intrinsically motivating instruction. In this paper, the framework on a Theory of Intrinsically Motivating Instruction was discussed thoroughly. There are 3 key components in order to attain an intrinsically motivating instruction: challenge, fantasy, and curiosity.

For an environment to be challenging, it must provide a goal whose outcome is uncertain. So, uncertainty and goal comes hand-in-hand in this situation. A good game is intentionally made difficult to play to increase its challenge but a tool, a mean in achieving the goal, should be made as easy as possible to use. Fantasy can make instructional environments more interesting and more educational. A fantasy-inducing environment is one that evokes mental images of things not present to the senses or within the actual experience of the person involved. In order to stir curiosity of the player, the environment should neither be too complicated nor too simple with respect to the learner's existing knowledge.

2.6 What Makes Things Fun To Learn: A Study of Intrinsically Motivating Computer Games

This paper talks about the set of heuristics that is needed in order to come up with a game-based learning tool that is intrinsically motivating. Since the proponents are using Thomas Malone's Framework, this is also an important basis in creating the learning tool because the three major categories of an intrinsically motivating are well explained in this research material. This paper was used as a basis in formulating the evaluation sheet for the application.

For the challenge component, there must be goal and uncertain outcome. Goal is needed so that it may be appealing for the players. This will give them something to look forward achieving. The uncertain outcome is needed in order to keep the interest of the player. With the player knowing that he/she is certain in winning or losing the game, it will not be challenging anymore for the perspective of the player. The player will not be enticed in playing the game for the fact that he/she knows what the result will be.

For the fantasy component, computer games will be more interesting if there is a fantasy involved in it. In general, games that include fantasy show or evoke images of physical objects or situations. Fantasy let the players immerse themselves in the situation or setting of the game. Fantasy is divided into two: intrinsic and extrinsic fantasies and emotional aspects of fantasy. In extrinsic fantasy, fantasy not only depends on the skill but the skill also depends on the fantasy of the game. But in intrinsic fantasy, the fantasy depends on the skill. As mentioned earlier, fantasy helps the player immerse himself/herself in the setting of the game, which points to the emotional aspect of the game.

Lastly, for the curiosity component, there are two kinds of curiosity: sensory curiosity and cognitive curiosity. Sensory curiosity involves attention-attracting value of changes in the light, sound, or other sensory stimuli of an environment. On the other hand, cognitive curiosity can be thought of as a desire to bring better form of one's knowledge structures. The way to engage the learner's curiosity is to involve the presence of informative feedback and audio and visual effects. Audio and visual effects have a big role in enhancing the fantasy of the game. Without the fantasy, the toddler's curiosity will not be captured.

3. TECHNOLOGICAL BACKGROUND

Game-Based Learning (GBL) or the so-called Educational Game is a common concept in creating application in markets for smartphone devices. GBL can provide challenging experiences that promote the intrinsic satisfaction of the players, keeping them engaged and motivated. GBL is also categorized into two areas: Casual Games and Simulation Games. Casual Games are simple, easy to play, short and designed for repeated play. This type of game is an ideal for knowledge type of games, which will also be with the same concept in this research study.

This Game-Based Learning Tool will be created in Android using the Corona Software Development Kit. Corona SDK allows programmers to create applications in iPhone and most especially in Android, where this study will be created. Corona SDK integrates with Lua in building its graphic application, which will be created in Sublime Text. Adobe Photoshop will also be used in enhancing its Graphical User Interface (GUI) to help the players be captivated with the graphics embedded in the application.

Corona SDK allows programmers to build mobile applications ten times faster and can be published to all major platforms such as iOS, Android, Kindle Fire and NOOK from a single code base. Its extensive API library enables animation to networking with just a few lines of code. You can also see changes instantly in the Corona Simulator. The development is done in Lua, a lightning-fast and easy to learn scripting language. Lua is a free scripting language and is used in games such as Angry Birds and World of Warcraft.

Thomas Malone's framework on Intrinsically Motivating Instruction focuses on challenge, fantasy, and curiosity that will be used as an approach in developing the Game-Based Learning Tool for toddlers. In this paper of Thomas Malone, it was mentioned that a game is a steady game if participants can adjust the level of challenge to their abilities while still leaving the outcome of each round of the game undetermined. A game should be challenging to the users of the application wherein they will be able to use their abilities and achieve the goal of the created application and also to develop their self-esteem. Fantasy is an attempt to assimilate experience into existing structures in the child's mind. Curiosity is the most important feature of an Intrinsically Motivating Environment; it is to arouse and satisfy the participants of the game. In order to engage a learner's curiosity at the same time be educational, the feedback should be surprising and constructive. With the framework by Malone, he generated a specific set of heuristics for the increase of the appeal of the instructional computer games. Environments that vary in difficulty level increase both challenge and potential for learning and environments that evoke cognitive curiosity and then satisfy it can be both captivating and educational. The framework of Thomas Malone was also used as the basis in the creation of the story line of the game to integrate the fantasy part of the game. The modules from Little Champ Schoolhouse will be used as basis for the different games to be played in the application.

4. RESEARCH DESIGN AND METHOD

Game-Based Learning (GBL) is a new trend in education reform. Games are now being used to learn and teach and not just plainly for enjoyment. The proposed project will be an Android game that will be created using a casual game approach, which is ideal for knowledge recalling. With casual games, it can be easily used with its simple rules. This GBL tool will be based on the syllabus of the Little Champ Schoolhouse. The key characteristics of an engaging Game-Based Learning, which was derived from Thomas Malone's Intrinsically Motivating Instruction, are as follows: challenge, fantasy, and curiosity.

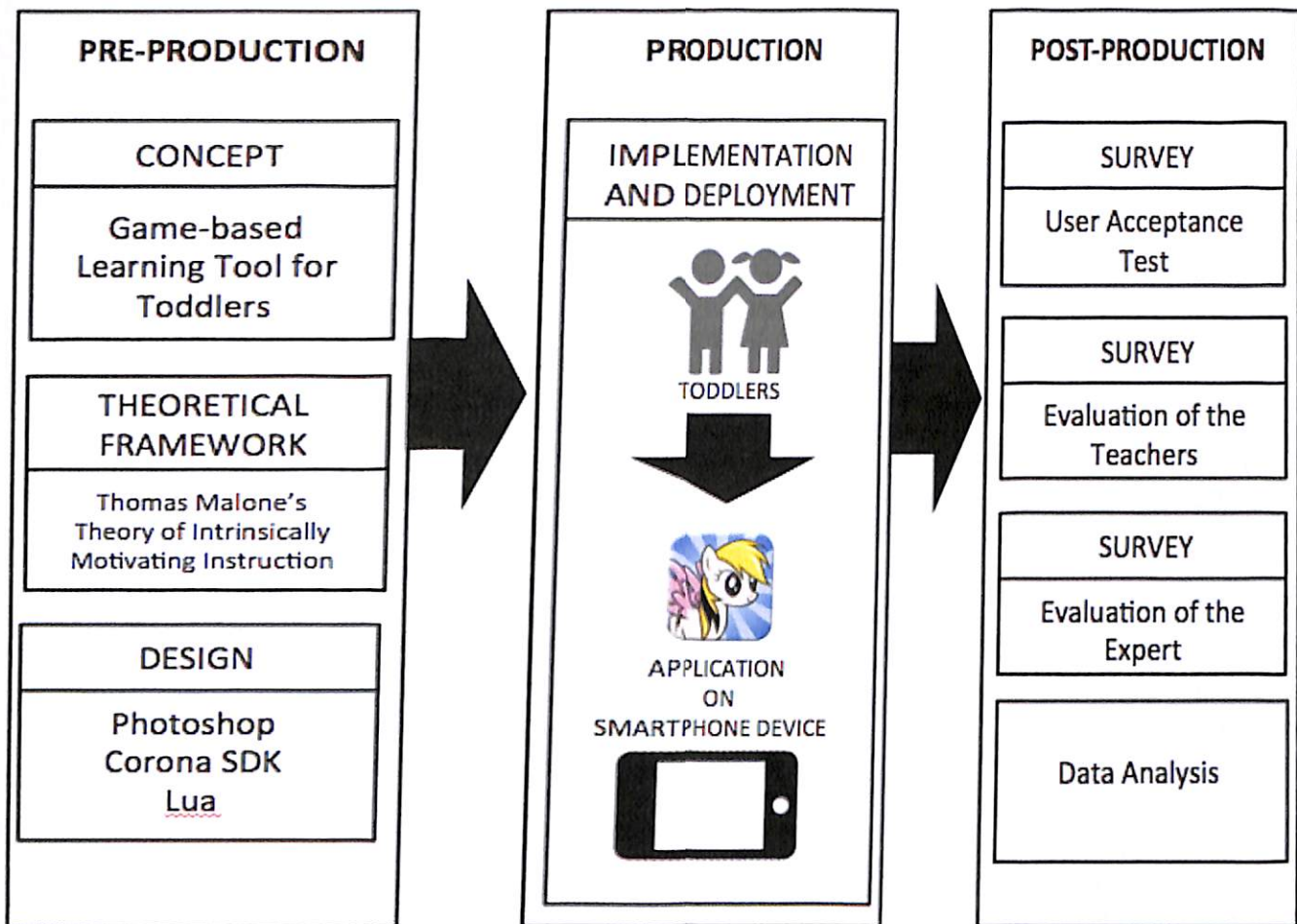


Figure 1: Research Design

The project methodology shows the steps taken to accomplish this research study. The whole project was derived from Thomas Malone's Intrinsically Motivating Instruction, which discusses the following: challenge, fantasy, and curiosity.

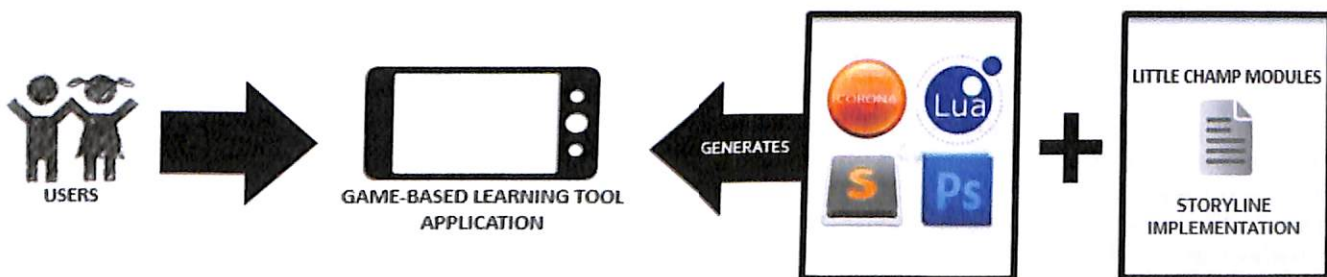


Figure 2: Deployment Framework

4.1 Game-Based Learning Tool Development

The game-based learning tool development dwells also on the development of casual games specifically for toddlers with simple, easy, short and designed for repeated playing. Casual games can be distinguished by their simple rules. The main concept of this study is to develop an intrinsically motivating game for toddlers in Android.

4.1.1 Development of the Modules

On this phase, the proponents gathered modules from Little Champ Schoolhouse in creating and developing a learning tool with storylines in helping the children understand the right functions of the application by decorating its user interface with the use of the research of Thomas Malone's Intrinsically Motivating Instruction

4.1.2 User Interface Development

An article by Naranjo-Bock about the effective use of color and graphics in applications for children is used for the design. It was stated that younger children would generally prefer bold, primary colors and high contrasts in graphics layout that would evoke exploration and discovery. This guideline for the creation of the user interface was addressed with the use of the following: Corona SDK, Lua, SublimeText, and Adobe Photoshop.

4.2 Testing/Survey of the Learning Tool

4.2.1 Testing Phase

The finished application will be tested by the toddlers for the User Acceptance Test and the evaluation of the Game-Based Learning Tool will be conducted to the teachers of the Little Champ Schoolhouse.

4.2.2 Conduct Survey for Teachers

Survey forms will be provided to the teachers for the evaluation regarding the guidelines of Malone's framework if it was able to be integrated in the application. The teachers will be surveyed as to how they have perceived the application for the toddlers.

4.3 Evaluation of the Learning Tool

4.3.1 Analysis from the Survey gathered

Analysis from the calculated results from the teacher's surveyed will tell if this application will work for toddlers or improvements should be done in order to meet the expected results for this study.

5. RESULTS AND DISCUSSIONS

5.1 Game Design and Evaluation

In order to come up with the Game-Based Learning Tool, the proponents have created a story wherein the elements of the framework of Thomas Malone were reflected. The story enriches the fantasy element of the Game-Based Learning Tool. Before starting with the game proper, the story of the game will let the player feel the its setting. Upon the game play, there will series of games to be solved that was created with the basis of the modules of Little Champ Schoolhouse. The games in our application are based upon the basic module of the schoolhouse, which covers the topic on color, shapes, sizes, numbers and alphabets.

The proponents have conducted the survey in the Little Champ Schoolhouse where there are 5 respondents for the evaluation of the application. They are the preschool teachers and teacher aids in the schoolhouse and all of them are female. The average age for these teachers is 25.6. For

the user acceptance test, we have tested it to 12 toddlers. Six of them are female and the other six are male with age ranging from 3-5.

According to Allison Druin, when designing user interface for toddlers the designers should use more than primary colors and should incorporate meaningful graphics, readable fonts, and dynamic layouts. The proponents have addressed this concern by using the basic colors that is used in teaching the toddlers. The majority of the user interface uses the colors green, blue, and brown but nevertheless other colors are still present.

In the application, after tapping the start button, there is an option wherein the player can choose whether the language to use throughout the story and the games will either be in English or in Filipino. The instructions are embedded on screen and have a voiceover for it too. This option can be found in the menuStoryMode.lua file of the program and stores this code:

```

local engButton = widget.newButton
{
    defaultFile = "buttons/dialect_Engl.png",
    overFile = "buttons/dialect_Engl_1.png",
    onRelease = function()
        storyboard.gotoScene( "menu", "fade", 400
    )
    end,
}
engButton.x = display.contentWidth * 0.50
engButton.y = display.contentHeight * 0.45
engButton:scale(2,2)

local tagButton = widget.newButton
{
    defaultFile = "buttons/dialect_tagl.png",
    overFile = "buttons/dialect_tagl_1.png",
    onRelease = function()
        storyboard.gotoScene( "menuTagalog",
"fade", 400 )
    end,
}
tagButton.x = display.contentWidth * 0.50
tagButton.y = display.contentHeight * 0.65
tagButton:scale(2,2)

```

Whenever the function `storyboard.gotoScene("menuTagalog", "fade", 400)` is called, the file `menuTagalog.lua` will be called and whole component of the application will turn into its Filipino mode making all the instructions be in Filipino and when the function `storyboard.gotoScene("menu", "fade", 400)` is called, the file `menu.lua` will be called and the instructions of the application will be in English.

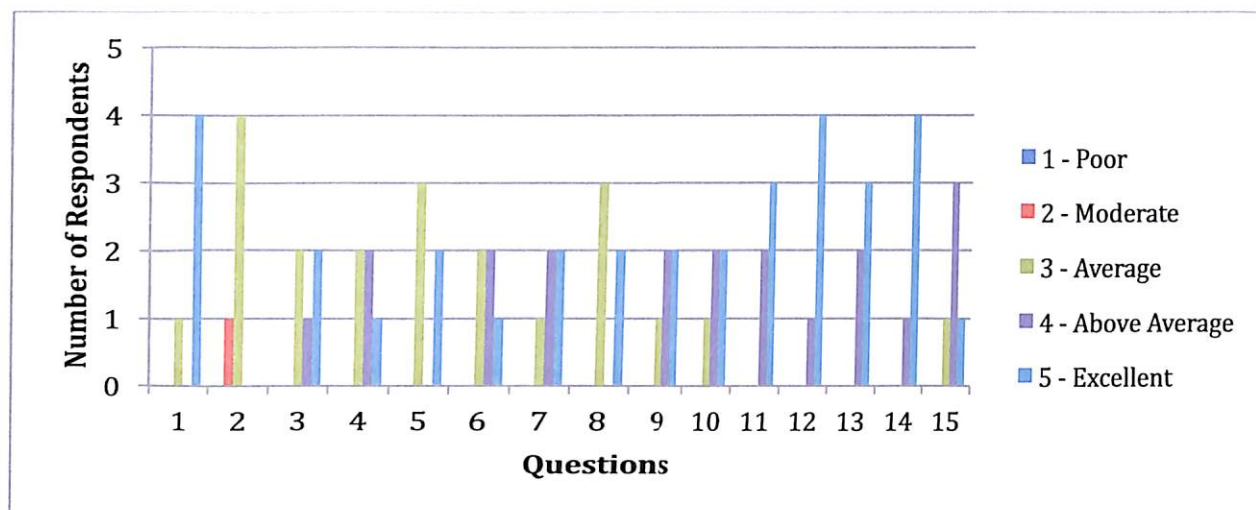


Figure 3: Tally of Evaluation Sheet

| | QUESTIONS | | | | | | | | | | | | | | |
|----------------------|---------------------------|--------------------|---------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------|---------------|---------------|---------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| SUM | 23 | 14 | 20 | 19 | 18 | 19 | 19 | 21 | 21 | 20 | 21 | 23 | 24 | 23 | 24 |
| MEAN | 4.6 | 2.8 | 4 | 3.8 | 3.6 | 3.8 | 3.8 | 4.2 | 4.2 | 4 | 4.2 | 4.6 | 4.8 | 4.6 | 4.8 |
| QUALITATIVE RESPONSE | Above Average - Excellent | Moderate - Average | Above Average | Average - Above Average | Average - Above Average | Average - Above Average | Average - Above Average | Above Average | Above Average | Above Average | Above Average | Above Average - Excellent | Above Average - Excellent | Above Average - Excellent | Above Average - Excellent |
| MEDIAN | 5 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 5 |
| MODE | 5 | 3 | 5 | 3 | 3 | 3 | 3 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 |
| MINIMUM | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 |
| MAXIMUM | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| STANDARD DEVIATION | 0.89 | 0.45 | 1 | 0.84 | 0.89 | 1.1 | 0.84 | 0.84 | 1.1 | 0.71 | 0.84 | 0.55 | 0.45 | 0.55 | 0.45 |

Table 1: Descriptive Statistics of the Evaluation Sheet

CHALLENGE

According to Malone, emergent goals are not as motivating as the fixed goals. In this element, there are two factors involved: goal and uncertain outcome. It would not be a challenging game if the player was certain that he/she would win or certain that he/she would not win. So in a sense, the outcome must really be uncertain. The goal should also be obvious and compelling. A game may be unappealing to a player especially when an appropriate goal is not provided.

A game is not challenging if the player can be certain in winning or losing it. It makes the game challenging and in order to do so the game must have different difficulty level, multiple level goals and an element of randomness in it. In every game the difficulty level must vary. The game should show multiple level goals that will help in posting a challenge for the player. It will keep the player's interest in the game and it will make them want to play more because there is a variation in difficulty especially in the case of the proponents' games wherein the difficulty of the game varies from one to another. As mentioned earlier, another factor of keeping the challenge factor of a game is by putting an element of randomness in it. Randomness can be used in heightening the interest of the player in the game. The game would not be a challenging one especially if the game is repetitive in a sense that when you play it again the order of items is just the same.

The first two questions below evaluate the goal factor. After the evaluation of the preschool teachers and teachers aid in the schoolhouse, 4 out 5 of them gave a score of 5 when asked if there

is an obvious and compelling goal found in the game and only one gave it a score of 3 meaning it is on the average level. This shows that the proponents were able to really put a compelling goal in the games. The standard deviation for this question is .89 that would most likely state that the mean of the data sample is not different from each other. Eighty percent of the respondents have said that the player's certainty of winning or losing in the game is on the average while twenty percent said that it is on the moderate level. In a sense, this will most likely show that the player's certainty in winning or losing in the game is within the range of moderate to average. The standard deviation for this is .45, which will tell you that the data are not on the extremes in being far from each other.

Is there an obvious and compelling goal?



Figure 3.1: Summary of the responses for evaluation question number 1

Can the players tell whether they are getting close to the goal?



Figure 3.2: Summary of the responses for evaluation question number 2

The three figures below shows the results of the evaluation whether there is really an uncertain outcome in the game. The application exhibits different difficulty level. The application consists of six games and each game reflects the level. Each game exhibits different difficulty level as it consists of different questions. Malone have stated that as people's abilities increase, in this case the toddler's abilities, the absolute difficulty level they find most challenging will also increase and therefore intrinsically motivating environment should provide this increasing level of difficulty. Two respondents gave a rating of 3, another two gave it a 5 and lastly one gave it a 4 when asked whether the application shows different difficulty level. There is a multiple level goal

in it too. It was stated that the whole application consists of different games and each game have different goals. The answers of the respondents are within the range of 3-5 and have a standard deviation of 1. Two gave a rating of 3, another two gave it a 4 and one gave it a 5. As you can see, the answers are not that far from each other. Same as the first two questions related in the uncertain outcome, the answers for the third question range from 3-5. Three respondents gave it a rating of 3, one respondent gave it a 4, and another one gave it a 5. Still, the data are not that distant from each other and has a standard deviation of .89. The qualitative response ranges from average to excellent.

For toddlers aging 3-5 years old, the challenge posted for them is to play the game and answer as many correct as they can with respect to the lessons that they have discussed. This may be challenging for them in a sense that the approach of testing their knowledge is different than how they usually learn in a classroom setting. It is important that the elements of the game are challenging enough too in order to maintain the interest of the toddlers. A room for independent learning is also addressed. With this application, toddlers are given the opportunity to think on their own.

Does it exhibit different difficulty level?

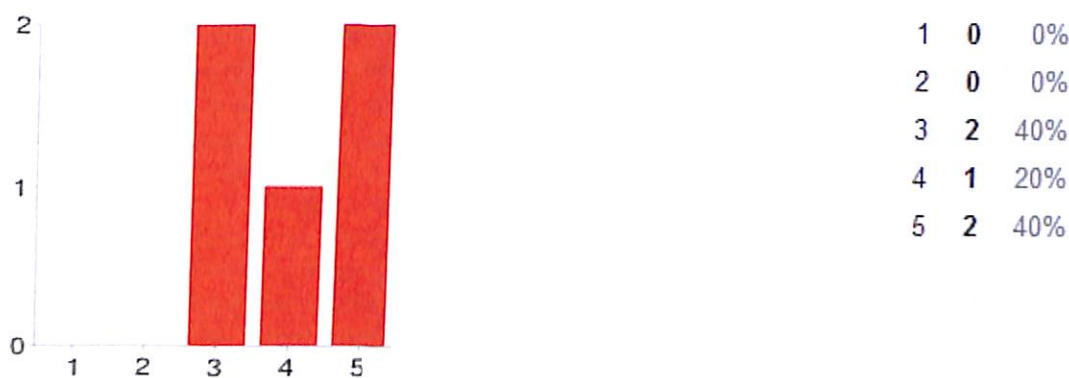


Figure 3.3: Summary of the responses for evaluation question number 3

Is there a multiple level goals?



Figure 3.4: Summary of the responses for evaluation question number 4

Does the game exhibit randomness?

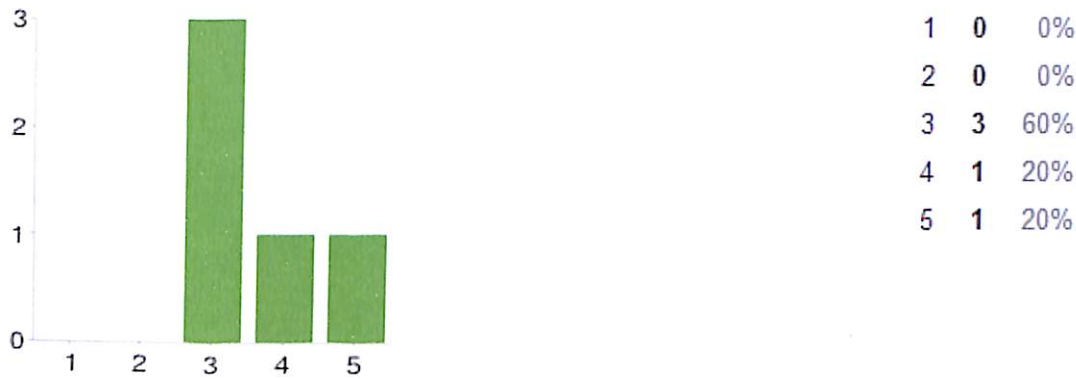


Figure 3.5: Summary of the responses for evaluation question number 5

FANTASY

Fantasy can be divided into two aspects the intrinsic and extrinsic fantasies and the emotional aspects of fantasy. According to Malone, when referring to the fantasy aspect of the game, a fantasy-inducing environment as one that evokes “mental images of things not present to the senses or within the actual experience of the person involved”. It involves intrinsic fantasies and extrinsic fantasies. In extrinsic fantasies, fantasy not only depends on the skill but the skill also depends on the fantasy. This may be reflected upon playing the whole application in the overall context. The player will adjust his/her skills depending on the fantasy presented in the games. It is already given that they have acquired the skills in counting numbers, identifying shapes and sizes, matching colors, and arranging the alphabets. However, in the fantasy world the players are the ones who will have to adjust as to how to come up with the right answer given the situation that they are in. Still according to Malone, the cognitive advantage of intrinsic fantasies is simply that they can improve memory of the material. It is also important that the problems presented are in terms of the elements of the fantasy world. The games of the applications are presented in such a way that it is relevant or in correlation with the fantasy world. The voiceover of the application lets the player imagine that Penny the Pony will go through a series of challenges that will happen on different parts of Happy Farm.

The game should embody emotionally involving fantasies. This helps the player immerse himself/herself in the setting of the game. This will let the player motivate himself/herself with the aid of the fantasy presented in the game. The main concern for this aspect is on how to ensure that the fantasy affects the player’s motivation to learn. If different kind of fantasies can be created for different kind of kids, then the game will have a broader appeal.

In the evaluation sheet answered by the preschool teachers and teachers aid, on the scale of 1-5, 5 being the highest, 60% of the respondents or 3 out 5 gave a rate of 3 and 40% or two respondents gave a rate of 5 when asked if the skill of the players depend on the fantasy presented in the application. The standard deviation in this item is 1.1, which tells you that the data samples are slightly varied. In the second question for this aspect, the range of answer is within 3-5. Two respondents gave a 3, another two gave a 4, and one gave a 5 when asked if the problems are presented in terms of the elements of the fantasy world. The standard deviation for this item is .84 that tells you that the responses are not that far from each other.