Educational Games Design to Introduce Nutritious Food to Kids

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***Abstract*— Keeping the food supply is done continuously since we were a child. But in fact, children's awareness of having balanced – nutrition of dietary habit is still limited. Then the idea to develop educational game to introduce nutritious food to children came.The results of the study generates that 29 out of 30 respondents had never played an educational game with the material related to nutritious food. And all the respondents said that they were all interested in the idea of developing educational game to introduce nutritious food to children.**

***Key words*— Educational Game, diet pattern, education, nutrition**

I. INTRODUCTION

In the last ten years, the number of children who are aware of nutritious foods is still volatile. This fact is shown by *Data Riset Kesehatan Dasar*. This causes many cases of malnutritions in children. The data shows that in 2007 the number of cases of malnutrition was 18.4% then it decreased in 2010 to 17.9%, but it increased again in 2014 to 19.6%[1]. The continuously increasing cases of malnutrition happened to children under five years should also be a concern. In 2014 3,121 children under five years are recorded as malnourished. Kompas Daily Newspaper reported on Tuesday, June 23, 2015 that throughout January 2015 11 children aged under five years were recorded died of malnutrition. Beside economic factors, lack of maternal knowledge and lack of awareness of the children about nutritious food is a factor influencing this occurance.

II. LITERATUR REVIEW

2.1 Nutrition Improvement Efforts

However small effort must still be done to improve awareness of nutrition, especially in children. As it is written in Law No. 36 of 2009 on Health chapter VIII in which nutrition improvement program aims to improve the nutritional quality of individual and community, among others, through improvements in food consumption patterns, improved patterns of behavior that lead to the conscious actions of nutrition and health who implement progress science and technology. Efforts to provide education for children about how good the quality of food they eat. And to educate children on the concept of healthy eating, nutrition education media needs to be developed into "user friendly media" by using current technological

developments. According to Pérez-Rodrigo & Aranceta, education needs to consider the needs and interests of targets[2]. Mobile devices such as Smartphone or tablets are particularly strong magnets for children. Around 70% of children who have a Smartphone just use it to play games [3][4].

2.2 Educational Games

Education does not only have to be in a school. Education can be done by playing the game because the game is an enjoyable activity for children and can be a way to start learning[5]. Games that actually are media which have properties to entertain should be used as a medium of education so called educational games[6]. Game more or less will brings a lot of impact to players, such as relaxation and feelings of pleasure while playing. But the game will be better and more useful it is used as media that can engage learners in the learning process[7].

2.3 Educational Games For Kids

When a child plays the game, the children will find freedom in managing the resources received. If the kids play the games they learn theories , then the thought and creativity of the children will be formed to accept the theories and enable to handle cases related to the theory[8]. Educational game can be interpreted as an exciting activity but they are still educational and beneficial to improve language skills, social skills, to train members of the body, and to develop personality[9]. So the value of education will be well received when the child is motivated to play educational games[10].

III. RESEARCH METHODOLOGY

3.1 Data Resources

This study uses secondary data source. Secondary data is data that have been collected for the purpose of solving a problem faced.

One of the benefits is that this kind of data can be found quickly. In this study the source of secondary data is literature, articles, journals and websites on the internet with regard to the research conducted.

3.2 Questionnaire and Sample

A questionnaire was used to determine how the prospective user responses to the idea of making educational games to introduce nutritious foods. Questionnaires were distributed to 30 respondents of parents who have children with the age group 3-7 years. The questionnaire contains questions about the child's ability to identify nutritious foods, as well as the interest of parents against the idea of making an educational game to introduce nutritious foods.

IV. RESULTS AND DISCUSSION

4.1 Design of Game

a. Knowing Comprehension Target Users

56.7% or 17 respondents who are the parents of children who are the targets audience of the game stated that their children were not familiar with Balanced Nutrition Diet.

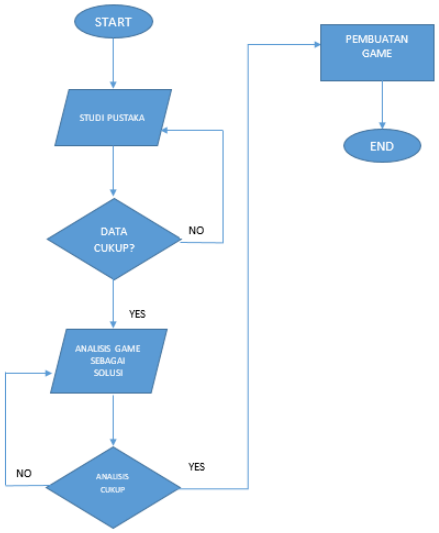
b. Knowing Interest in Idea of Game Design

29 of 30 respondents said that they had never played educational

games on introduction of nutritious foods.

All of the respondents admitted that they were keen to take advantage of games as a medium of education to introduce nutritious foods for their children.

c. Framework of thought Design Game



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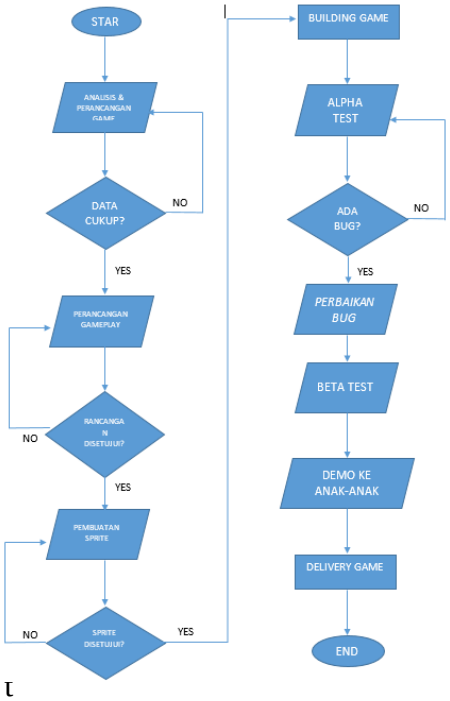
he research here is conducted to find appropriate educational delivery methods to be applied in a game. The study begins with a literature study on several journals with related materials. After the data are enough, they are used to reinforce the theoretical basis of the analysis to determine the genre and method of delivery of educational materials. The analysis is conducted with literature. After our analysis, it is then continued with developing game.

d. Framework of thought on Developing Game

Development of the game begins with the gameplay synthetically made based on analysis of literature.

Then the gameplay design is conducted. Once approved, it is continued with sprite and assets required. Making the sprite and asset begins with sketching which is continued with tracing. Programs that will be used for



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his process is the dram X7 Corel, Adobe Illustrator and Adobe Photoshop. After all sprites and all assets necessary to do are completed, then it may progress to the process of making games that will use the application Construct 2.21 assisted by Intel XDK applications to build the process into android application. After the game is finished, it will be tested against multiple devices with different orientations and specifications to find the bug.

If a bug is found then the next the bug is fixed. After the application is finished and the bug is not found, then it continues by doing a demo on the user target age children 3-7 years.

4.2 Graphic User Interface

a. Splashscreen

"Super Bagas" will apply splahscreen loading bar that  informs the extent to which applications have to load the constituent components such as pictures, sounds, and other data. When the loading bar is fully charged it will display the next screen.

b. Main Menu

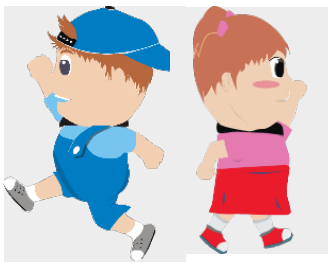
In the main menu there are several keys, ie,:

1. Start,  for starting the game
2. Sound,  for setting the sound.
3. Level,for  starting the game at a certain level, but not all of the levels can be played. Players have to play from the start and finish all the missions to unlock all levels.

c. Language Menu

Language menu will ask the player to choose what language they use during game play "Super Bagas".

d. Select Player Menu



Select Player Menu will prompt the player to choose which character they use for playing the game "Super Bagas". Two characters in this game will be named Bagas and Saras.

e. Level Menu

On the menu level, players will find six levels in the game "Super Bagas" if the level is not already open, the display buttons will be gray and cannot be accessed by the player. In the bottom left corner there is a back button that takes players back to the previous screen.

f. Mission Information

This view contains information on the goals of that level. And the explanation are:

1. Column of information regarding how a star should be collected and how the maximum duration to be taken to complete the level.
2. Play button which will take the player into the game stage
3. Level button to get to the menu level
4. Sound button to adjust the sound.

g. Board Result

The display will be found when the levels of the game ends, either because it is already up to the destination or due to hit the enemy. A detailed explanations on the result board are:

1. Final status of the game, in this

sectionare: (1) if the status of the player wins, the player will gain greeting of victory, (2) if the player lose, the player will receive a greeting defeat.

2. Star column that was

compiled by the player

3. Duration the players have to

complete levels

4.3 *Reward & Punishment*

a. Reward: Congratulations

Reward system congratulations given to players who have been able to completed the mission at a level. When the players reach a score that has been determined, the system will give congratulations to display the result board saying "kamu menang" or "you won" if the player is playing with English mode. Board result will also show the number of scores collected and the amount of time spent to complete a level.

b. Reward: Score

The next reward is in the form of a score, scores are obtained when the player takes the booster in the form of dragon fruit, grapes, broccoli, oranges, kiwi, cabbage, watermelon, tomatoes, eggplant, beans, milk, apples, bananas, carrots, peppers, and mango. Score value is stored in variable scores.

c. Reward: Booster Up

Reward is the third form of booster up, which will help the player to complete the mission. Booster up new players will be encountered when entering the third level.

The first booster up is the milk booster that will change the character of the players to become higher and higher. This booster will make players immune to enemy attacks. The second one is the booster chili that will increase the speed of the players which will be very helpful when the player has limited time to complete the mission.

d. Reward: Unlocked Level

This reward will be received by players who have completed the mission in each and every level of it. In each completed mission, then the players will be given a value to a variable that will affect whether or not the level is open.

V. CONCLUSIONS

Educational game to learn about nutritious foods will then be called "Super Bagas" game developed for the Android platform and is targeted for children with the age group of 3-7 years. It has six levels, with different missions in each level. Educational materials delivered to the players in the middle of the adventure game "Super Bagas" through a pop-up information that will help children to learn about nutritious foods. Then the booster features milk and chili in the game try to visualize the benefits of

consuming nutritious foods. The reward and punishment system in the game will give a picture that this very nutritious food is needed by the body. By playing the game "Super Bagas" children will be helped to learn nutritious foods.

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