

"LET'S CLEAN UP" a Game for Children's Hygiene Learning

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Abstract - Health is an absolute need for all human beings. When they are healthy, the humans can perform all activities smoothly. So people should always keep good hygiene for themselves and the environment in which they live. Education about hygiene should be taught from an early age so that children can understand the importance of maintaining hygiene for health. In addition to the conventional media of learning through formal education, alternative media can be used as a medium of learning for children. Then a game, "Let's Clean Up", is designed with the theme of hygiene to children by using the application Construct 2. The objective of this study was to design a medium of learning about hygiene through games

Keywords: Hygiene, Health, Educational Games, Games

I. INTRODUCTION

Maintaining cleanliness is important for humans. Because cleanliness is essential to

human health. Keeping human hygiene can prevent diseases and make people feel comfortable. For example, maintaining healthy teeth diligently will protect children from dental caries. The children should be introduced to brush their teeth from an early age and when it is done continuously it will become a habit[1].

Teaching personal hygiene should be taught to the children at an early age, especially when children play with the stuffs around them that can carry germs. For example, when children like to play in the ground, then the possibility of a child to be infected by hookworm is big enough[2]. In addition to maintaining their health, environmental health is also very important. Children should be taught to care about the surrounding environment such as not to scatter his stuffs in his room and not to litter.

Parents should be able to teach cleanliness starting from small things like teaching how to tidy up their room, take a bath regularly and other matters. Often there are children who do not want to be told to tidy up their room. The children may feel that the room is too large and the toys are too many which make

children feel lazy to tidy up[3]. In addition to teaching cleanliness for children directly, there is other way, which is to use a game. With the game children can learn with more fun. With this method of learning, the game is expected to improve their understanding quickly because it makes children interested in playing games[4].

"Let's Clean Up" game theme is about maintaining personal hygiene and the environment. This game is about a character who was doing chores, such as sweeping, mopping, cleaning dirt and other houseworks. Games are won by using scores and are limited by time. With this game the child is expected to be able to understand the importance of cleanliness.

II. LITERATUR REVIEW

2.1 Hygiene

Hygiene is something that can not be separated in the lives of everyday people. Cleanliness may be an important element in health and disease prevention by keeping us safe from the various diseases that can infect the body. Additionally hygiene can provide a sense of comfort and a lovely atmosphere.

Cleanliness needs to be introduced to the children so that they know the importance of health. Since their childhood children should be taught to maintain their health starting from simple things. House could be the beginning of learning cleanliness. Starting from waking up the child can begin to clean up the bed. After that the children can continue with their personal hygiene like brushing their teeth, taking a bath and changing clothes[5].

2.2 The Relations between Student Achievement and Health

School age is a period in which children become very vulnerable to health problems. Health problems can be caused by environmental influences or habits of children who lack medical attention. Parents and

schools should be able to give lessons on health to the children so that the child will always be healthy and able to follow the lessons in school well. There are some children's daily habits that can affect the health of children like pattern of breakfast and lunch, body cleanliness, clothes cleanliness, snack habits and environmental factors[6].

2.3 Game

Game is part of the activities in which interconnected. In the game there are rules that are quite complex and the players can interact with each other. The main purpose of playing the game is to entertain. Game requires players to solve various problems in the most appropriate way and fast[7].

2.4 Game Based on Environment

Game is not only for fun but it can also be a means of education. An example of an educational game is Edunvi game. Edunvi Game is created by Wafra Adita Rifai. He made this game to deliver education about environment cleanliness, especially on trash. He considered that the amount of litter, especially in very large cities, so that the level of waste management needs to be taught to children. With this Edunvi Games, it is expected that the child can understand environmental cleanliness and garbage. In this game the player will be asked to classify the waste based on its classification[8].

2.5 Education Games

Educational game is a game in digital form that is designed for educational enrichment (supporting learning and teaching), using interactive multimedia technology [9].

Daryanto mentions that the materials and methods in the implementation of the Environmental Education used until now are still not sufficient so that understanding the target group for environmental protection is

not intact. In addition, the implementation of methods and materials on Environmental Education is not applicable and is considered less in solving environmental problems. Along with big enough development of technology today, the development of applications that are cheap, popular and preferred by children is required[10].

2.6 Game Engine Used

Game Engine is a software created and designed for the development of a gaming application. With Game Engine Game-making becomes more efficient. The time required is faster and easier because it already contains a variety of tools that help in manufacturing Game Developer Game. It also has features such as 2D and 3D rendering, collision detection, audio, graphics, artificial intelligence, etc[11].

Game engine Construct 2 is one of the game engine that can be used to create games, especially 2D games. Construct 2 is a game engine that is already compatible with several platforms in both smartphones and PC like Android, Iphone, Windows Phone windows and it can even be used as a HTML5-based game.

Construct 2 has several advantages over other game engines. First, this game engine is easy to use and learn. Construct 2 is not using too much coding or programming, but emphasizing more on logic. Beginners can learn from games template already available in Construct 2. Second, Behavior or Flexible Behavior is a kind of command that has been provided by Construct 2 so users no longer need to enter the same command. Third, users can see a preview of the game that has been created through a browser on a computer. Fourth, Construct 2 can produce a game to different platforms or Cross Platform such as Android, iPhone, Windows Phone, Windows, Linux, and HTML5. Fifth, Construct 2 can also add a plug-in that provides additional

visual effects. The disadvantages of Construct 2 is if you want to add motion effects on the object it will be harder to outsmart behavior given to the object. So it must add an event on its own sheet event[12].

III. RESEARCH METHODOLOGY

3.1 Approach Method

The method used is a method of research and development (Research and Development). According to Soegiyono (2009) methods of research and development are to produce and test those products[13].

To produce a single product, it is necessary to analyze the needs of the research. So that the product can solve the problem formulation.

The stages in this study are as follow:

- a. Problem Analysis
Problem analysis is used to determine what the problem is in terms of cleanliness. Trying to find solutions for solving problems.
- b. Designing Games
Designing Games is the stage of system design to design games that will be generated to be an interactive media in learning cleanliness. This stage is to facilitate the implementation so design sketches and storyboard must be prepared.
- c. Games Implementation
Games Implementation is the process of translating a design into a real form. In this study the game implementation process is using Construct2.
- d. Testing
At this stage the game is not only tested for feasibility, but also tested for its effect to the children who use this game.
- e. Game analysis
If the test shows that the game does not have an impact on children. Then it is necessary to study what is the cause of the failure and make improvements to the game.

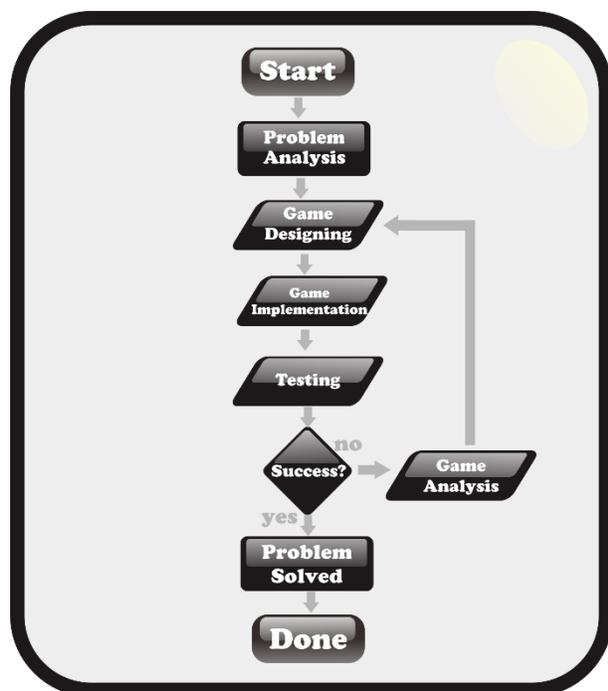


Fig. 1 Flowchart of the Stages in the Research method

3.2 Research Object

Object that is examined in this study is the educational game entitled "Let's Clean Up". This game is a learning tool for children to learn cleanliness.

Respondents used for testing activities are children ranging from 5-13 years old. During the test, the child will be accompanied to use "Let's Clean Up" Games.

3.3 Techniques in collecting of data

Technique in collecting of data was a questionnaire. The questionnaire was filled out by the child while they were testing "Let's Clean Up" Games. The questionnaire is a technique in data collection where the respondent will be given a set of written questions that will be filled by the respondent. Questionnaires will be given twice: before and after the game testing or pre test and post test. After data collection, the data will be used as one.

3.4 Games Implementation

This stage is to make the design view to be applied to the game.



Fig. 2 Character design and games sprite

It displays character and sprite design that will be used in the game and makes the sprite to be playable in the game. It also provides the animation in the game display.



Fig. 3 "Let's Clean Up" Start Page

The initial view of the games contains a play button, options, credit and share. Players can turn off or turn on the noise of the game by passing the option.



Fig. 4 Display of map menu

Games menu display shows the five maps that can be selected and played. In the beginning only one folder is open but when the other map will begin to open after level up



Fig. 5 Display of dialog

It display dialogue between Aya and her mother before starting the game.



Fig. 6 View of game 1 map

Pictures above are the game view of the map room. Players will be asked to clean the

bedroom by tidying stuffs through clicking or dragging stuffs into place.



Fig. 7 Event Sheet On Drag

While playing in the map of room, there are items that are not put in the place and there are garbage scattered around the room which the player must move by dragging the object to where it should be.



Fig. 8 Event Sheet On Click

Entering the room map, the player then find the scattered items. A player's task is simply clicking on scattered items so that they can tidy up themselves

System	Condition	Action
System	rintangan = 13	Go to menang
System	level ≤ 1	Set level to 2
System	On end of layout	Stop all
System	On start of layout	Set rintangan to 0
System	volume = 0	Set "" muted
System	volume = 1	Set "" unmuted

Fig. 9 Event sheet goal of the game

Each game has a number of different obstacles. To win the game, the player must complete a number of obstacles that have been set.

System	Condition	Action
System	On start of layout	Set nyawa to 3
System	Every tick	nyawa = 3
System	nyawa = 2	Set animation frame to 1
System	nyawa = 1	Set animation frame to 2
System	nyawa ≤ 0	Go to kalah

Fig. 10 Event sheet of number of lives

In each game the player will only be given three lives. When players make a mistake it will reduce the life. When the life is over then the players will be considered lost and the game must be repeated.

IV. RESULTS AND DISCUSSION

4.1 Pretest

Pretest is a question given to respondents before testing. This is done to determine the level of understanding of respondents on a material before testing.

From the results of pretest conducted on 31 children, it is found that 67.7% of the respondents say cleanliness is very important and 32.1% say that cleanliness is less important. Then 22.6% of the children said

that she had never received hygiene education.

4.2 Posttest

Posttest is a question given to respondents after testing. This is done to determine the success of the test.

The post test found that 71% of the children said that they were interested in the game of "Let's Clean Up". And 77.5% of them said that the game, "Let's Clean Up", has described about cleanliness.

V. CONCLUSIONS

From the research, problem analysis, game design and stage of completion, then the finding can be deduced including the following:

- The process of developing educational game "Let's Clean Up" with applications Construct 2 as a medium of learning children about hygiene through several stages are among others, problem analysis, game design, game implementation, testing and analysis of games. The testing phase of "Let's Clean Up" game is tested to 31 respondents.
- The test data of 31 respondents show that 45.2% of the children said that "Let's Clean Up" game has already describe the importance of cleanliness. And 51.6% of the children become aware of the cleanliness after playing a game of "Let's Clean Up" and 29% becoming very understanding.
- Responses to the use of "Let's Clean Up" game was considered quite good. The data show that, 54.8% and 16.1% of the respondents agree that the game is very good

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