

INTERACTIVE MULTIMEDIA DESIGN IN SOCIALIZING SUSTAINABLE ENVIRONMENT FOR TEENS

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Abstract: This study aims to produce an interactive multimedia as an attempt to bring the information of the sustainable environment concept for teens. The concept of sustainable environment is one important basis in environment conservation. The information presented in this interactive multimedia focused on sustainability concept applied to the behavior in everyday life as well as various exposures to environmental problems caused by unsustainable behavior. The content material presented includes energy, water and waste management. The research was conducted using the Research and Development (R & D) approach. This study is producing an interactive multimedia through the stage of preliminary studies and development as well as followed by the evaluation stage.

Keywords : environment sustainability, interactive multimedia, sub urban area, teens

1. Introduction

The concept of sustainable environment is a concept to reach the balance of the environment elements so that environmental sustainability can last for a long period. This concept needs understanding and awareness of the dangers and threats of environmental damage due to the paradigm that environmental and natural resources as a land to be conquered by human exploitation. Therefore education and outreach efforts related to the threat of the unbalanced environmental conditions and procedures to prevent environment degradation should perform as soon as possible (Cato, 2009:145). This kind of education is then displayed in an interactive multimedia with sustainable environment theme (Cato, 2009:142-150). Currently, one of the most popular interactive multimedia and serves more than just an entertainment is the game.

Several studies which analyzed sustainable environment-themed gaming products abroad have successfully delivered an important message to the sustainability of the environment to the audience target. Among them is the Harvest Moon game, a Role Playing Game (RPG) produced by Marvelous and was first released in 1996. Since then, Harvest Moon got a huge response from the public. Harvest Moon game-play basically gives players the opportunity to be a farmer who can earn some money by managing a farm in a given period. The game is interesting because it offers a fun side of life farmers through the graphical display and game-play that can be played by the audience target of various ages and educational background.

The game model of Harvest Moon can be applied for this sustainable environment concept for teens. Teens in Indonesia are now getting related with the sustainable environment issue since this concept is discussed in various media and school subject. Discussion and education sometimes can not reach the basic understanding of the young people. We need tools to make this sustainable issue can be easily understandable for them and the most popular tool is interactive multimedia gaming. In Indonesia, there has not been any game with sustainable environment theme. Teens were targeted because if they understand then they will have a high critical power and can do something for the environment.

Interactive multimedia play activity is one form of constructivism-based learning that emphasizes learner as a major figure in the learning process. For example, when acting as a farmer in Harvest Moon games, the player is indirectly learned to farm, breeding and having a life on the farm because of the game-play in the game is an instructional system that requires players to follow and carry out the commands in interactive multimedia. Thus the activity of playing games can be used as a medium to implement constructivism-based learning.

2. Methods And Procedures

This research and design of simulation interactive multimedia with sustainable environment theme is using stage model of Borg and Gall (1989:783-795), which consists of ten steps, namely :

1. Preliminary Study, the first step includes need assessment analysis, literature review and literature research related to environmental problems that occur in sub urban areas in Indonesia.
2. Research Planning, start from setting the research objectives, estimates of funds, manpower and time, and researchers qualification and their participation in the study.
3. Design Development, planning the concept of interactive multimedia design, interactive multimedia design results as a hypothetical design, determine the facilities and infrastructure needed in research, determining the stages of design development and determining the job description of the parties involved in the research.
4. Preliminary Field Test is a limited product test with the initial field test for the product design and is done twice.
5. Revision of Limited Field Test Results is an improvement or design or models based on limited field test. Most are performed with a qualitative approach. Evaluation is mostly performed on the evaluation of the process, so that the improvements made are internal improvements.
6. Main Field Test is a wider test product by using experimental techniques repetition models.
7. Revision of Wider Field Test Result, a second improvement after the wider field test than the first field test for product improvement.
8. Eligibility Test, conducted at a large scale to test the effectiveness and adaptability of product design with the involvement of potential users of the product that the results are ready applied.
9. Final Revision of Eligibility Test Result is product perfection for the developed product accuracy with a level of effectiveness that can be justified. The result of this stage is an interactive multimedia product that is ready to be published both offline and online.
10. Dissemination and Implementation of End Product are reports of R & D results that will be delivered through seminars and scientific journals.

In outline, the design stages of this interactive multimedia model consist of:

- 1) The concept of interactive multimedia design. Initial draft which includes aspects of interactive multimedia design, narrative, timeline and budgeting.
- 2) Preparation of visual assets. Preparing assets visual interactive multimedia which includes asset of building, environment, people, animals and vehicles.
- 3) Programming. Making the code required to build a digital application (engine).
- 4) Testing. Interactive multimedia application performance testing to avoid errors (bugs) and to test whether interactive multimedia works well or not.
- 5) Publishing. Making interactive multimedia applications into a ready-to-use products and ready to be distributed.

3. Design Concept Development

3.1 The concept of Discourse Competence

The resulting interactive multimedia refers to how adolescents understand the concept of sustainability and to link it with the real conditions occurring around the neighborhood where they live. Thus the topic of sustainability is communicated interactively as well as various examples of environmental problems that appear involved in the social context of sub-urban areas.

3.2 The concept of communication

In terms of demographics, the primary goal of interactive multimedia communications are adolescents with age range between 13-15 years. Therefore both narrative and visualization developed character always rests on teenage characters.

Judging from the geographical aspect, the primary goal of interactive multimedia communications are adolescents in sub-urban areas which have computer facilities both at school and at home. But this

interactive multimedia can be disseminated to a broader scope of geographical area regarding that computer is a device that belongs to each school or personal .

Teens as the target of this communications media are teenagers who can operate the computer, especially for students who are familiar with computer games. Almost all teenagers now make the computer as an important part of their daily lives. Thus, this interactive multimedia is a potential media as an alternative that can entertain as well as increase the students' ability and knowledge to understand the concept of sustainable environment.

4. Concept Of Interactive Multimedia

In this interactive multimedia, there are two main types of activities. The main activity is the elaboration of a variety of important information to create an environment which refers to the concept of sustainability. The topics of discussion include energy savings, water use and waste management. Information on the three elements were presented in the form of narrative -based audio that will be supported with an explanation in the form of animation.

The second activity is an activity to measure the knowledge of the target audience related to sustainable environment issues. In this activity, the user will be presented with several interactive multimedia environmental issues and asked to choose the most prudent action decisions in dealing with the environmental problems. Any decision or action taken had levels of effectiveness that will be demonstrated through sustainability meter, and the results can be seen through sustainability charter in virtual form, but can also be printed. The Charter is a reward / recognition of user effort in understanding the concept of sustainability.

5. Character Development

Based on the target users of this interactive multimedia that junior and senior high school students, aged 13-15 years, then determined that the character used refers to the social symbols displayed by the students including the physical form and attributes imposed. From attributes that apply, scout uniform is still in use by all junior and senior high school on Friday and Saturday. Of these reasons, the characters in the game are designed to wear scout, so it can represent all junior and senior high school levels. Design development is done with styling cartoon character so that the character does not seem too realistic, but it has a simple and attractive impression.

The overall design of the characters contained in this game was developed with pre-rendered techniques of 3-dimensional objects into two-dimensional sprite, so users can view the media each character from various sides.

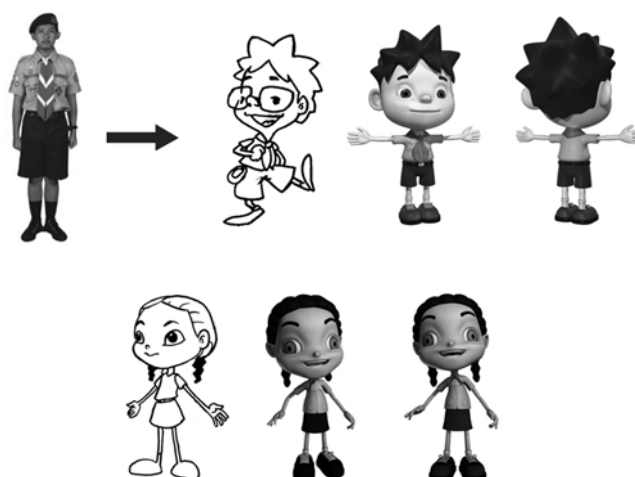


Figure 1. The main characters in interactive multimedia with scout uniform
Source (researchers, 2013)

6. Visualization Development Environment (Environment)

Some scenes in the video featured in this multimedia displays suburban area that has been adapted in animated form. The perspective used in several animated scenes use isometric perspective which displays 3-dimensional objects in two-dimensional perspective. With this view, the object of 2-dimensional in the game is as if it has depth.

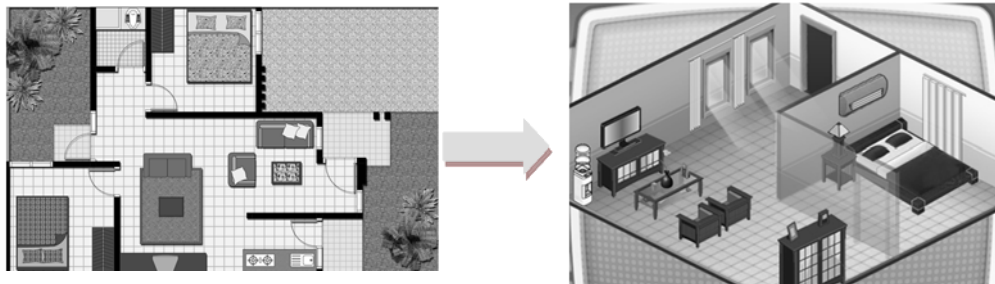


Figure 2. Adaptation 2D object into view isometric, Source (researchers, 2013)

7. Visual Interface Multimedia Interaktif

This interactive multimedia will be preceded by a pre-loader that displays the identity of some of those involved in the development of this interactive multimedia. After the preloader page appears, followed by the main menu interface where there are two main characters Tito and Nasya who greets the audience and briefly describe the content of the interactive multimedia.



Figure 3. Display the main menu of interactive multimedia

In the main view, there are 5 button that will connect the audience with a different interface. A description of the function of each button on the menu and the content of each interface are described as follows.

1. Sustainability Button

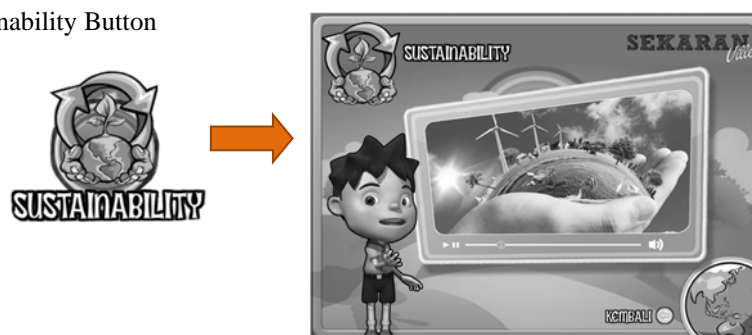


Figure 4. Sustainability button on the interface that connects the audience sustainability

Sustainability button will connect audiences with the sustainability menu that contains all the information about the concept of sustainability, impact of not implementing sustainability behavior, and the steps to be able to create a more sustainable environment. All information is packaged in a format that is supported by audio narration animated character to explain through video display. Video display can be controlled by using the play and pause buttons are found on the video bar, as well as volume control.

2. Energy Button

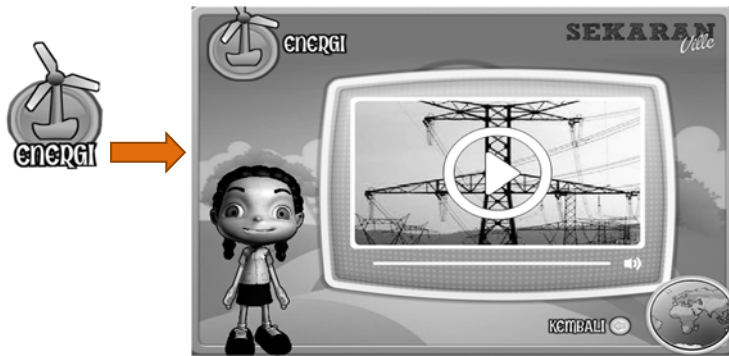


Figure 5. Energy button that connects the audience to the energy menu

The energy button connects the audience with energy menu that contains information about type of energy used by the majority of people on earth. Through an animated display of characters supported by video, described how the impact of burning fossil fuel energy results for the sustainability of life on earth.

3. Water Button

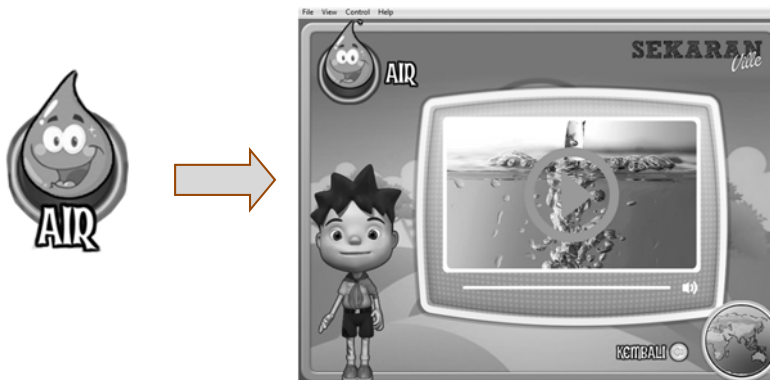


Figure 6. Water button that connects the audience to the water menu

Water button connects the audience with water menu which contains information about how the condition of groundwater in wells as the source of clean water in sub-urban areas is strongly influenced by environmental conditions. This menu also guides the audience to know the simple steps that can be done to conserve water and protect water quality in the neighborhood.

4. Waste Button

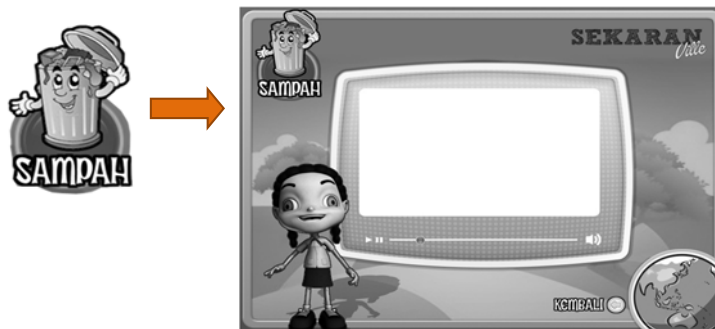


Figure 7. Waste button that connects the audience on the menu interface of waste

Waste button will connect the audience on the menu that explains how to manage waste in your neighborhood. This menu also discussed the 3 R namely Reduce, Reuse and Recycle that can be associated with activities of daily living.

5. Test button

In the test menu, the audience will be asked to decide the most sustainable actions related to energy use, water and waste management. The results of this test is in the form of charters that can be printed as a reward /awards for the audience to learn the concept of sustainability, an initial step to create a better living environment.

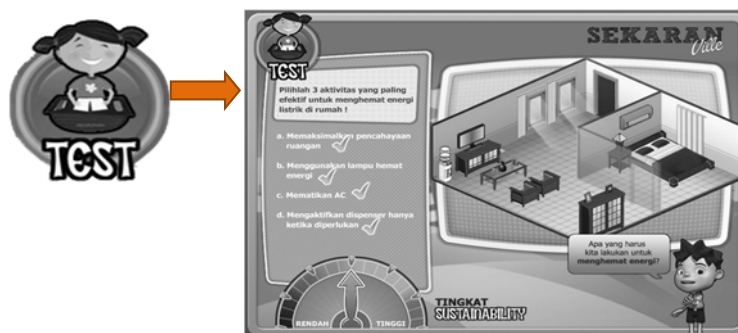


Figure 8. Test button on the interface that connects the audience to test menu

8. Reward System

To measure the level of understanding and knowledge of the user about the concept of sustainable environment and provides an appreciation of their efforts to learn about sustainability, sustainability meter is provided as an indicator of the effectiveness of the decisions taken by the interactive multimedia users in addressing the problems in the environment, particularly related to energy issues, waste and water. Each interactive multimedia user is entitled to get an award plaque that comes with the level of their knowledge about sustainability. Advance level is for users who get a score of 150-200 in taking appropriate decisions related problems in the Test, whereas intermediate level for users who get a score of 100-140.



Figure 9. Display of interface when a user successfully completed the test

9. Conclusion

In developing an interactive multimedia that can be a means of socialization and education of sustainable environment concept for young people in sub-urban areas, it is required a relevant data relating to the condition and the character of the area, object behavior, environmental issues and the characteristics of the waste that occurs in sub-urban areas. The information in interactive multimedia also contains numerous examples of simple behaviors that can transform the neighborhood into a more sustainable environment. Overall information presented in narrative form supported by the main display and video animation character.

References

- Bog dan, Robert, S. & Biklen. 1982. *Qualitative Research for Education: An Introduction to Theory and Methods*, Boston: Allyn and Bacon, Inc.
- Cato, Scott. 2009. *Green Economics*. London: Earthscan, pp. 142-150