A 2D Animation Cartoon about Flood Disaster Prevention

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Abstract - According to flood disaster situation in Thailand last year, there has been significant interested in how to educate the children about flood disaster prevention and also stimulate ideas of rescue people including themselves from the disaster. As we know, the young generation grows within the environment that fulfill with technology. It is our responsibility to know how they learn. Thus, we should select the most appropriate way to support learning and 2D animation cartoon is the common media in everyday life for the young generation. Therefore, the purposes of this study were 1) to develop a 2D animation cartoon about flood disaster prevention for Thai junior high school students, 2) to evaluate the quality of the cartoon by multimedia specialists, 3) to evaluate the samples’ satisfaction towards the cartoon, and 4) to evaluate the samples’ understanding about the flood disaster prevention before and after watching the cartoon. There were eighty-four junior high school students from Bangkok participated in this study. The development process consisted of content analysis, design, development, implementation, and evaluation. The content of the cartoon was developed using simplify words that suitable for the sample group. The data that collected from evaluation process was analyzed using mean and standard deviation. The results of the study found that the quality of the cartoon evaluated by specialists was good and sample’s satisfaction towards the cartoon was also good. Moreover, students’ understanding about flood disaster prevention was improved as well.

Keywords - Flood Disaster Prevention, Junior High School Students, 2D Animation Cartoon

1. INTRODUCTION

According to flood disaster situation in Thailand last year, there has been significant interested in how to educate the children about flood disaster prevention and also stimulate ideas of rescue people including themselves from the disaster [6]. The young generation grows within the environment that fulfill with technology. It is our responsibility to know how they learn. Thus, we should select the most appropriate way to support learning [2]-[3]. As we know, 2D animation cartoon is the common media in everyday life for the young generation. We use 2D animation cartoon because this kind of media will be lead by a story. From the story, we can include so many knowledge and content that need to transfer to the learners while they are watching the cartoon. The learner can enjoy the cartoon and learn the content in the
same time [1]. This paper shows how to apply multimedia technology to teach young generation through cartoon with 2D animation technique. The cartoon story was about flood disaster prevention. The aim is to transfer the knowledge about flood disaster prevention to Thai young generation to rescue people including themselves from the flood disaster. We hope that this study will be the first step for educators in Thailand to develop a media that might be used to support learning and match the life style of young people in this information age.

2. Objectives

1. To develop a 2D animation cartoon about flood disaster prevention.
2. To evaluate the quality of the cartoon by multimedia specialists.
3. To evaluate the samples’ satisfaction towards the cartoon.
4. To evaluate the samples’ understanding about flood disaster prevention.

3. Methodology

A. Sample Group

Samples were eighty-four students age range from 12 to 14 years old. They were purposive selected from Bangpakok Wittayakom School.

B. Instruments

There were four instruments in this study as followed:
1) The 2D animation cartoon about flood disaster prevention. The development processes would be described on the next section.
2) The questionnaire used to evaluate the cartoon quality by three multimedia specialists. The evaluated aspects, for examples, “the content is appropriate for the learners”, “the animation techniques”, “the music and sound are appropriate”, “the picture are clear and smooth”.
3) The questionnaire used to evaluate the samples’ satisfaction towards the cartoon. The satisfaction was evaluated in the following aspects, for example, the story is easy to understand, this make learning fun, the conversation is clear, the characters and scenes are attractive.

Both questionnaires (No. 2 and NO.3) were rated by respondents on a 5-point Likert scale as: not appropriate at all (1), not appropriate (2), neutral (3), appropriate (4), and very appropriate (5).
4) The pre test and post test; each test consisted of 50 items multiple choice to evaluate the samples’ understanding about flood disaster prevention. Pre and post test were conducted on paper-based.

C. Procedure

There were two phases in the development process. The first phase was to develop a 2D animation cartoon and the second phase was to evaluate the 2D animation cartoon. For the first phase, to analyze and gather the information of the flood disaster prevention to develop the cartoon, we divided the process into five steps as follows:

1.1) Content analysis: In this step, a brain storm chart was created to analyze the content of the flood disaster prevention. Then a concept chart was created. The topics of the concept chart were made into a network chart. Finally, network analysis method was used to examine the correlation of the content.

1.2) Design: The presentation method was determined in this step. We examined how young learners learn and understand the concepts of flood disaster prevention. Finally, we decided to present the content by 2D animation cartoon. The scenario was written and then characters and scenes were designed in this step.

1.3) Development: The details of each screenshots were elaborated by storyboard. The accuracy of the content and time line was then examined again. In this step, the storyboards were still in hardcopy format.

1.4) Implementation: All characters and scenes were created using computer program and then animated them. After that, we composed the edited sound and dub into the animation. Finally, rearrange all objects to be a complete 2D animation cartoon.
1.5) Evaluation: The finished cartoon was used as a tool for evaluation process in the second phase.

4. DATA COLLECTION PROCESS AND DATA ANALYSIS

After the 2D animation cartoon development process, the second phase was to evaluate the cartoon’s quality and sample’s satisfaction and then evaluate samples’ understanding about the story. Three multimedia specialists rated the quality items on the questionnaire (instrument no.2). After revised the cartoon based on the suggestion from the specialists, the next step was to collect data from the sample group. Before watching the cartoon, samples were asked to complete the pre-test. Then they were allowed to watch the cartoon. After that, the samples were given post-test to evaluate their understanding about flood disaster prevention. Then they filled out satisfaction questionnaires (instrument no.3). The questionnaires collected from specialists and samples were separately analyzed using mean and standard deviation. The criteria used to interpret the results were 4.50-5.0 meant very appropriate, 3.50-4.49 meant appropriate, 2.50-3.49 meant neutral, 1.50-2.49 meant not appropriate, and 1.00-1.49 meant not appropriate at all. The pre and post test scores were calculated using mean. The criteria used to evaluate the understanding was E post – E pre ≥ 60.

5. RESULTS

The results from this study could be divided into four parts as follows:

1) The 2D animation cartoon about flood disaster prevention that we developed was an 8-minute animated cartoon. This cartoon, telling a story about flood disaster prevention, consisted of 3 parts involving the cause, the effect, and the prevention of flood disaster. The narratives were easy for young children to understand. In the animation, each situation appeared in various contexts.

Fig. 1 shows some exemplar characters and scenes captured from the cartoon.

2) The result of the cartoon quality evaluated by multimedia specialists was provided in Table 1.

Table 1
The results from the specialists in aspect of quality

<table>
<thead>
<tr>
<th>Evaluated Items</th>
<th>( \bar{X} )</th>
<th>SD</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Animation technique</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>2 Characters and scenes are attractive</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>3 The content is appropriate for sample</td>
<td>5.00</td>
<td>0.00</td>
<td>very appropriate</td>
</tr>
<tr>
<td>4 The continuity in cartoon</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>5 The movement is smooth</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>6 Sound and music is appropriate</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>7 Picture size is appropriate</td>
<td>4.33</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>8 The presentation time is appropriate</td>
<td>4.33</td>
<td>0.00</td>
<td>appropriate</td>
</tr>
</tbody>
</table>

From Table 1, we found that the quality items that very appropriate was “the content is appropriate for sample” while the other items are all appropriate. The total mean from Table 1 = 4.41, these could be interpreted as good level.

3) The result of sample’s satisfaction
towards the cartoon evaluated by sample group was provided in Table 2.

Table II
The results from the users’ satisfaction evaluation questionnaires

<table>
<thead>
<tr>
<th>Evaluated Items</th>
<th>X</th>
<th>SD</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The content is continuity</td>
<td>4.62</td>
<td>0.52</td>
<td>very appropriate</td>
</tr>
<tr>
<td>2 Characters and scenes are attractive</td>
<td>4.62</td>
<td>0.52</td>
<td>very appropriate</td>
</tr>
<tr>
<td>3 The story is easy to understand</td>
<td>4.62</td>
<td>0.52</td>
<td>very appropriate</td>
</tr>
<tr>
<td>4 The necessary information are provided</td>
<td>4.40</td>
<td>0.70</td>
<td>appropriate</td>
</tr>
<tr>
<td>5 The movement is smooth</td>
<td>4.40</td>
<td>0.70</td>
<td>appropriate</td>
</tr>
<tr>
<td>6 Presentation time is appropriate</td>
<td>4.20</td>
<td>0.58</td>
<td>appropriate</td>
</tr>
<tr>
<td>7 Making learning fun</td>
<td>4.80</td>
<td>0.42</td>
<td>very appropriate</td>
</tr>
<tr>
<td>8 Sound and music is appropriate</td>
<td>4.40</td>
<td>0.70</td>
<td>appropriate</td>
</tr>
</tbody>
</table>

From table 2, the total mean = 4.50. These could be interpreted that the sample were all very satisfied with the cartoon. Consider the items that the samples rated very appropriate were “characters and scenes are attractive”, “the understanding about the story” and “making learning fun”.

4) The results from pre and post test scores. The pre and post test scores from participants were translated into 100 total score first and then calculated mean from the translated score. The criteria used to evaluate the understanding is E post – E pre ≥ 60. In this study, the E pre = 34.40 and E post = 96.30. Thus, E post – E pre = 96.30 – 34.40 = 61.90 that is greater than 60. This could be concluded that participants improved their understanding about the flood disaster prevention after they watched the cartoon.

6. CONCLUSION

This 2D animation cartoon was developed aim to educate the junior high school students about flood disaster prevention. The media was suitable for the target group because multimedia technology can help the young learners better understanding the procedural concepts [5]. Before using this cartoon, it was evaluated for the quality by multimedia specialists. We found that the cartoon not only had a good quality but the content about flood disaster prevention also clear and easy to understand for the target group as the results shown in Table 1. Moreover, when evaluate the samples’ satisfaction, we found that the samples were very satisfied with the learning system embedded in the cartoon as the results shown in Table 2. That could be explained that samples felt they could be enjoy and learnt in the same time. In addition, the most important part was the samples’ understanding about the flood disaster prevention improved after they watched the cartoon (E post–E pre = 61.90). These could be concluded that the 2D animation cartoon about flood disaster prevention was an interesting media that could be delivered the knowledge through entertainment channels and attracting the young learners to concern on the flood disaster prevention. If the content can be delivered from the teacher to the learner in this manner, it will gain the most effectiveness [4]. As teachers, we should select the appropriate teaching strategy to motivate learners to learn. The innovation and multimedia technology can be used as a tool to improve learning in this era. Lastly, we hoped that this study would stimulate more potential of technology-based learning in Thailand.

REFERENCES

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