Electronic Comic about Sufficiency Economy:
Case Study at Klongpittayalongkorn School

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Abstract—The purposes of this study were
1) to develop an Electronic Comic about Sufficiency Economy for upper
elementary students, 2) to evaluate the
accuracy of the content by staffs from
Klongpittayalongkorn School, 3) to
evaluate the quality of the Electronic
Comic by multimedia specialists, and 4) to
evaluate the readers’ satisfaction towards
the Electronic Comic. The
Klongpittayalongkorn School was selected
as case study because this school has
integrated the concepts of Sufficiency
Economy in school curriculum that called
“local curriculum”. We chose electronic
comic because of two reasons: it was
better than paper book to motivate
readers and it could improve reading
skills in the same time.

The samples for this study were
thirty upper elementary students
randomly selected from
Klongpittayalongkorn School. The
development process consisted of content
analysis, design, development,
implementation, and evaluation. The
content of the Electronic Comic 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 Electronic Comic about Sufficiency
Economy had accurate content, good
quality, and could satisfy readers in the
same time (mean score = 4.25, 3.76, and
4.21 respectively). Therefore, it would be
used as one of the learning resources in
the local learning center for the students
and the community near school.

Keywords—Electronic Comic, Sufficiency
Economy, Upper Elementary Students

I. INTRODUCTION

The philosophy of Sufficiency
Economy has been highlighted over the past
decade after the government has announced
a clear policy to step up education reform to
develop Thais into quality citizens, based on
the virtue-led knowledge principle.
Sufficiency Economy means a middle way,
moderation, reasonableness, and self-
immunity against risks [1, 2]. Knowledge,
care, and caution are needed to put it to use.
Moreover, the core of this philosophy is
concerned with integrity, which means
virtue, honesty, and tolerance.

The Ministry of Education is taking
steps to include knowledge about the
philosophy of Sufficiency Economy in the
school curriculum and various school
activities at all levels. A goal has been set for
schoolchildren completing basic education to
have better knowledge and understanding
about this philosophy and be able to apply it
in their daily life. One of the education
policies of the Thai government is to
promote the value of the Sufficiency
Economy philosophy. There has been a
systematic attempt to integrate the
Sufficiency Economy way of thinking into

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school curriculum at every level. The aim is to teach children from an early age how to be self-reliant and live a balanced life, so that they can contribute to society and cope with changes in the globalized world [3].

Sufficiency Economy is now taught across the curriculum of primary and secondary schools. The “Klongpittayalongorn School” is one of the prototypes of the successful application of Sufficiency Economy in educational institutions. It has integrated the Sufficiency Economy concepts in school curriculum called “local curriculum”. This school has launched a program to make the schools more self-reliant. The students engage in planting vegetables and herbs, raising poultry, and other activities to provide the school with necessities. This project not only reduced the cost of running the schools and earns money for the students’ families but also acts as practical education in the values of Sufficiency Economy. Moreover, schoolchildren work on community development projects, take part in activities at the community, and develop projects to promote local wisdom, conserve local historical sites, and sustain the inheritance of Thai culture. All of these projects can be found at the “local museum” in school. Additionally, a special emphasis is placed on local projects for natural and environmental resource conservation because the school location is near the Bangkhuntien-Chaitalay seaboard [4]. The school itself needs to be an environment where these principles are at work. By doing so, the school has developed an educational learning center in school for local people and schoolchildren to exchange views and experience concerning the Sufficiency Economy lifestyle. In this regard, the learning center needs a clear and easy media to educate upper elementary students to have a better understand of Sufficiency Economy.

Telling stories by building comic strips is a way to make the difficult concepts a much more enjoyable experience. Comic strips are a perfect vehicle for learning the Sufficiency Economy concepts for upper elementary students. Each strip’s three or four panels provide a finite, accessible world in which funny or compelling characters live and go about their lives. And readers with limited reading skills are not as overwhelmed in dealing with the size of a comic strip as they can be with a book of many pages. Comic strips also don’t require long sentences or paragraphs to tell a good story. Only few words are required for the characters to go about their lives and reveal their stories. And with computer literacy so emphasized today, the act of encouraging students to use computer also provides a way for students to become more comfortable using computers. As they reading the Electronic Comic, they are also improving their computer skills. Instead of reading a comic book at the paper contents, they can read comic contents with a richer and efficient viewer tool which supports to the additional information such as sound effects or video files [5, 6, 7]. Electronic Comic that includes simplified words shown in the balloons coming from the characters’ mouths or above their heads in the comic strip and some sound effects go along with the beautifully drawn cartoon characters can help students better learning the Sufficiency Economy concepts [5].

Therefore, the purposes of this study were 1) to develop an Electronic Comic about Sufficiency Economy for upper elementary students, 2) to evaluate the accuracy of the content by the staffs from Klongpittayalongkorn School, 3) to evaluate the quality of the Electronic Comic by multimedia specialists, and 4) to evaluate the readers’ satisfaction towards the Electronic Comic.

II. RESEARCH METHODOLOGY

A. Sample Group

Sample group was thirty upper elementary students randomly selected from Prathom 4, 5, and 6 (ten students for each level) at Klongpittayalongkorn school in academic year 2007.
B. Research Tools

1) The Electronic Comic: To analyze and gather the information of the Sufficiency Economy to develop the Electronic Comic, 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 Sufficiency Economy based on the knowledge and experience of the staffs from Klongpittayalongkorn School. 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 younger learners would learn and understand the abstract Sufficiency Economy concept. Finally, we decided to present the concept by Electronic Comic. The scenario was written, follow by drawing storyboard. We also designed characters and scenes in this step.

1.3) Development: The details of each comic strip were elaborated here. Then, the sequence of each strip would be rearranged in the correct order. In this step, the comic strips were still in a hardcopy format. The accuracy of the content was then examined by the content experts again.

1.4) Implementation: The Electronic Comic was created in this step using computer program. We also integrated multimedia technology such as sound effects and video files to demonstrated some specific content.

1.5) Evaluation: The finished Electronic Comic was used as a tool for evaluation process.

2) The Evaluation Forms: We developed three forms for evaluation process in this study. The first form used to evaluate the accuracy of the content by the content experts. The second form used to evaluate the quality of the Electronic Comic by the multimedia specialists. And the third form used to evaluate the readers’ satisfaction towards the Electronic Media by sample group. We used 5-point Likert scale to rate the level of agreement or satisfaction towards the Electronic Comic (5-most agree, 4-agree, 3-neutral, 2-least agree, 1-disagree).

C. Data Collection and Analysis Process

Data collection process was separated into three parts. For the first part, we collected data from two content experts during the development process. For second part, we collected data from three multimedia specialists when the Electronic Comic was finished. Finally, we collected data from the sample group in their normal class period. We completed the data collection process within two months. After that, we converted the evaluation results into scores (1-5). Then we calculated the average score in each topic and summed up all the average scores to find out the overall average score.

III. RESULTS

The results of this study could be divided into four parts as follow:

A. The Electronic Comic

The completed Electronic Comic about Sufficiency Economy: case study at Klongpittayalongkorn School had an attractive cover page in the front and the back as shown in Fig. 1.

Fig. 1 The attractive front (left) and back (right) cover pages of the Electronic Comic
We also inserted video files for readers to understand specific contents such as herbs as shown in Fig. 2.

![Fig. 2 Video file in the Electronic Comic](image)

We provided explanation about each kind of herbs along with clear picture for more understanding as shown in Fig. 3.

![Fig. 3 Explanation about each kind of herbs along with pictures](image)

**B. The Content Accuracy Evaluated by the Content Experts**

**TABLE I**

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>S.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Sufficiency Economy knowledge</td>
<td>4.33</td>
<td>0.67</td>
<td>good</td>
</tr>
<tr>
<td>2. The content suitable for the target group</td>
<td>4.33</td>
<td>0.67</td>
<td>good</td>
</tr>
<tr>
<td>3. The content is clear and easy to understand</td>
<td>4.33</td>
<td>0.67</td>
<td>good</td>
</tr>
<tr>
<td>4. The content is not too much or less</td>
<td>4.00</td>
<td>0.00</td>
<td>good</td>
</tr>
<tr>
<td>The overall average score</td>
<td>4.25</td>
<td>0.50</td>
<td>good</td>
</tr>
</tbody>
</table>

Table I showed the results of the content accuracy. The overall average score was 4.25 that could be interpreted as good level.

**C. The Electronic Comic Quality Evaluated by the Multimedia Specialists**

**TABLE II**

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>S.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The characters and scenes are attractive</td>
<td>4.53</td>
<td>0.67</td>
<td>good</td>
</tr>
<tr>
<td>2. Painting and shadowing techniques</td>
<td>4.00</td>
<td>0.00</td>
<td>good</td>
</tr>
<tr>
<td>3. Font and size of comic strip are suitable</td>
<td>4.00</td>
<td>0.00</td>
<td>good</td>
</tr>
<tr>
<td>4. The scenario is interesting</td>
<td>3.67</td>
<td>0.58</td>
<td>good</td>
</tr>
<tr>
<td>5. Video files are suitable</td>
<td>3.67</td>
<td>0.58</td>
<td>good</td>
</tr>
<tr>
<td>6. Sound effects are suitable</td>
<td>3.33</td>
<td>0.15</td>
<td>neutral</td>
</tr>
<tr>
<td>7. Cover page is interesting</td>
<td>3.33</td>
<td>1.15</td>
<td>neutral</td>
</tr>
<tr>
<td>The overall average score</td>
<td>3.76</td>
<td>0.59</td>
<td>good</td>
</tr>
</tbody>
</table>

Table II showed the results of the Electronic Comic quality. The overall average score was 3.76 that could be interpreted as good level. The most agreeable item was “the characters and scenes are attractive” (mean=4.33).

**D. The Readers’ Satisfaction towards the Electronic Comic**

**TABLE III**

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>S.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attract attention</td>
<td>4.57</td>
<td>0.68</td>
<td>very good</td>
</tr>
<tr>
<td>2. Enhance Sufficiency Economy knowledge</td>
<td>4.50</td>
<td>0.68</td>
<td>very good</td>
</tr>
<tr>
<td>3. Characters and scenes are attractive</td>
<td>4.37</td>
<td>0.67</td>
<td>good</td>
</tr>
<tr>
<td>4. Scenario is interesting</td>
<td>4.37</td>
<td>0.80</td>
<td>good</td>
</tr>
<tr>
<td>5. Images and video files are helpful to understand the contents</td>
<td>4.33</td>
<td>0.71</td>
<td>good</td>
</tr>
<tr>
<td>6. The color is beautiful</td>
<td>4.33</td>
<td>0.76</td>
<td>good</td>
</tr>
<tr>
<td>7. Number of page is suitable</td>
<td>4.10</td>
<td>0.88</td>
<td>good</td>
</tr>
<tr>
<td>8. Wording is simplified to understand</td>
<td>4.10</td>
<td>0.92</td>
<td>good</td>
</tr>
<tr>
<td>9. Content is complete</td>
<td>4.00</td>
<td>0.91</td>
<td>neutral</td>
</tr>
<tr>
<td>10. Sound effects are suitable</td>
<td>3.43</td>
<td>0.57</td>
<td>neutral</td>
</tr>
<tr>
<td>The overall average score</td>
<td>4.21</td>
<td>0.76</td>
<td>good</td>
</tr>
</tbody>
</table>
Table III showed the results of the readers’ satisfaction. We found that the overall average score was 4.21 that could be interpreted as good level as well. The most satisfy items were “this media can attract attention” and also the item “Enhance Sufficiency Economy knowledge (mean=4.57, and 4.50 respectively) whereas the least satisfy item was “sound effects are suitable” (mean=3.43).

IV. CONCLUSION

This Electronic Comic was developed aim to educate the Sufficiency Economy concept to upper elementary students by selecting Klongpittayalongkorn School as case study. We integrated multimedia technology in the Electronic Comic such as various sound effects and video files. These features can help the younger readers better understand the abstract concepts as found in [8]. Before using the Electronic Comic, this media was evaluated for the content accuracy, the media quality, and the readers’ satisfaction. We found that the Electronic Comic not only had accurate content about Sufficiency Economy, but the content also clear and easy to understand for upper elementary students as the results shown in TABLE I. Moreover, the Electronic Comic had a good quality such as attractive characters and scenes, painting and shadowing techniques, video files, and sound effects as the results shown in TABLE II. In addition, the most important part was the readers’ satisfaction towards the media. We found that the beautiful characters and scenes in the Electronic Comic could attract readers’ attention to read the Sufficiency Economy content in more interesting and enjoyable scenario as the results shown in TABLE III.

In conclusion, we proposed this Electronic Comic to educate upper elementary students about Sufficiency Economy concept and the result was highly efficient and practical.

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REFERENCES