The Development of Computer-Assisted Multimedia Training Lesson about Skills and Practices for the Course in Work, Profession and Technology for Grade 6 Dyslexic Students

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Abstract
This research was aimed 1) to develop the computer-assisted multimedia training lesson about skills and practices, 2) to measure the quality of the computer-assisted lesson, 3) to assess the reading and writing ability, 4) to examine the learning achievement of learners, and 5) to measure the learners’ satisfaction towards the developed computer-assisted multimedia training lesson about skills and practices. The sampling group in this study was 20 Grade 6 dyslexic students in the second semester of the academic year 2011 from Thetsaban Mueang Thakham 1 School in Phunphin. They were aged between 11 and 12 years and they were chosen through purposive sampling method out of students whose learning achievement was lower than the requirements. The tools used in this study consisted of the computer-assisted multimedia training lesson about skills and practices entitled “Food and Nutrition”, the reading and writing ability assessment form, the learning achievement test and the questionnaire on learners’ satisfaction. The statistics used to examine the learning achievement was dependent t-test. The research results showed that the computer-assisted multimedia training lesson about skills and practices entitled “Food and Nutrition” contained contents with texts, graphics, still images, animations and sounds and there were activities which allow learners to interact. The result from the quality assessment in terms of contents was 4.19 on average with S.D. of 0.78 or at good level and the quality assessment in terms of media presentation was 4.27 on average with S.D. of 0.72, or at good level. The result from the reading and writing ability assessment was 3.65 on average with S.D. of 0.25, or at good level. As for the learning achievement test, the students’ posttest score was higher than their pretest one with statistical significance at the .05 level. The students expressed high satisfaction towards the developed computer-assisted multimedia training lesson about skills and practices with mean score of 4.50 and S.D. of 0.90. It could be concluded that the developed computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology for Grade 6 dyslexic students was of high quality and could be used for instruction.

Key words
Computer-assisted multimedia lesson, Skills and practices, Dyslexia, Reading and writing difficulty

1. Introduction
The Constitution of Thailand B.E. 2550 (2007) and the National Education Act B.E. 2542. (1999) with Amendments B.E. 2545 (the Second National Education Act in 2002) have discussed the education for disabled people by asking the Office of the Basic Education Commission to organize education to become up-to-date, flexible and variable in accordance with special needs of disabled children and young people so that education is accessible to all. Moreover, all disabled people have their rights to get materials, service and assistance for their education in accordance with established principles and approaches [1].

At the present time, the instruction for the course in work, profession and technology for Grade 6 has changed and developed greatly. In the past instructors were responsible for giving knowledge and direct guidance to learners. Nowadays, learners become the center and it is necessary for instructors to take into account the need of each learner to provide a suitable instructional approach for each learner. The instruction based on computer-assisted multimedia lesson is significant and can be helpful for the individual differences because this kind of lesson will meet the need of learners and allow learners to learn according to their ability and aptitude [2]. Therefore, the computer lesson is considered as an important learning material. When it is used...
for instruction, it will enable learners to learn. This might be the reason why computer-assisted instruction has become popular as learners can learn from lessons with multimedia contents such as texts, graphics, still images, animation and sound. Learners have fun learning and they do not get bored [3]. The computer-assisted multimedia training lesson about skills and practices is a kind of computer lesson with the aim that learners are allowed to sharpen their skills and practices so that they understand the contents. Moreover, it gives an opportunity for low achievement learners to try to understand essential contents and instructors do not need to spend more time in their classroom to repeat the same contents.

At Thetsaban Mueang Thakham 1 School in Phunphin, a one-to-one instruction in a traditional classroom is impossible. Another difficulty is that there is no sufficient time for instructors to organize and follow up their teaching because there are between 48 and 50 students in each classroom and there are around 7-8 dyslexic students who have difficulty in reading and writing. In the academic year 2006, Thetsaban Mueang Thakham in collaboration with Suan Saranrom Hospital to initiate education for dyslexic students in a concrete manner under the project about Mental Health in School with the aim that such children will get appropriate aid for their education [4]. The students who can neither read nor write and those who are slow in their classroom are filtered. In the past, it is often believed that such difficulty is due to intellectual deficit. Actually, some are due to learning disability. It could be seen that certain reading difficulties are related to memory such as consonants, vowels and spelling and these result in reading and writing disability, misspelling and mispronunciation. In this group of students, their reading and writing ability is usually lower than their peers and their ability is similar to those who are 2 years younger than them. In other words, Grade 6 dyslexic students would perform like Grade 4 students. Therefore, they could not write sentences and organize their ideas in classroom although they can copy the vocabulary on the blackboard. It is common that those with writing difficulty will show signs of reading difficulty too [5].

According to the above-mentioned rationale, the researchers would like to help shape the education without difficulty for disabled learners as initiated by Ministry of Education and we decided to develop the computer-assisted multimedia training lesson about skills and practices entitled “Food and Nutrition” so that learners could follow the course in work, profession and technology and they could read and write better.

2. Research Objectives

1. To develop the computer-assisted multimedia training lesson about skills and practices to help Grade 6 students who have reading and writing difficulty
2. To measure the quality of the developed computer-assisted multimedia training lesson about skills and practices
3. To assess the reading and writing ability of students who learned from the computer-assisted multimedia training lesson about skills and practices
4. To examine the learning achievement of students who learned from the computer-assisted multimedia training lesson about skills and practices
5. To measure learners’ satisfaction towards the computer-assisted multimedia training lesson about skills and practices

3. Research Hypotheses

1. The quality of the computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology would be at good level.
2. The assessment of reading and writing ability of dyslexic students would be at good level.
3. The learning achievement for the course in work, profession and technology would show that learners’ posttest score was higher than their pretest score with statistical significance at the .05 level.
4. The learners’ satisfaction towards the computer-assisted multimedia training lesson about skills and practices would be at high level.

4. Research Scope

The research scope of the study on the development of the computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology for Grade 6 dyslexic students was as follows:

4.1 Population
The population in this study was all Grade 6 students who had reading and writing deficit in Thetsaban Mueang Thakham 1 School, in Phunphin, Surat Thani Province.

4.2 Sampling group
The sampling group consisted of 20 Grade 6 students who had reading and writing deficit in Thetsaban Mueang Thakham 1 School, in Phunphin, Surat Thani Province. They were filtered by the medical staff under the Mental Health in School project. They were chosen through simple random sampling method.

4.3 Experts
There were 3 experts in contents and they held at least a Master’s degree or had at least 5 years of experience in teaching about reading and writing difficulty. They were chosen through purposive sampling method out of those who were qualified and willing.

There were 3 experts in media presentation who held at least a Master’s degree and had at least 5 years of experience in computer multimedia lesson production. These experts were chosen through purposive sampling method.

4.4 Scope of contents
The scope of contents in the computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology entailed the contents about food and nutrition.
4.5 Variables

The independent variable was the computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology.

The dependent variables were as follows:
1. The quality of the computer-assisted multimedia lesson
2. The reading and writing ability
3. The learning achievement
4. The learners’ satisfaction.

5. Research Methodology

The research methodology in this study was as follows:

5.1 Tools used in this research
1. The computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology for Grade 6 dyslexic students
2. The quality assessment form for the computer-assisted multimedia lesson and there were 2 forms as in:
   - The quality assessment form in terms of contents consisted of 3 main topics and 14 sub-topics. They were based on Likert’s 5-rating scale.
   - The quality assessment form in terms of media presentation consisted of 3 main topics with 15 sub-topics. They were based on Likert’s 5-rating scale.
3. The reading and writing ability assessment form for Grade 6 dyslexic students. There were 2 main topics and 12 sub-topics.
4. The learning achievement test for the sampling group of Grade 6 dyslexic students which contained:
   - Pretest with 20 questions with 4 multiple choices for each question.
   - Posttest with 20 questions with 4 multiple choices for each question
5. The questionnaire on learners’ satisfaction towards the computer-assisted multimedia training lesson about skills and practices for the course in work, profession and technology for Grade 6 dyslexic students. There were 3 aspects as in:
   - The assessment on the quality of images, texts, language and sound which contained 1 main topic and 5 sub-topics. They were based on Likert’s 5-rating scale.
   - The assessment on the quality of contents which contained 1 main topic and 2 sub-topics. They were based on Likert’s 5-rating scale.
   - The assessment on the quality of practices and exercises which contained 1 main topic and 3 sub-topics. They were based on Likert’s 5-rating scale.

5.2 Steps in the production of computer-assisted multimedia lesson
1. Analysis phase: the contents from the course in work, profession and technology about food and nutrition were analyzed.
2. Design phase: the contents about food and nutrition would be presented with texts, graphics, still images, animations and sounds along with activities which allowed learners to interact.
3. Development phase
4. Implementation phase
5. Evaluation phase

5.3 Research design

This research followed one group pretest-posttest design.

Table 1 The one group pretest-posttest research design.

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>X</td>
<td>T₂</td>
</tr>
</tbody>
</table>

6. Research Results

6.1 The development of computer-assisted multimedia training lesson

The computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students was designed to contain media, tools and resources for the trainees to get direct experiences and to participate in activities on their own. The contents were presented in the format of texts, still images, animations, narrations and group activities with the aim that learners could have interaction with both reading and writing. There were also pretest and posttest.

Fig. 1 Introduction to the computer-assisted multimedia training lesson

Fig. 2 Content summary
6.2 Results from the quality assessment

The quality assessment from the experts in contents and the experts in media presentation could be described according to two tables below.

Table 2 Mean score of the quality assessment in terms of contents

<table>
<thead>
<tr>
<th>Item</th>
<th>X</th>
<th>S.D.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contents and sequences</td>
<td>4.00</td>
<td>0.34</td>
<td>Good</td>
</tr>
<tr>
<td>2. Practices</td>
<td>4.17</td>
<td>0.18</td>
<td>Good</td>
</tr>
<tr>
<td>3. Tests</td>
<td>4.41</td>
<td>0.27</td>
<td>Very Good</td>
</tr>
<tr>
<td><strong>Total Average</strong></td>
<td>4.19</td>
<td>0.78</td>
<td>Good</td>
</tr>
</tbody>
</table>

According to Table 2, the content quality of the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” was 4.19 on average with S.D. of 0.78. This means that the content quality was at good level.

Table 3 Mean score of the quality assessment in terms of media presentation

<table>
<thead>
<tr>
<th>Item</th>
<th>X</th>
<th>S.D.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Images</td>
<td>4.14</td>
<td>0.46</td>
<td>Good</td>
</tr>
<tr>
<td>2. Sounds</td>
<td>4.22</td>
<td>0.26</td>
<td>Good</td>
</tr>
<tr>
<td>3. Texts</td>
<td>4.44</td>
<td>0.00</td>
<td>Very Good</td>
</tr>
<tr>
<td><strong>Total Average</strong></td>
<td>4.27</td>
<td>0.72</td>
<td>Good</td>
</tr>
</tbody>
</table>

According to Table 3, the media quality of the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” was 4.27 on average with S.D. of 0.72. This means that the media quality was at good level.

6.3 Results from the assessment of reading and writing ability

The results from the assessment of reading and writing ability of students who used the computer-assisted multimedia training lesson were shown below.

Table 4 Mean score of the reading and writing ability assessment

<table>
<thead>
<tr>
<th>Item</th>
<th>X</th>
<th>S.D.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>3.64</td>
<td>0.15</td>
<td>Good</td>
</tr>
<tr>
<td>Writing</td>
<td>3.67</td>
<td>0.51</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Total Average</strong></td>
<td>3.65</td>
<td>0.25</td>
<td>Good</td>
</tr>
</tbody>
</table>

According to Table 4, the average reading and writing ability of students who used the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” was 3.65 on average with S.D. of 0.25. This means that the reading and writing ability was at good level.

6.4 Results about the learning achievement

The learning achievement was assessed and shown in the following table.

Table 5 The learning achievement of the computer-assisted multimedia training lesson

<table>
<thead>
<tr>
<th>Score</th>
<th>n</th>
<th>X</th>
<th>S.D.</th>
<th>ΣD</th>
<th>ΣD²</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>20</td>
<td>5.55</td>
<td>0.14</td>
<td>152</td>
<td>1392</td>
<td>29.23**</td>
</tr>
<tr>
<td>Post-test</td>
<td>20</td>
<td>17.70</td>
<td>0.14</td>
<td>152</td>
<td>1392</td>
<td>29.23**</td>
</tr>
</tbody>
</table>

* statistically significant at the .05 level

According to Table 5, the average pretest score was 5.55 whereas the average posttest score was 17.70. When the data were analyzed using dependent t-test, the t-value was 29.03. According to the standards table, this means that the t value was higher than the significance at .05 level. In other words, the learning achievement showed that the posttest score was higher than the pretest score with statistical significance at the .05 level. The computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” could increase the learning achievement of the sampling group with statistical significance at the .05 level.

6.5 Results about the learners’ satisfaction

The learners’ satisfaction towards the computer-assisted multimedia training lesson was measured and shown in the following table.

Table 6 The learners’ satisfaction towards the computer-assisted multimedia training lesson

<table>
<thead>
<tr>
<th>Item</th>
<th>X</th>
<th>S.D.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Images, language and sound</td>
<td>4.00</td>
<td>1.67</td>
<td>High</td>
</tr>
<tr>
<td>2. Content quality</td>
<td>4.50</td>
<td>1.41</td>
<td>The Highest</td>
</tr>
<tr>
<td>3. Practices and exercises</td>
<td>5.00</td>
<td>0.00</td>
<td>The Highest</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.50</td>
<td>0.90</td>
<td>The Highest</td>
</tr>
</tbody>
</table>

**Table**: Table titles and content are properly formatted according to the provided data.
According to Table 6, the learners’ satisfaction towards the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” was 4.50 on average with S.D. of 0.90. This means that their satisfaction was at the highest level.

### 7. Discussions

The results from this research on the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” could be discussed as follows:

#### 7.1 The development of the computer-assisted multimedia training lesson about skills and practices

According to the result, the computer-assisted multimedia training lesson about skills and practices was developed and verified by the panel of experts and as such it was of good quality. This is because the design followed the principles of computer multimedia lesson about vision for Grade 7 students and the result showed that the students expressed high level of satisfaction towards the computer multimedia.

#### 7.2 The quality assessment in terms of contents and media presentation

According to the results about the quality assessment for the computer-assisted multimedia training lesson about skills and practices, the total average was at good level, especially the assessment about the technology was at very good level. This is because the training lesson was developed in accordance with the principles by Pairoj Teeranathanakul, Paiboon Kiattikomol and Seksun Yampinij [6] in that the online lesson must meet the demands of learners through 5 steps of ADDIE as in 1) Analysis, 2) Design, 3) Development, 4) Implementation and 5) Evaluation. There are 16 steps in total and this is the reason why the computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” could be of good quality. This result is similar to the research by Priyanuch Kanti [7] in that the development of computer lesson on Thai vowel form and form changes for Grade 1 students showed that the quality was of good level.

#### 7.3 The assessment of reading and writing ability

According to the results about the reading and writing ability of students who learned from the computer-assisted multimedia training lesson about skills and practices, the total average was at good level. This is because the training lesson was developed in accordance with the principles by Silchais Tessana [10] who says that instructors should observe the intellectual ability of students or know their students individually to find out their strong points and ways of improvement so that the students could develop their potential to the maximum individually.

#### 7.4 The learning achievement

According to the results about the learning achievement of students who learned from the computer-assisted multimedia training lesson about skills and practices, it was found that their posttest score was higher than pretest score with statistical significance at the .05 level. This is because the training lesson was developed in accordance with the 5 steps of ADDIE [6]. Moreover, it followed Taksina Sawananon [8] whose development of the training lesson could yield high level of learning achievement. This is similar to the principles proposed by Moncharn Sawananon [11] in that the index of congruence for each item was over 0.5 and the level of difficulty was between 0.20-0.80 with the distributive power of 0.20 and the reliability was 0.62. Therefore, the learning achievement increased. Similar research by Kittipong Darak [12] also shows that the quality of the computer-assisted multimedia training lesson could increase the learning achievement with statistical significance at the .05 level.

#### 7.5 The learners’ satisfaction towards the computer-assisted training lesson

It was found that the learners showed high level of satisfaction towards the computer-assisted multimedia training lesson about skills and practices. This is because the research was designed with the principles of computer multimedia by Sukree Rotphoethong [13] who encourages students to do exercises to have interaction and relationship with the computer multimedia by way of pretest and posttest so that learners could know their score immediately. This is similar to the research by Wanchai Konkammoed [14] who studies and compares the learning outcomes between collaborative learning and independent learning through computer multimedia lesson about vision for Grade 7 students and the result showed that the students expressed high level of satisfaction towards the computer multimedia.

### 8. Suggestions

#### 8.1 Suggestions for research application

1. The developed computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” was of good quality because it followed the steps of ADDIE for the development of multimedia training lesson. This means that it is suitable for instruction.

2. The computer-assisted multimedia training lesson about skills and practices for Grade 6 dyslexic students entitled “Food and Nutrition” could help learners achieve their learning achievement with statistical significance at the .05 level. This is because the learners could learn according to their interest and there were beautiful images, easy to read texts and exercises for practices. It was also verified by the panel of experts so it could be used for teaching and learning.

#### 8.2 Suggestions for further research

There should be research on the computer-assisted multimedia training lesson with other formats such as game-based computer multimedia lesson.
9. References


[14] Konkamnoed, W., 2007. The learning outcomes between collaborative learning and independent learning through computer multimedia lesson about vision for Grade 7 students, an independent study for a Master’s degree in Educational Technology, Silpakorn University, pp. 70-72.