The Development of English Reading Materials Using Inference Strategies Instruction to Enhance English Reading Comprehension Ability of Upper Secondary Students: A Case Study of Tenth Grade Students of Chonkanyanukoon School

Pimwaree Muneerat *
Associate Professor Sumalee Chinokul, Ph.D.

**

Abstract

The research in this study has the purpose of 1) developing English reading materials using inference strategies to enhance English reading ability, 2) studying the quality of teaching materials using inference strategies to enhance English reading ability of upper secondary students, and 3) studying the students' opinions towards the use of English reading materials using inference strategies.

The research was conducted with a total of 20 students in Grade 10 from School Chonkanyanukoon, with an average age of 16 years. The research was conducted for 8 weeks, and the research tools included reading materials using inference strategies, reading ability tests, and student opinion questionnaires.

The statistical tools used for data analysis were the paired sample t-test and mean and standard deviation.

The results of the research found that after the students studied the materials developed using inference strategies, the average test scores for Grade 10 students in the English reading ability test after the experimental group were significantly higher at the 0.05 level than the pre-test scores. The students' opinions towards the use of reading materials using inference strategies were generally favorable.

* Nisit, Ph.D., Associate Professor of English Language Teaching, Faculty of Education, Chulalongkorn University
E-mail Address: pimwaree.mnr@hotmail.com

** Associate Professor of English Language Teaching, Faculty of Education, Chulalongkorn University
E-mail Address: sumalee.c@chula.ac.th

ISSN 1905-4491
Abstract

The objectives of this research were to: 1) develop the English reading materials using inference strategies instruction; 2) explore the quality of the English reading materials using inference strategies instruction; and 3) investigate the opinions of students towards the developed English reading materials. To evaluate the quality of the developed materials, the researcher investigated its effectiveness by experimenting with the sample group of 20 Grade 10 students at Chonkanyanukoon School. The duration of the experiment lasted 8 weeks. The instruments used were: 1) English reading materials using inference strategies instruction, 2) English reading comprehension ability test, and 3) the English reading material questionnaire. The data were analyzed using a paired sample t-test, mean score and standard deviation.

The results revealed that after exposure through activities in the developed English reading materials to inferences strategies instruction, the students’ mean scores of their pre and post reading comprehension test significantly improved. 2) The students expressed their opinion towards the use of the developed reading English reading materials using inferences strategies at a strongly agree level.

Introduction

Reading is regarded as one of the essential language skills for English as a second or foreign language learners in order to succeed in academic purpose and professional development (Dorkchandra, 2010). However, a large number of Thai students still have poor reading comprehension (Siriphanich & Laohawiriyanon, 2010). The problem occurs not only at the elementary level but at the high school education and the higher education also. The students who have low ability in reading comprehension cannot reorganize the information learned from the text and cannot connect their own knowledge to the new information received from the reading text, and most Thai students lack motivation to read. (Singtui, 2008 cited in Siriphanich & Laohawiriyanon 2010).

One of the necessary factors that can promote reading comprehension is reading strategies. It also refers to the methods for approaching a task and they are conscious rather than automatic processes. Many empirical studies have indicated that improving readers’ reading strategies leads to substantial reading comprehension benefits (Cain et al., 2004; Rapp et al., 2007). Furthermore, Gascoigne, 2008 claims that reading comprehension strategies can help readers gain a better understanding of text. A lot of reading strategies such as making connections, inferring, predicting, asking questions, summarizing, visualizing, using context clues, drawing conclusions, and determining main ideas are embedded in one another. In order to succeed in reading comprehension, the readers should be able apply the reading strategies to texts. (Beers, 2003).
Anderson & Pearson, 1984 states that inference is one of the most widely accepted reading strategies and these strategies are made on the basis of the readers’ prior knowledge and input. Throughout reading comprehension, readers establish coherence in understanding the text by generating possible inferences to connect the input data. There are two main types of inferences which are coherence and elaborative. Coherence inferences is the connection of different pieces of information from within the text, and elaborative inferences is the connected information from the text with readers’ prior knowledge (Barnes et al., 1996; Cain et al., 2001; McNamara et al., 2009). Many empirical studies have indicated that readers must involve in inferential processing to be successful in reading comprehension (Cain et al., 2001 and Broek et al., 2006). Oakhill et al. (2001) marked that learners often fail to comprehend and make the important connections within the text because they are unable to infer. Cain et al. (2004) also found that poor readers had the difficulties to infer the text. In his research has shown that instructions that focus on making inferences and reading strategies is beneficial to students who have low reading comprehension ability, (Cain et al., 2004). The use of inferences and strategies assist poor readers in reading comprehension since readers can employ certain reading strategies to infer the meanings of unfamiliar vocabulary and connect information to establish the conclusion of the text (Oakhill, 2003).

Many scholars agree that the ability to make inferences is crucial for reading comprehension. Inference is a cognitive process used to construct meaning and offer as a conclusion (Cain et al, 2004). It assists the readers to understand the conveyed messages from the authors (Goetz, 1977) as well as it is an integral part of the understanding and remembering the information (Anderson & Pearson, 1984) Moreover, the background knowledge of the readers is also one of the essential factors in the comprehension of text through inference. The background knowledge facilitates the effect on inferential comprehension (Pearson et al., 1979). Thus, the reader’s ability to relate the prior knowledge to the text is emphasized in order to comprehend the text.

In addition, the role of English in Thailand is in an EFL context, and students do not have many opportunities to use and be in an English speaking environment. Therefore, English teachers in Thailand should attempt to be more productive and creative in terms of providing the students with more exposures to use English in both formal and/or daily communication (Richards & Schmidt, 2010). Besides, Tomlinson (1998) advocates that the instructional materials should provide the students’ experience to interact with authentic use of English through spoken and written texts in order to fulfil the needs of students. However, English reading lessons for upper secondary students especially in Thailand, still do not provide enough the lessons about inference strategies. Therefore, it is necessary for the teachers to develop the
English reading materials which can fulfil learners’ and learning needs. To provide experiences that can result in students’ reading comprehension ability, a development of English reading materials using inference strategies instruction is the possible approaches and techniques which can be used by considering the condition of the learners and the possible situations of language use which the students encounter.

In brief, the purposes of this research is to develop the English reading materials using inference strategies instruction; to explore the effectiveness of the English reading materials using inference strategies instruction; and to investigate the students’ opinion towards the developed English reading materials in relation to the raising of students' motivation and attitude towards English language learning.

Objectives

This study aimed: 1) to develop the English reading materials using inference strategies instruction; 2) To explore the quality of the developed English reading materials; and 3) to investigate the opinion of students towards the developed English reading materials.

Methodology

This study was a single group of pre – test / post – test of experimental design. The participants for this study consist of twenty students from 10th grade who willingly enrolled in an elective course of English Reading in the second semester of academic year 2013. The samples are purposively selected.

The processes of conducting this study are divided into two phases. The first phase is the development of English reading materials and the second phase consisted of the implementation of developed English reading materials.

Phase 1: Development of English reading materials

In this phase, the preparation of an experiment is carried with five significant stages. The details of each step are presented in the following orders:

Stage 1.1: Exploring the basic concepts and the related document, reviewing theoretical frameworks, and related research

The basic concepts and related document dealing with the process of materials development (Tomlinson, 2011) and Explicit Instruction of Comprehension Strategies (NSW Department of Education and Training, 2010) are explored.

Stage 1.2: English reading materials Design

1.2.1 Process of materials writing
According to Tomlinson (2011), with the process of materials development, there are five stages for creating valuable, authentic and contextualised materials. Identification of a students’ needs, exploration of the need or problem, contextual realisation of the proposed new materials, pedagogical realisation of materials and the writing of instructions of use, as well as physical production of materials are considered for materials development process. In addition, the researcher adopted the Explicit Instruction of Comprehension Strategies proposed by NSW Department of Education and Training (2010) by placing inference strategies at the core of instruction. The steps of inference strategies instruction were:

Step 1: Text selection
The criteria for text selection was focused on text usefulness for teaching an inference strategies, student interests and connections to literacy themes based on the inference taxonomy (Chikalanga, 1991) which are lexical, propositional and pragmatic categories. The topics were explored by using the needs survey. They are sentences, conversations, cartoons, and passages.

Step 2: Inference strategies Explanation
There are the explanation about the importance and the role of inference strategies, building inference skills, how to make inference, and the strategies to help readers make meaning through inferences.

Step 3: Strategy Model
The developed English reading materials was provided the section of the text aloud and use a think aloud and a visual (symbol, chart, etc.) to share ideas with students. The model of inference strategies instruction was focused on the three questions: what is the clue from the text? What the reader knows about the clue? What can the reader infer? The models of how to make inference are provided in the inference chart using asking inferential question and inference chart template.

Step 4: Guided Support
After the student has had the opportunity to see the inference strategies models, the students had to work in pairs to apply the inference strategies in the provided exercise. This step of guided support promoted the co-operative learning because the students had a chance to discuss the how to make inference and response from the tasks with their partners.

Step 5: Independent Practice
After students have experienced success during guided support, students worked independently on the inference strategies. The students invited to read independent texts on their own. Nevertheless, students independently use the inference chart in order to ensure that
students know the strategy which the clue from the text and reader’s background knowledge are needed to be the process of how to make inference.

Step 6: Reflection

Students were asked to reflect on how using the inference strategies helped them to understand the text. The reflection part was provided for sharing the reflection that how they can use the strategy when they are reading on their own.

Stage 1.3: Validity of English reading materials

In order to verify the quality of the English reading materials, the materials were verified using the evaluation form (Item-Objective Congruence Index, IOC) to ensure the content and construct validity and the appropriateness. It was evaluated by three experts in the field of language teaching. In the evaluation form, layout and design, activities skills, language type and subject, and content were examined. The whole evaluation form which were presented on a three rating scale range from -1 to 1. The items with the scores higher than or equal to 0.5 were considered appropriate; those with the scores less than 0.5 were considered inappropriate and had to be revised according to the suggestions of the experts.

Stage 1.4: Conduction of pilot study

After revising, a pilot study was conducted before the main study in order to ensure that the initial version of the developed English reading materials, English reading comprehension ability test and English reading material questionnaire were all applicable to the study. Moreover, the pilot study also aimed to identify the parts of the materials which required changes and revisions before conducted and applied to the main study.

Stage 1.5: English reading material redesign

The results obtained from the pilot study were used to revise and redesign the developed English reading materials. The researcher allocated more information for the reading strategies part as to help students’ elaborate wider range of the reading strategies that promoted their reading comprehension ability.

Phase 2: Evaluation of the quality of the developed English reading materials

The developed materials were experimented with the sample group from 20 of grade 10 students from Chonkanyanukoon School. The duration of the experiment is eight weeks. Each unit lasted for one week with two periods and each period lasted fifty minutes. The steps in conducting the experiment are as follows.

Stage 2.1: Pre-test

Prior to English reading Instruction using the developed reading materials, the students were given a English reading comprehension pre-test in order to assess their reading comprehension ability and to classify students as low, or high reading achievers.
Stage 2.2: During the experiment
During the experimentation period, in which each unit lasted for one week, the students participated in English reading materials using inference strategies instruction.

Stage 2.3: Post – test and questionnaire
At the end of the experimentation period, all of the students did the post-test. The English reading comprehension ability test and questionnaire were distributed in order to examine the effectiveness of the English reading materials and students’ opinions towards the developed English reading materials.

Stage 2.4: English reading materials Evaluation
Students’ reading ability
To evaluate the effectiveness of the English reading material, the data gathers from the pre and post English reading comprehension ability tests and were statistically analyzed using a mean, and standard deviation.

Students’ opinions
To investigate the opinions of the students, the four-point rating scale of the opinions questionnaire were used. The students rated the English reading material on scale from 1 to 4 depending on their agreement with the statements. Then results of the evaluation were analyzed using a mean, standard deviation and a sample paired t-test.

Research instruments
The instruments used in this study were:

(1) The English reading materials using inference strategies instruction
The English reading materials using inference strategies instruction was designed to motivate the students to learn conceptual content regarding to inference strategies and promote students’ reading comprehension ability. The framework of English reading materials based on inference strategies instruction combines the aspect of material development process proposed by Tomlinson (2011) and the explicit instruction of comprehension strategies suggested by NSW Department of Education and Training (2010). The main elements of pedagogy, content, language focus, tasks and the tests after finishing each lesson were designed the learning objectives were identified and three experts in the field of English language teaching were invited to evaluate the developed materials and lesson plans. The materials were verified using the evaluation form (Items Objective Congruence Index, IOC) to ensure the content and construct validity and the appropriateness of the tasks and materials.

(2) English reading comprehension ability test
English reading comprehension ability test was used as both before and after the experiment. The pre - test and the post – test were parallel. The test was administered before
and after implementing the English reading materials in order to assess the students’ English reading comprehension ability. This test aimed to evaluate the students’ English reading comprehension ability. The English reading comprehension ability test was administered to 10th grade students twice. The content of the test was based on the conceptual theme of inference. The content validity of the test items were evaluated by the three experts in the field of English language teaching according to the IOC Index. Results from the expert indicated that 90% of the items were rated higher than 0.5 of the IOC index, meaning that they were acceptably congruent with the objectives. Only 2 items needed revision. After the revision, the test was pilot tested with 20 students. After administrating the test, all test items were analyzed for difficulty and discrimination index of the test. The reliability of the overall test calculated by Kuder-Richardson-20 formula (KR-20) was 0.8047, which was interpreted as having high reliability of the test.

(3) The English reading materials questionnaire

The English reading materials questionnaire was adapted from Litz (2005). This questionnaire was aimed to investigate students’ thoughts and opinions about the developed English reading materials and was conducted at the end of the course. All 5 items were presented in the four point form of the Likert scales in order to investigate the opinion towards the developed English reading material as well as the open-ended question. Consequently, each scale consisted of a list of responses categories ranging from 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree. The data obtained from the first part of the questionnaire was analyzed quantitatively. The content validity of the item in the questionnaire was evaluated by three experts in the field of language teaching by Item-Objective Congruence (IOC) Index. The IOC index ranges from -1 to 1. Items that had an index lower than 0.5 should be revised. Results indicated that all 5 items were rated higher than 0.5 which means they were acceptably congruent with the objective.

Data collection

The data collection for this study was conducted between January to February 2014 and was carried out in two phases: before and after the experimental study. Prior to English reading materials, the English reading comprehension ability pre-test was distributed to the students in order to assess level of students’ reading comprehension ability. Then, students participated in the English reading materials for 8 weeks. At the end of the of the experiment, the students were given the English reading comprehension post-test to measure their English reading comprehension ability and asked to do the questionnaire in order to investigate the students’ opinion of using the developed English reading materials.
Data analysis

To compare the differences in the students’ reading comprehension ability, the score from the pre-test and post-test were statistically analyzed by mean, standard deviation and a sample paired t-test. Additionally, the students’ opinions towards the use of the developed English reading materials were evaluated by the questionnaire including the open-ended question.

Results

According to the objectives of this research, the findings were presented as follows.

Part I: Features of the English reading materials using inference strategies instruction

Based on the data gathered from the needs analysis and the literature review, features of contents inside the developed English reading material were the importance and the role of inference strategies, building inference skills, how to make inference, and the strategies to help readers make meaning through inferences. In addition, each section provides students with model instruction, guided practice, and independent practice. This English reading materials provide the variety of kinds of texts, i.e., sentences, conversations, cartoon, and passage readings that they experience in their real-life situation.

Part II: Quality of the developed English reading materials

The English reading comprehension ability test was used to evaluate the general reading comprehension ability and the reading strategies of the students. The reading comprehension ability to identify facts and main ideas, make inference, evaluate the information, and determine the words meaning was also judged. The mean score and standard deviation were statistically applied.

Table 1: Descriptive Statistic of the English reading comprehension ability test scores.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>Mean Difference</th>
<th>t-test</th>
<th>df.</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>20</td>
<td>11.55</td>
<td>3.069</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td>13.50</td>
<td>4.110</td>
<td>1.95</td>
<td>3.297</td>
<td>19</td>
<td>.004**</td>
</tr>
</tbody>
</table>

**p < .05

According to table 1, the results indicates that the posttest mean score ($\bar{x} = 13.50$, S.D. = 4.110) of the English reading comprehension ability post-test was higher than students’ pre-test mean scores ($\bar{x} = 11.55$, S.D. = 3.069). The possible total score was 20 and the difference between the mean differences was 1.95. The t-value was 3.297 with a degree of freedom of 19 (n = 20). Therefore, it can be concluded that there was a significant difference between the pre-test and post-test mean scores of the English reading comprehension ability test at a significance level (p<.05). Therefore, it can be summarized that there was a difference between
the pre-test and post-test mean scores of the English reading comprehension ability test. Thus, the students had improved their reading comprehension ability after experiencing the English reading materials using inference strategies instruction.

**Part III: Opinions of students towards the English reading materials using inference strategies instruction.**

At the end of the experiment, the students were asked to rate the English reading materials questionnaire and answered the open-ended question as the results showed as follow.

**Table 2: Results from the English reading materials questionnaire**

<table>
<thead>
<tr>
<th>Items</th>
<th>English reading materials</th>
<th>Mean</th>
<th>SD</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The subject and content provide an adequate explanation of all topics (the reading strategies, examples or model instruction, guided practice and independent practices)</td>
<td>3.85</td>
<td>0.73</td>
<td>strongly agree</td>
</tr>
<tr>
<td>2</td>
<td>The strategic points are introduced in motivating way.</td>
<td>3.90</td>
<td>0.31</td>
<td>strongly agree</td>
</tr>
<tr>
<td>3</td>
<td>The English reading materials help me improve my reading comprehension ability.</td>
<td>3.75</td>
<td>0.44</td>
<td>strongly agree</td>
</tr>
<tr>
<td>4</td>
<td>The language used is not cultural biased.</td>
<td>3.70</td>
<td>0.47</td>
<td>strongly agree</td>
</tr>
<tr>
<td>5</td>
<td>The subject and content of the textbook is interesting, challenging and motivating.</td>
<td>3.80</td>
<td>0.41</td>
<td>strongly agree</td>
</tr>
<tr>
<td>Mean</td>
<td>3.80</td>
<td>0.47</td>
<td>strongly agree</td>
<td></td>
</tr>
</tbody>
</table>

According to Table 2, regarding to the overall students’ opinion of the developed English reading materials, the students strongly agreed ($\bar{x}=3.80$, SD=0.47). Accordingly, the questionnaire results can be concluded that the students had the positive opinion towards the implementation of the English reading materials using inference strategies instruction. Since students approved that the developed English reading materials instruction helped them to be the effective readers as their reading comprehension ability were increased according to the post-test scores. Besides, most of the students strongly agreed that the subject and content especially the strategic points were introduced in the appealing and suitable contexts as well as the explanation of the reading strategies, examples or model instruction, guided practice and independent practices were adequately provided. Moreover, they learned the inference strategies enthusiastically because the subject and content of the materials are interesting, challenging and motivating. Moreover, the language used was appropriate and not contained too much cultural bias. Hence, the students reflected that they had more positive attitude towards English language learning after the implementation of the developed English reading materials.

**Discussion and Recommendation for Future Research**
The main purpose of the present study was to develop the English reading materials using inference strategies instruction which promoted tenth grade students’ reading comprehension ability. The findings statistically demonstrated that after the students exposed with the developed English reading materials, their reading comprehension ability significantly improved. According to the mean of the post-test scores of the students using the English reading comprehension ability test were higher than their mean scores of the pre-test at the significant level of .05. As well as students reflected positively towards the English reading materials. Consequently, it can be concluded that the English reading materials using inference strategies instruction facilitated the development of the English reading comprehension ability of tenth grade students.

Based upon the results of this study, the English reading materials using inference strategies instruction is considered a good source for teaching inference strategies to tenth grade students as many scholars stated that inference skills, reading strategies, comprehension monitoring, integration of text information are essential for the reading comprehension success (Oakhill et al. 2003; Pressley, 2002; Snow, 2002). Teaching reading strategies such as inference is crucial for the reading instruction in terms of reinforcing the students to be the logical and strategic readers. Improving students’ inference strategies leads to substantial reading advantages for learners (Cain et al, 1999; Broek et al, 2006). Consequently, the students’ reading comprehension ability post-test scores were increased after the implementation of the developed materials using inference strategies instruction. Additionally, the students were also motivated to learn with the inference strategies that helped them comprehend the text. Moreover, it created the more positive class atmosphere and the more positive learning experience overall according to the feedbacks that the students reflected on the English reading materials questionnaires. The students approved that the implementation of the developed English reading materials are practical for them as they can adapt for their daily-life reading. They also gave the suggestion that the English reading strategies instruction materials should be continuously developed for the English language learning as it meets with learners’ needs and enhance their reading comprehension ability. The students also stated that they wanted to learn with the various kinds of texts such as lyrics and favorite quotations.

Furthermore, the inference strategies instruction is the effective strategies that need to be fostered in English language teaching in order to promote students’ reading comprehension ability. The instructional strategies can be applied to the variety types of text; and should be used with students independently, in pairs, and in groups. Besides, the reading strategies especially inference should be taught explicitly with the adequate explanation of the strategies, modeling the strategies, scaffolding and coaching from the teacher so that the students are able
to apply them to a variety of texts. The instruction of reading strategies is the crucial component for students’ reading comprehension and should be implemented appropriately and continuously to the English language instruction.

According to the findings discussed earlier, it is recommended that further research studies can be expanded to populations at other levels and schools due to the results of this study are relevant to the upper secondary students. As well as the period of the experiment should be lengthen in order that the results can be more consistency and reliability.

References
NSW Department of Education and Training. Teaching comprehension strategies. Focus on Reading 3–6 program, 7


Siriphanich, P., & Laohawiriyanon, C. (2010). *Using mind mapping technique to improve reading comprehension ability of Thai EFL university students*. The 2nd International Conference on Humanities and Social Science April 10th, Faculty of Liberal Arts, Prince of Songkla University.


