

Improving Grade 7 Students' Reading Comprehension Ability Using the 12PBL Learning Management

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Abstract

The purposes of the study were 1) to study the effects of the 12PBL technique learning management on Grade 7 students' reading comprehension; and 2) to study students' satisfaction with learning in the 12PBL technique. The samples were 22 Grade 7 students in a school in Thailand selected by a purposive sampling method. The instruments were the 12PBL learning management plan, a learning achievement test for reading comprehension, and a satisfaction questionnaire for the 12PBL learning management. The effectiveness of the

12PBL learning management plans was assessed using the effectiveness index (E1/E2) with the determining criteria of 80/80 and a paired-sample t-test. Mean scores, percentages, and standard deviation were used to analyze the questionnaire data. The results of the study show that the 12PBL technique could be considered an alternative solution for fixing reading comprehension problems. Moreover, the instructional technique also brought about satisfactory learning in a language classroom.

Keywords: 12PBL, Problem-based learning, Project-based learning, Reading comprehension

1. Introduction

The ability to read is essential for students as it is a gate to knowledge that is essential for their education and lives. According to Heller et al. (2001), reading is self-exploration as readers interact with the written texts by decomposing new knowledge and inferring meaning with comprehension as the final objective. Reading is used to characterize both beginning readers and fluent readers. The two types of readers do various activities and have different reading needs. Reading at these two extremes of expertise, and at the various levels between them, requires diverse information, needs, and objectives. What is true at one reading level may not be true at higher or lower levels (Kalayci & Humiston, 2015; Rathert, 2012). Therefore, a learner needs to develop skills and knowledge to comprehend text at various levels of difficulty and complexity.

Moreover, it should be noted that one of the major purposes of reading is reading comprehension. However, the concept of reading comprehension could be discussed in several aspects and factors involved in the process of reading comprehension. Kirby (2007) indicated that learners need the knowledge of vocabulary, prior knowledge, morphological awareness, cognitive speed, etc. to develop the skills of input decoding, the strategy uses, and reading fluency which could lead them to the comprehension of text. According to Kintsch (1999), there are two or more pieces of information related to reading comprehension. One is background knowledge of the reading stored in readers' working memory. One is the information in the text which needs to be decoded by readers using their linguistic knowledge. Therefore, readers need to make a connection between the piece of information to comprehend the text. Johnson-Laird (1983) explained that the more learners expose to input using their reading ability, the more improved our mental representation of the text's meaning. Therefore, reading comprehension draws interest from scholars and becomes one of the main research areas of reading studies.

In addition, reading knowledge and attitude toward the skills are important for teenage learners. At the age of 13 (Grade 7), students entered high school for the first time and have to face a new learning environment. With good reading skills, teenage students could reach useful information for their learning and lives (Howard, 2011). According to Scott and Saaiman (2016), reading knowledge and attitude would benefit teenage learners as it could increase their vocabulary knowledge and familiarize them with different styles of written texts. Shea and Ceprano (2017) suggested that reading increases world knowledge that could be useful in learning multi-disciplines. For example, one who reads biographies would understand historical figures better. For the attitude aspect, Bastug (2014) found that there

was a relationship between high school students' attitudes toward reading development and academic achievement. Therefore, it is crucial to develop reading skills for students in their early years of the teenager.

However, there are problems in establishing reading comprehension in language classrooms. Issues such as lack of vocabulary, incompetence in using reading strategies, ability to make connections between text components, etc. have still been found (Spencer & Wagner, 2018). Kirby (2007) indicated that students with insufficient supportive knowledge of reading tend to lose interest in the skill. To illustrate, students with limited vocabulary knowledge have to face difficulty in comprehending the texts. They would lose interest in developing the skill the more they struggle, creating a vicious cycle.

In the Thai context, reading comprehension has also been one of the crucial problems in language classrooms. The results of the national test for Grade 6 students across the country show the average score that accounts for only 54.96% of the maximum point (National Institution of Education Testing Service, 2021). Considering the test with the reading comprehension part, it could be assumed that average primary school students in Thailand have problems understanding texts and lack other knowledge of the language. Kedsupap (2018) indicates that the causes of problems in teaching reading comprehension skills are related to both learners, teachers, and learning environments. To illustrate, Thai learners do not favor reading in general, and a lack of linguistic knowledge makes them struggle with reading comprehension and lose interest in reading. Moreover, the author criticized Thai teachers to lack the understanding of their learners and the methodology employed in teaching. This aggravates the problems not to mention the limited reading resources in Thai education. Therefore, it should be a solution for teachers to develop their teaching to reach the goal of reading classes.

It should be noted that learning processes could be described in various aspects. From a cognitive point of view, learners develop knowledge via reading, listening, thinking, memorizing facts, linking new facts to current knowledge, analyzing issues, learning psychomotor skills, etc. (Cate et al., 2004). Meanwhile, the affective component of learning is the learner's incentive to start and persist in learning. This component includes extrinsic and intrinsic drive, emotional connection to the content, and study preparedness (Weiner, 1979). Moreover, learners need metacognitive skills to process information using metacognitive regulation activities such as planning study activities, monitoring and evaluating progress, and diagnosing and addressing knowledge gaps (Brown, 1994). Therefore, teachers to consider both skill development and the psychology of class management. Chomeya (2020) presented the 12PBL technique to be a guideline for teachers to develop a learning management plan. Input, process, and output of teaching are presented with 12 issues to consider. In detail, the author integrates learning processes in problem-based learning and project-based learning to guide teaching with the use of problems in real life to drive learning. According to Duch et al. (2001), Problem-Based Learning (PBL) uses challenging real-world issues to teach concepts and principles, rather than presenting them directly. PBL promotes critical thinking, problem-solving, and communication skills beyond the course topic. It can help with collaborative work, research, and lifelong learning.

Meanwhile, project-based learning is a student-centered method of instruction based on three constructivist principles: context-specific learning, active learner participation, and achieving goals through social interactions and knowledge exchange (Cocco, 2006). It could be sorted as an inquiry-based learning method where actual questions and challenges in real-world practices lead to meaningful learning experiences (Al-Balushi & Al-Aamri, 2014). Each step of the 2PBL technique can be seen below.

1.1 Input

In the input component, teachers ensure whether their teaching preparation consists of the 4Ps qualities of preparation, problem, project, and process. In detail, the Preparation stage focuses on making the class understand regulations and desirable learning behaviors. In the stage of Problem, real-world problems are brought to the class to discuss the causes and effects. Meanwhile, the Project stage emphasizes initial class work related to the problem, and teachers prepare processes of learning activities thoroughly in the Process stage.

1.2 Process

In the component of Process, teachers clarify whether their teaching process consists of the 4Ps qualities of passion, professionalism, performance, and promotion. To demonstrate, the *Passion* quality is related to drawing the attention of the class to the concepts that are being taught. *Professionalism* is the problem-solving process where learners present rational solutions to problems. *Performance* is when learners are informed about the key indicators of their performances. Lastly, *Promotion* is when outstanding student solutions are selected as a group or class project.

1.3 Output

The component of Output refers to the stage of evaluation of teaching outcomes. Students' development and the trend of their performance are involved in the process. Sub-stages of the component include Product, Place, Price, and Presentation and Partners. In detail, the stage of *Product* refers to the evaluation of students' learning achievement regarding cognition, competency, and characteristics. The *Place* is teachers' recommendations about the possibility of further investigation on the class content. The *Price* is defined as the economic value of the project. This could be an authentic and imaginary enterprise. Finally, the *Presentation* and *Partners* stage is the discussion of the possibility of presenting students' products worldwide.

To date, there is a limited number of studies using the 12PBL technique in developing reading skills. However, Studies have employed problem-based learning (e.g., Berenji et al., 2020; Lin, 2017; Syahfutra & Niah, 2019) and project-based learning (e.g., Friska, 2018; Kavlu, 2015; Shiraz & Larsari, 2014), the core principles of the technique, to develop learners' reading comprehension. The results of the previous studies indicate that both methods of PBLs are beneficial for reading comprehension and attitude toward reading. What could be noted from the results is that problem-based learning and project-based learning are problem-driving teaching approaches that could provide solutions to class problems using projects or scientific methods. Therefore, they also could be integrated to provide a solution

to the reading classroom. The current study seeks to provide empirical evidence to support the 12PBL technique. The purposes of the study were 1) to study the effects of the 12PBL technique learning management on Grade 7 students' reading comprehension; and 2) to study students' satisfaction with learning in the 12PBL technique.

2. Methodology

2.1 Samples

The samples were 22 Grade 7 students in a school in Thailand selected by a purposive sampling method. For the background information of the sample, they had lower intermediated knowledge of the language. None of the participants had experience abroad or enrolled in an international school setting. They took 12 English courses in primary school before the time of data collection. The samples were treated considering ethical issues.

2.2 Research Instruments

2.2.1 12PBL Learning Management Plan

The learning management plan is designed with the principles of 12PBL techniques (Chomeya, 2020). The technique utilized the integration of problem-based and project-based approaches in teaching. The detail of each process of learning can be found in the table below.

Table 1. Processes of learning in the 12PBL technique

Input	
Preparation	Class regulations such as no phone, being ready for class, no interruption, etc. were informed.
Problem	Teachers asked questions that led to class discussion. A video of an animal documentary was shown, and students were encouraged to discuss how they could comprehend the content of the media.
Project	An animal documentary text was given to the class, students were asked to summarize the text in a spring card given by teachers according to their comprehension.
Process	The principle of reading non-fiction text was instructed, and students summarize the text in the spring card again.
Process	
Passion	The teacher and students joined a discussion to review the processes of the previous activity. The teacher made sure that students understand the principles of non-fiction reading and the connection to the text.
Professionalism	Students were grouped. The members of the group shared their projects and discussed them with each other.
Performance	The teachers informed students about the evaluation criteria.

Promotion	Each group chose the best project of its member and improve it together to present to the class.
Output	
Product	Students took a class assessment test.
Place	The teachers recommended sources for further studies.
Price	Students were encouraged to use their imagination to think about how their group project could be merchandised.
Presentaion and Partner	Each group presented its project.

The processes of the 12PBL technique were used to teach 10 lessons throughout the semester. The learning management plan was evaluated by 5 experts including scholars in education and professional teachers with the aspects of appropriateness, feasibility, and validity. The evaluation indicates a very high level of the plan ($\bar{x} = 4.90$). The plan was improved according to the recommendations of the experts before being implemented in the data collection.

2.2.2 A Learning Achievement Test for Reading Comprehension

The test was employed as both pre-test and post-test in the data collection. The test consisted of 30 question items designed in a 4 multiple-choice. The content of the test is related to reading comprehension of non-fiction texts. The average IOC of the test was 0.65, and the discrimination was 0.11-0.74. Moreover, the reliability of the test was 0.94.

2.2.3 A Satisfaction Questionnaire for the 12PBL Learning Management

The questionnaire was designed in a 5 Linkert-scale design. It consisted of 15 positive statements regarding learning in the 12PBL learning management. The reliability of the questionnaire was 0.98. The OICs of the statements were between 0.60-1.0.

2.3 Data Analysis

The effectiveness of the 12PBL learning management plans was assessed using the effectiveness index (E_1/E_2) with the determining criteria of 80/80 and a paired-sample t-test. Mean scores, percentages, and standard deviation were used to analyze the questionnaire data.

3. Results

3.1 The Effects of the 12PBL Learning Management on Grade 7 Students' Reading Comprehension

Table 2. The effectiveness of the 12PBL learning management

Effectiveness	Full mark	\bar{x}	S.D.	Percentage
Process effectiveness (E_1)	400	320.59	5.25	80.15
Outcome effectiveness (E_2)	30	24.63	2.08	82.10
The effectiveness index (E_1/E_2) = 80.15/82.10				

The data in table 2 shows the effectiveness of the 12PBL learning management on samples' reading comprehension. In detail, the process effectiveness (E_1), the average score of students in class assessment, was 320.59 which accounts for 80.15% of the maximum point of 400 ($E_1 = 80.15$). Likewise, the learning management outcome effectiveness, the student's overall performance at the end of the process, was 24.63 accounting for 82.10% of the maximum point of 30 ($E_2 = 82.10$). Therefore, the effectiveness index of the treatment was 80.15/82.10 ($E_1/E_2 = 80.15/82.10$) reaching the determining criteria of 80/80. Consequently, it could be claimed that there is a positive effect of the 12PBL learning management on samples' reading comprehension.

Table 3 The comparison between students' pre and post-test performances

N	Pre-test		Post-test		t	Sig.
	\bar{x}	S.D.	\bar{x}	S.D.		
22	12.86	2.19	24.36	2.08	35.13	0.00*

Note. $p > .05$.

The comparison of students' pre and post-test performances also signifies the effectiveness of the learning management. A paired t-test shows that students' average score of reading comprehension learning achievement in the post-test ($\bar{x} = 24.36$, S.D. = 2.08) was significantly higher than in the pre-test ($\bar{x} = 12.86$, S.D = 2.19), $t = 35.13$, $p = 0.00$. It could be interpreted that samples developed their learning achievement of reading comprehension after learning with the 12PBL learning management plan.

3.2 Student Satisfaction with the 12PBL Learning Management

Table 4. Student Satisfaction with the 12PBL learning management

Statements	\bar{x}	S.D
1. The class environment was learnable.	4.41	0.50
2. The class environment made students more enthusiastic about learning.	4.45	0.50
3. Students were allowed to participate in learning activities.	5.00	0.00
4. The teacher encouraged students to share opinions.	4.45	0.51
5. The teacher's teaching processes were well-prepared.	4.50	0.51
6. Learning media was interesting.	4.50	0.51
7. Learning media was beneficial to students learning.	4.41	0.50
8. The class content was appropriate.	4.50	0.51
9. Learning media was sufficient.	5.00	0.00
10. The learning management suited class contents.	4.50	0.51
11. The learning management was diverse and interesting.	4.64	0.49
12. The learning management supported students' self-learning.	4.09	0.68
13. Students were satisfied with collaborative learning.	4.45	0.51
14. Students comprehended class contents.	4.50	0.51
15. Knowledge gained in the class can be applied in other situations.	4.59	0.50
Average	4.53	0.45

The result of the study indicates a very high level of the sample's overall satisfaction with the 12PBL learning management used in their reading comprehension class ($\bar{x} = 4.53$, S.D = 0.45). In detail, learning management was perceived as an instructional technique that encouraged students' participation in learning and learning collaboration. Moreover, the learning activities and learning media were also reported to make the class more interesting and learnable. Most importantly, the sample perceived the 12PBL as a beneficial teaching method for their learning to read comprehensively. Therefore, it could be interpreted that students were satisfied with the treatment.

4. Discussions

The results of the study indicate the potential of the 12PBL techniques in the reading classroom in terms of both developing students' reading comprehension and satisfaction in learning. The results of the study confirm the benefits of problem-based learning and project-based learning in developing students' reading comprehension as found in the

previous studies (*e.g.*, Berenji et al., 2020; Friska, 2018; Kavlu, 2015; Lin, 2017; Shiraz & Larsari, 2014; Syahfutra & Niah, 2019). The study also provides one of the first empirical pieces of evidence to support the 12PBL technique as an effective integrated instructional method of the two principles.

To discuss the effectiveness of the technique, the samples were encouraged to use real-world problems to create a project that could solve their learning problems by the processes of learning in the 12PBL learning management. Collaborative learning activities and teachers' support also played a great part in the current study as they allowed learners to actively develop their skills. According to Chomeya (2020), the technique employs the principles of problem-based learning and project-based learning and introduces teaching psychological aspects to guide teachers in teaching a subject. It aims to let teachers design teaching processes for the sake of students' learning. The results of the current study confirm the benefits of 12 elements of teaching design in a language classroom.

It was also able to note that the samples were satisfied with the 12PBL learning management. Throughout the learning process, Students had the chance to actively learn with the problem-driving instruction. As a result, the level of participation and class collaboration had an impact on how students perceived the teaching technique. The findings of this study are similar to those of Echiverri et al. (2020), who also discovered the relationship between the two factors in terms of how they support meaningful and learnable learning contexts.

5. Conclusion

The research aimed to assess the effects of the 12PBL on reading comprehension instruction. A learning management plan was developed using the integration of problem-based learning and project-based learning presented in the name of "12PBL" and implemented in a class of Grade 7 students in Thailand. The results of the study show that the 12PBL technique could be considered an alternative solution for fixing reading comprehension problems. Moreover, the instructional technique also brought about satisfactory learning in a language classroom. The results of the study could be implicated in teaching. For example, teachers of reading can apply the 12PBL technique in their classes to improve the quality of their students' reading comprehension. However, it should be noted that the technique is a problem-driven instruction. Therefore, teachers should make sure that the problems raised in class are related to their students' related problems in real life. In addition, as the result provide a piece of empirical evidence to support the integration of problem-based learning and project-based learning, further studies could either use the 12PBL technique as a treatment or develop a new technique using the combination of the principles. It should be noted that reading comprehension is a goal of reading, and any techniques that could develop students' skills are preferable.

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