The Effects of Project-based Learning on Critical Reading and 21st Century Skills in an EFL Classroom

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Received: *April 15, 2020*
Revised: *September 4, 2020*
Accepted: *September 29, 2020*

Abstract

This research study was designed to study the effects of project-based learning (PBL) in an EFL classroom. The objectives were to investigate the effects of PBL on students' critical reading skills and its relation to 21st century skills. It also aimed at studying students' attitudes toward participating in PBL. The participants were 50 fourth-year students majoring in English at Srinakharinwirot University in Thailand They were divided into two groups: an experimental group and a control group. The experimental group was taught using PBL while the control group was taught using the traditional method. The instruments in this study included tasks, a critical reading skill test, questionnaires, group reports, and an interview. Mean scores, standard deviations, and the t-test analysis were used to analyze the quantitative data while content analysis was used to analyze the qualitative data. The results revealed that the critical reading skills of students in the experimental group were significantly higher than that of the control group at 0.5 level. In addition, on average students had highly positive attitudes toward PBL. The results also showed that PBL benefited students' 21st century skills including collaboration skills, IT skills, communication skills, and self-esteem. This study pointed out the effectiveness of PBL in developing EFL students' critical reading and 21st century skills.

Keywords: Project-based learning, Critical reading skills, Reading, 21st century skills, Attitudes

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Introduction

While technology advances make information more available and much easier to acquire than ever, they also place considerable pressure on users regarding the selection, analysis and evaluation of information. Friedman (2007) argues that since 2000 many technological factors came together, creating a newfound power for individuals to collaborate and compete globally through a "flat-world platform" (p. 10). In this flat world, everyone is easily accessible to information and to everyone else by the personal computer, fiber-optic cable, and the rise of workflow software. Readers easily fall into the trap of information overload (the term is coined by Toffler in 1970), which results in less productive performance. People frequently need to deal with complicated public and political issues, make decisions, and solve problems. In order to do this efficiently and effectively, they need to be able to evaluate critically what they see, hear, and read and to detect misleading claims, recognize the best values, and avoid spending their money foolishly. In short, we are living in time of advanced technology and the widespread expansion of information and need to be a critical reader to uncover bias, prejudice, faulty reasoning, misinformation, and illogical conclusions presented in texts.

In the information age, education cannot be just an effort to cover content and pass exams, but it must support each student develop the knowledge and skills in the period of rapid changes. The majority of researchers (such as Epstein and Kernberger, 2006; Miri, David and Uri, 2007; Taglieber, 2008; Vallis, 2010) claim that critical literacy should additionally be taught in the school curriculum in order to prepare students to be critical readers, thinkers, decision makers.

These skills are also acknowledged in Thailand. Education policy requires that Thai students be able to reason, criticize, know how to solve problems, and apply these skills in their real life situations (The Office of the National Education Center., 1996). Additionally, it is indicated in the objectives and policy guidelines for implementation in the National Scheme of Education that all Thais will have critical thinking ability and master the processes of thinking, analysis and problem-solving. More importantly, ASEAN (The Association of Southeast Asian Nations) community officially launched in 2015, and all ASEAN countries are focusing on human development. In this way, learning, should take place in a real situation where students learn from experience and do work that support their physical, mental, emotional, and intellectual development (Wasi, 2000).

However, research studies revealed that most Thai lecturers still employ traditional ways of teaching which do not support learners' critical thinking and problem-solving development. It is widely agreed among Thai scholars that the teaching methods used in schools do not promote students' curiosity. (Tripatara, 2000; Ponsarum & Thephasdin Na Ayuthaya, 2001; Wiratchai, 2002). Additionally, these traditional ways emphasize memorization and fail to support Thai students to think critically and creatively (The Office of the National Education Commission, 2000). The important point to note is that the skills which students learn in class cannot be applied to real life.

In the information age, critical reading and 21st century skills are considered one of the most important skills that university students need to acquire. These skills have gained increasing importance (Rotherham and Willingham, 2009; Chu, Reynolds, Notari, Tavares, Lee, 2016). The explosion of information and rapidly changing society add an additional challenge to students. To deal with this challenge, teachers need to employ an appropriate teaching and learning method that encourages students to use content in real world settings. Students should have the opportunity to practice applying the knowledge to new contexts, using it to solve problems, or using it as a platform to develop creativity.

Many scholars claim that to accomplish the above goal, project-based learning (PBL) can be a good alternative for instructors. PBL is a student-centered approach that engages students in exploring important and meaningful questions through a series of investigations and collaborations (Krajcik, Czerniak & Berger 1999). This study focuses on identifying imaginative and intellectually sound ways of teaching critical reading which challenge the traditional conceptions that teaching and learning must take place in a classroom with the teacher as the authority. It proposes to investigate the effects of PBL in an English foreign language (EFL) classroom. The aims were: 1) To study the effects of PBL on EFL students' critical reading skills, 2) To study EFL students' opinions about participating in PBL, and 3) To study the effects of PBL on EFL students' 21st century skills improvement.

Literature Review: The concept of project-based learning (PBL)

The project method originates from Pragmatism, the philosophical movement which appeared in the middle of the 19th century and promotes action and practical application of knowledge in everyday life (Frey, 1996, 31). The roots of PBL can be found in experiential education of the American educational reformer John Dewey

at the turn of 19th and 20th century in the USA. He is considered an ideological father of PBL. Dewey perceived a child as a complex human being and pursued students felt the inner urge for learning along with their realization of reasons for studying. Coufalová (2006) enforced the motto "learning by doing" and laid the theoretical foundations of PBL; nonetheless, the founder of PBL method is considered his fellow worker American pedagogue William Heard Kilpatrick who emphasized students' interest and proposed instructors to put content into project works in which encouraged learners´ responsibility of their own learning.

PBL has been defined differently by various authors. It is "an instructional approach that contextualizes learning by presenting learners with problems to solve or products to develop" (Moss & Van Duzer, 2005, p. 2). PBL is "a natural extension of what is already taking place in class" (Stoller, 2013:109). According to Markham, Larmer, and Ravitz (2003), PBL is defined as "a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed projects and tasks (p.4)." Buck Institute for Education (2003) defines PBL as a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks.

Much literature reports the benefits of PBL. According to Klein et al. (2009), PBL helps increase students' engagement for several reasons. First, students thrive when they have the opportunity to become experts called "exportable knowledge." Students working on their own projects tend to learn about the subject more than they are confined to their final products. They translate the information they discover to real knowledge and then share with others. Second, projects usually provide students chances for authentic investigations and presentations. They realize the real reason to learn something and to present their learning. Students identify real problems to pursue, and they investigate them through real-world sources of information such as internet sites, journal articles, and interview. Doing research, they also find connections with their own interests. Third, learning is social. Through PBL, students work and learn collaboratively. They are highly motivated when they have frequent opportunities to talk over ideas with their peers. Lastly, projects enable students to be active learners. They take charge, question, decide, analyze, think critically, create, and present.

In addition, PBL facilitates students in their content learning. The element of choice is the key for students' success. Differentiation allows students to develop their own interests and pursue deeper learning (Bell 2010). PBL allows students to learn at their own levels, using resources appropriate for their reading levels and interest. Students also will read more challenging materials to pursue the information they seek. Moreover, learning becomes fruitful for students because they employ their abilities to plan, manage, and accomplish projects using their content knowledge and language skills (Kloppenborg & Baucus, 2004).

PBL also supports students' creativity. Taddei (2013) states that creativity in these days is essential. He argues that the goal of education should be to encourage students to be creative. He emphasizes that schools should develop creative programs in which students can work on projects. Svobodová, Lacko, and Cingl (2010) claim that PBL supports the development of creative thinking because with the help of teachers, students take more responsibility for their project development and decide how they reach the set goal.

According to Bell (2010), PBL promotes social learning. When students work collaboratively, there is an expectation that each will contribute to the project equally. The group dynamic creates an interdependent team in which each student must do their parts. If they are not responsible for their part, others may no longer want to be paired with them. In addition, as students work on these projects, they must brainstorm ideas and act as good listeners to their group members.

Many theorists suggest how to employ this method of teaching. According to Bell (2010), there are several phases within PBL. Each phase must be completed in a timely manner. Thorough and careful planning is essential to the flow of the project and the success of the student. In the beginning, children use organizers to isolate an inquiry question. They then brainstorm their procedure and identify the materials needed for their project. Next, students select a way to present what they have learned in the form of a project. The target audience students can share their project include their peers, the principal, and their parents. The audience must be authentic and appropriate.

According to Svobodová, Lacko, and Cingl (2010) project management and PBL are based on the same principles; in fact, project management is a long-standing approach towards realization of extensive and complex tasks. In other words, there is no difference between working on projects at school and any other (business) organization. They also proposed that PBL should be divided into four major phases

including: preparation phase, realization phase, presentation phase, and evaluation phase.

In preparation phase, the main thing teachers should bear in mind is to help students to create authentic, engaging and relevant projects and to guide them through the sequence of preparation steps. The preparation covers: 1) Selecting the purpose 2) Determination of the educational aims 3) Selecting the final product 4) Creating a general structure, timeline and regular check-ins 5) Forming teams and 6) Producing the final written framework. The realization phase covers stages of launching project work; planning and realizing concrete activities along with project finishing. It consists of: 1) Information gathering cycle and 2) Information processing cycle. In presentation phase, students present the final outcome on the bases of initial decisions and standards. Stoller (2013) describes this stage as information reporting cycle, where teachers create language activities helping students successfully present the final project outcomes. Those practicing tasks usually involve teaching of paraphrasing, presentation skills, depending on the manner in which students are going to present their work. For evaluation phase, PBL assessment does not concern only the final product; students should be assessed throughout the process of PBL. The samples of the assessment in PBL include self-assessment, peer assessment, teacher or outside expert/audience assessment (Patton, 2012).

There are increasing studies on PBL. Some studies have appeared on incorporating PBL in teacher education programs. For example, Frank and Barzilai (2004) implemented PBL in a course for science and technology pre-service teachers to prepare these future teachers to teach using PBL by doing PBL. They found several benefits to student learning, including knowledge acquisition and an increase in motivation and responsibility. The authors also emphasized the importance of incorporating formative assessments throughout the PBL process. Papastergiou (2005) also found that PBL increased pre-service teachers' engagement and motivation in a course on educational website design. Wilhelm, Sherrod, and Walters (2008) found that the mathematics understanding of pre-service teachers improved significantly after completing a science project which required them to apply particular mathematical concepts. Other studies were found in teaching math and engineering. Specifically, high school-level research examined marine engineering and physical science (Verma, et al., 2011), as well as content knowledge and interest in STEM subjects (Lou, Shih, Diez, & Tseng, 2011). These research studies found that

students had higher levels of engagement and interest in their subjects. A study conducted by Panasan and Nuangchalerm (2010) found that PBL was effective in fifth grade students' science learning achievement.

In conclusion, many research studies reveal that PBL facilitated classroom engagement and content learning. However, studies on implementing PBL in EFL classrooms are limited, especially in literature field. Therefore, the researcher proposed to study the impact of PBL in an EFL classroom.

Methodology

1. Research Design

The present study relies on a method triangulation which means combining research methods to give a range of perspectives. According to Burns (1997), to ensure internal validity in the research design, several methods of data collection should be used for triangulation purposes. Thus, this study combined quantitative and qualitative data collection. The quantitative data comprised students' pretest and posttest scores from critical reading test and scores obtained from questionnaires. To ensure the conclusions drawn from the quantitative data were reasonable, the qualitative research techniques of a semi-structured interview and group reports were employed to investigate the PBL experience and 21st century skills improvement of EFL students. The data from the interview and group reports were triangulated each other to provide a confluence of evidence that breeds credibility. Group reports could lead to deeper understandings than interviews alone and enable the researcher to see things that participants were not aware of or unwilling to discuss.

2. Participants

The participants were 50 fourth-year students majoring in English at Srinakharinwirot University in Thailand. They enrolled in Children's Literature course in 2018 academic year. They were selected via convenient sampling. They were randomly divided into 2 groups: the experimental group (25 students) and the control group (25 students).

3. Instruments

The instruments in this study included tasks, a critical reading skill test, questionnaires, group reports, and a semi-structure interview.

In the aspect of tasks, students in the experimental group were assigned to do 4 projects (three small projects and one final project). Namely, these tasks were: creating your own myth, writing a new ending to a fairy tale, designing a book

cover, and a trip to Sing Buri: teaching vocabulary through one of children's literary text of your choice (final project). Drawing on Svobodová, Lacko, and Cingl (2010), the following four stages were followed. In the preparation stage, the instructor prepared the guidelines for students such as project examples, available resources and created assessment criteria for presentation. Then the objectives and procedures of the final project were explained to the students. They were given the project guidelines, examples, and timeline to monitor their own progress. The list of resources and examples provided students with the trusting and supporting learning environment which helped to build up their critical thinking skill, a category of 21st century skills. At this stage, they realized that this project will comprise 20% of the total scores for the course. Working in groups, students discussed group interests and proposed the topic to the instructor. Then they divided their responsibilities, and planned their project. Listening to different points of view, working with a variety of people with each contributing to the whole facilitated 21st century skills. In the second stage, students gathered the information. This stage helped to strengthen critical thinking in general and critical reading in particular. That is, they practiced analyzing the data source, understanding the authors' purposes, distinguishing facts from opinions, reasoning, and forming judgments. For the final project, students discussed their project progress with the instructor at least once a week. During the second and the third stages, there are several opportunities of meaningful discussions created between the instructor and students as well as among students themselves, either inside or outside classroom. Students learned to consider viewpoints from different perspectives, challenge assumptions, and evaluate different points. This enhanced critical reading skills, namely reasoning, and forming judgments, and and 21st century skills, problem solving. In the next stage, students prepared to present their projects to the public. Specifically, for the small projects, they presented them to the classmates and for the final one, they taught vocabulary through children's literature that they chose. In term of the final project, students were free to choose their own texts of their interests provided that the texts are authentic and stimulating. Each group was also asked to submit a descriptive group report to the instructor: describing their project, the contribution of each member, and their difficulties. In this stage, they were required to use technology to assist their presentation. In the last stage, students were evaluated on three criteria: content of the presentation, language, and creativity. A rubric for the students' projects were created to evaluate the final presentation.

To measure students' critical reading skills, a critical reading test was developed for pretest and posttest to compare the critical reading skills of students in the experimental group to that of the control group before and after the experiment. The test was designed to test four main elements of critical reading skills: distinguishing facts from opinions, making inferences, drawing conclusions, recognizing an author's purpose, reasoning, and forming judgments. It was divided into two parts: multiple choices questions, and open-ended questions. The multiple choices part consisted of 20 questions (20 scores).The open-ended questions part included 2 questions (10 scores).

Questionnaires were prepared for students in the experimental group. They comprised 15 five-point Likert items. In addition, an open-ended question was provided for the students' criticism, opinions, and suggestions about PBL. A semi-structured interview was used to investigate the effects of PBL on 21st century skills, and allowed the researcher to obtain more information, apart from a written list of guided questions. The interviews were conducted in the students' native language (Thai) to avoid a language barrier in conveying a message. Group reports were also assigned to students in the experimental group during the time period of the task implementation and the final project presentation. The aim of group report writing was to investigate students' attitudes toward integrating PBL in classroom and to assure the accurate results from the questionnaires.

Three specialists were asked to review all instruments, determining validity and commenting on the language use. To determine the reliability, all instruments were tried out, and the data were analyzed using the reliability coefficient Cronbach's alpha. The reliability of the critical reading skill test and the questionnaires was 0.73 and 0.769 respectively. Since Cronbach's alpha value was higher than 0.7, the research instruments were strong enough to employ.

4. Data Collection

This study lasted 10 weeks. In the second week of the second semester in 2018 academic year, the participants in both groups were asked to complete the pretest. Then they were taught by the different methods for eight weeks. Students in the experimental group were taught using PBL while students in the control group were taught using the traditional method in which the contents and materials for teaching were the same as the experimental group. After the instruction, students in both groups were asked to do the posttest. Then students in the experimental group completed questionnaires, and the interview was conducted after students'

completing the questionnaires.

5. Data Analysis

The data from the pretest and posttest were analyzed by comparison of mean scores, standard deviations, and the t-test analysis. The data from the questionnaires were scored as follows: for the positive statements, Strongly Agree =5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1; for the negative statements, to measure the level of students' attitudes in the same way as the positive statements, the scores were reversed, Strongly Agree =1, Agree = 2, Neutral = 3, Disagree = 4, Strongly Disagree = 5. The data from the interview and group reports was analyzed by content analysis.

Results

1. The Critical reading skills

Table 1 Comparison of the critical reading skills before and after the experiment

Group		N	M	SD	t		
					Pre-Pre	Pre-Post	Post-Post
Experimental	Pretest	25	12.971	2.69	1.321	9.678*	4.193*
	Posttest	25	18.571	3.914			
Control	Pretest	25	11.629	2.571		6.565*	
	Posttest	25	15.914	4.264			

* ($p<0.05$)

Table 1 revealed that before the experiment, there was no significantly difference ($t = 1.321$, $p<0.05$) in the mean score of students in the experimental group ($M = 12.971$) and that of the control group ($M = 11.629$). It can be interpreted that students in both groups had critical reading skills in the same level. After the experiment, it was found that both teaching methods were effective in developing students' critical reading skills. That is, posttest mean scores of students in both groups were significantly different from pretest mean scores at 0.05 level ($t = 9.678$, $p <0.05$ and $t =6.565$, $p <0.05$). Before the experiment, the mean score of the students in the experimental group was 12.971, and that of the posttest was 18.571. This means that the posttest mean score of the students in the experimental group was significantly higher than the posttest mean score of the control group. Similarly, for the control group, the pretest mean score was 11.629, and the posttest mean

score was 15.914. This means that the posttest mean score was significantly higher than the pre-test mean score.

Table 1 also reveals the effectiveness of PBL in increasing critical reading skills. Specifically, the posttest mean score of students in the experimental group was found to be significantly different ($t = 4.193$, $p < 0.05$) from that of the control group at 0.05 level. The mean score of the students in the experimental group was 18.571, and that of the control group was 15.914. This can be concluded that the critical reading skills of the students in the experimental group were significantly higher than those of the control group.

2. Students' attitudes towards using PBL in the classroom

Table 2 Attitudes towards participating in PBL of students in the experimental group.

Group		N	M	SD	Level
1.	Participating in PBL helps me think and read more critically.	25	4.51	.56	Highly Positive
2.	Participating in PBL wastes my time. *	25	4.20	.75	Highly Positive
3.	Participating in PBL helps me learn English.	25	3.91	.95	Positive
4.	Participating in PBL hinders my learning. *	25	4.4	.60	Highly Positive
5.	Participating in PBL broadens my knowledge of life.	25	4.40	.74	Highly Positive
6.	I feel that participating in PBL is boring. *	25	4.23	.73	Highly Positive
7.	I am more motivated when I participate in PBL.	25	4.29	.71	Highly Positive
8.	Participating in PBL is a burdensome experience. *	25	3.74	.65	Positive
9.	I am stressed when I participate in PBL. *	25	4.34	.59	Highly Positive
10.	Participating in PBL makes me proud of myself as being a helpful participant.	25	3.77	.80	Positive
11.	Participating in PBL, I can communicate my ideas clearly.	25	3.97	.61	Positive

Group		N	M	SD	Level
12.	I would rather take a test than complete a test project or make a presentation in English class. *	25	4.26	.88	Highly Positive
13.	Participating in PBL, I can cope with my problems and information.	25	3.94	.76	Positive
14.	Participating in PBL expands my idea and helps me think critically.	25	4.37	.76	Highly Positive
15.	If I am a teacher, I will not employ this teaching method. *	25	4.34	.94	Highly Positive
Average		**25**	**4.2**	**.38**	**Highly Positive**

* Negative statements

Table 2 showed that on the average, students had highly positive attitudes towards PBL (M=4.19). The statements of the highest agreement were: 1) “Working in a small group with PBL helps me think and read more critically” (M=4.51), 2) “Working in a small group with PBL hinders my learning” (M=4.40), 2) “Working in my project works broaden my knowledge of life.” (M=4.40). It is worth to note that even the statement which received the least agreement were at the positive level

In the open-ended questions, it was found that most students liked PBL because learning did not only take place within a classroom, but also in a more conducive and engaging environment. They were better able to see the application of their learning and less likely to view English class as an isolated subject. Many students commented that they enjoyed the new context and liked the applied context of Children’s Literature course. However, there were some students (16%) who had a difficult time with the final project because they were not accustomed to the newfound freedom that was offered to them.

3. students’ 21st century skills

. After having scrutinized responses in the content analysis process, it was found that what students gained through PBL came under four categories: collaboration skills, IT skills, and communication skills. All students agreed that PBL facilitated collaboration skill. They responded that they had to work in teams to

solve problems and complete the tasks. They also learned to manage conflicts within their group by listening to other members and negotiating ideas together as a team. In all group report, it was shown that they had conflicts at the beginning, but they learned to solve the problem by reasoning. One student said, "At first we could not decide which texts we should choose; each member had her own favorite text and we argued. We decided to talk to the instructor and discussed about it again. At last we could solve the problem." All students accepted that a good team-work contributed to a successful outcome of the project. Almost three quarters or 72% of the students learned to delegate responsibilities to their group members. For example, one student responded, "It was the responsibility of each student to participate fully, not only to do his or her own part, but also to aid others. When we planned our project, we divided our responsibility. When we went to teach our text to pupils in Sing Buri, we had to help each other to make the pupils understand our text." Some of the students even stated that they liked working in teams now, contrasting to how they felt before they participated in PBL.

Another benefit of PBL in this study was IT skills. It was found that all students responded that participating in project works, they learned IT skills. Students had to navigate the Internet judiciously to search for information. For example, one group wrote, "We tried to find techniques to teach our text. It was amazing that we found a lot of interesting information, and we had to decide which one was suitable for the age of the pupils there." Results also indicated that almost two-thirds or 64% of the respondents learned to use various application to display their project. For example, one student responded, "I learned from my member how to create a story board."

Results also showed that students learned communication skills while participating in PBL. Almost all students said that they learned to listen and speak appropriately to other members in the group while two respondents (8%) did not. For example, one student said, "At the beginning, I was mad when they did not do as I suggested. Later, I started to listen to other members' opinions. Then I talked to them appropriately and explained them my reasons. Finally, they agreed with me." In their report, it was found that every group had conflicts and argued, but three groups (out of four) could solve their conflicts by listening to other members and explaining their reasons. In the presentation stage where they had to present their projects to pupils in Sing Buri, all students recognized that communication skills were the key to their success. For example, one group

reported, “At first, the pupils of the first group did not understand our activity, so we had to explain them clearly, and we learned how to explain step by step.”

It is remarkable that all students agree that PBL not only improved their 21st century skills but also contributed to their self-esteem development. According to Minev et al (2018, p. 114), self-esteem refers to individual's perception or subjective appraisal of one's own self-worth, one's feelings of self-respect and self-confidence and the extent to which the individual holds positive or negative views about self. An optimum level of self-esteem has been associated with achievement (Minev et al., 2018, p.115). Self-esteem is learned in a social context, and it develops as people appreciate the value of their own efforts as they develop, strive for, and realize personal life goals. In this study, every group report showed that the students’ self-esteem was developed. One group wrote, “We competed with other groups in seeking techniques to present our text. When we succeeded in teaching the pupils, we were very happy.” In the interview, almost students appreciated and acknowledged their positive contributions to the project success. One student said, “I was very happy when I found out that the pupils liked our presentation.” Another student expressed, “I felt great when the members of my group listened to and liked my suggestions.” One student expressed, “When I said, “I had an idea how we could incorporate technology to our project,” and my friend said, “Great idea!” I felt that I was valuable to the group.”

Discussion

The present study showed the effectiveness of PBL in enhancing critical reading skills of EFL students. The explanation is that in implementing PBL, the instructor encouraged students’ active engagement, such as their involvement in activities, inquiry learning, cooperative learning, and collaboration. In addition, as Svobodová, Lacko, and Cingl (2010) claim, students were in the control of their projects and decided how they succeeded, so they developed creative and logical thinking as well as decision making. Like the ideas of Bell (2010), in this study, students taught by PBL constructed their knowledge and built on their background knowledge and could retain more information when they learned by doing. Dewey proposed that learning by doing has a great impact on students’ learning. High-quality experiences, as well as continuity of experiences, are paramount (Dewey, 1997). Through projects, students mastered their content in meaningful experience, and this is in line with Dewey’s philosophies, to which many educators have ascribed.

In addition, students in the experimental group favored PBL. The reason is that experiences through PBL helped them use children's literature in a meaningful situation. As shown in the open-ended questionnaires, students commented that they liked PBL because they were motivated and engaged in classroom tasks which connected them to real life experience, and felt that the lessons studied was useful to them. The use of PBL enabled students to learn literature and appreciate the importance of literature in real life. The results are in line with many previous studies such as the studies of Verma, Dickerson, and McKinney (2011), Lou, Shih, Diez, and Tseng, (2011), and Papastergiou (2005) which found that students favored PBL and had higher levels of engagement and interest in the classrooms. Although students had highly positive attitudes toward PBL, some students felt concerned with their tasks. This is in line with the idea of Bell (2010: 42) who commented PBL demands from students a heightened level of self-confidence, motivation, and ability to organize their own work plans.

Notably, it revealed that PBL facilitated students' 21st century skills including collaboration skills, and IT skills. According to Bell (2010), PBL promotes social learning. In this study, students worked collaboratively and created interdependent teams in which they each had to do their part. As a result, as shown in the result of group reports and interview, they learned the fundamental skills of productive communication, respect for others, and teamwork. In the final project, each group had to present their projects in Sing Buri, so they had to do research for information and design their presentation. Therefore, their IT skills were improved. Collaboration and IT skills are the essential skills for the 21st century. By implementing PBL, instructors are preparing students a necessary skill they can use (Bell, 2010). Last but not least, PBL also boosted students' self-esteem. The climate of a classroom is important for appropriate self- esteem to grow in relation to learning. In this study, as shown in the interview results, students developed self-esteem in a climate when instructor and other group members appreciated and acknowledged their positive contributions. In addition, the final project was to teach English vocabulary in the rural area of Sing Buri. The students felt that they contributed to the society, so they felt they were worthy, and their self-esteem was increased as evidenced in the interview that all students said they were happy. Self-esteem is important because an individual who has high self-esteem has an easier time handling conflicts, resisting negative pressures, and making friends (Minev et al., 2018).

Suggestions

The findings of the present study may encourage more educators to consider the adoption of PBL to design and deliver their courses, due to the potential benefits that may be achieved in terms of students' satisfaction and enhancing content learning. The researcher suggests the following ways in which future research might build upon and strengthen the findings. Other qualitative research methods, such as an observation, could be used to complement the picture gained through quantitative methodology. This study involved only students in tertiary level. It might be a good idea to investigate the impact of PBL on students at different levels or in different subjects. Due to the rapid advance in technology, it might be interesting to compare the effect of PBL to online PBL.

References

Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. **The Clearing House,** 83: 39–43. doi: 10.1080/00098650903505415.

Buck Institute for Education. (2003). **What is PBL?.** Retrieved 24 May 2018 from https://www.bie.org/about/what_pbl

Burns, R. (1997). **Introduction to research methods** (3rd ed.). Melbourne: Addison Wesley Longman.

Chu, S., Reynolds, R., Notari, M., Tavares, N., Lee, C. (2016). 21st century skills development through inquiry-based learning. Singapore: Springer.

Coufalová, J. (2006). **Projektové vyučování.** Praha: Nakladatelství Fortuna.

Dewey, J. (1997). **Experience and education.** New York: Touchstone.

Epstein, R. L & Kernberger, C. (2006). **Critical Thinking. Belmont,** CA: Thomson-Wadsworth.

Eskrootchi, R., & Oskrochi, G. (2010). A study of the efficacy of project-based learning integrated with computer-based simulation - STELLA. **Educational Technology & Society,** 13(1), 236–245.

Frank, M., & Barzilai, A. (2004). Integrating alternative assessment in a project-based Learning course for pre-service science and technology teachers. **Assessment and Evaluation in Higher Education,** 29(1), 41-61.

Frey, K. (1996). **Die project methode.** Weinheim: Beltz.

Friedman, T. (2007). **The world is flat 3.0: A brief history of the twenty-first century.** New York: Picador.

Kloppenborg, T. J., & Baucus, M. S. (2004). Project management in local nonprofit organizations: Engaging students in problem-based learning. **Journal of Management Education,** 28, 610-630.

Klein, J. I.,Taveras, S, King, S. H., Commitante, A, Curtis-Bey, L, & Stripling, B. (2009). **Project based learning: Inspiring middle school students to engage in deep and active learning.** New York: NYC Department of Education.

Krajcik, J., Czerniak, C., & Berger, C. (1999). **Teaching children science: A project-based approach.** Boston: McGraw-Hill College.

Lou, S., Shih, R., Diez, C., & Tseng, K. (2011). The impact of problem-based learning strategieson STEM knowledge integration and attitudes: An exploratory study among female Taiwanese senior high school students. **International Journal of Technology and Design Education,** 21, 195-215.

Markham, T., Larmer, J., & Ravitz, J. (2003). **Project-based learning handbook: A guide to standards focused project-based learning for middle and high school teachers.** Novato, CA: Buck Institute for Education.

Minev, M, Petrova, B, Mineva, K, Petkova, M, & Strebkova, R (2018). Self-esteem in adolescents. **Trakia Journal of Sciences,** 2, 114-118.

Miri, B., David, B.-C., & Uri, Z. (2007). Purposely teaching for the promotion of higher-order thinking skills: A case of critical thinking. **Research in Science Education,** 37(4), 353-369.

Moss, D. & Van Duzer, C. (2005). **Project-based learning for adult English language learners.** Retrieved 29 July, 2018 from http://www.cal.org/caela/esl_resources/digests/ProjBase.html

The Office of the National Education Center. (1996). **The national education policy 1997-2001** (No.8). Bangkok, Thailand.: Atthapornkarnpim.

The Office of the National Education Commission. (2000). **Learning reform: A learner-centred approach.** Bangkok: Watana Painit Printing& Publishing.

Panasan, M., & Nuangchalerm, P. (2010). Learning outcomes of project-based learning activities. **Journal of Social Sciences,** 6, 252-255. Bangkok: Ministry of Education, Watana Panit Printing & Publishing.

Papastergiou,M. (2005). Students' mental models of the Internet and their didactical exploitation in informatics education. **Education and Information Technology,** 10(4), 341–360.

Patton, A. (2012). **Work that matters: The teacher's guide to project-based learning.** London: Paul Hamlyn Foundation.

Ponsarum, P., & Thephasdin Na Ayuthaya, W. (2001). **Educational reform in tertiary education: Developing learning process in university level.** Paper presented at the Research: The Way to the Success of Educational reform, Faculty of Education, Chulalongkorn University, Thailand.

Rotherham, A., & Willingham, D. (2009). 21st century skills: The challenges ahead. **Educational Leadership,** 67(1), 16–21.

Stoller, F. (2013). **Establishing a theoretical foundation for project-based learning in second and foreign language contexts.** In G. H. Beckett & P. C. Miller (Eds.), Project-based second and foreign language education: Past, present, and future (pp. 19-40). Connecticut, USA: Information Age Publishing Inc.

Svobodová, R., Lacko, B., Cingl, O. (2010). **Projektové řízení a projektové vyučování, aneb, Jakna výukové projekty podle zásad projektového řízení.** Chocen: PM Consulting

Taddei, L. (2013, August 23). **Encouraging creativity and innovation in yourself and your students.** Retrieved from: http://www.facultyfocus.com/articles/facultydevelopment/encouraging-creati vity-and-innovation-in-yourself-and-your-students/

Taglieber, L. K. (2008). Critical reading and critical thinking. **Ilha do Desterro: A Journal of English Language, Literatures in English and Cultural Studies.** 44, 141-163.

Tripatara, A. (2000). Teaching methods that encourage student thinking. **Journal of Learning and Teaching Competency,** 9(1), 10-19.

Vallis, G. (2010). **Reason to write: Applying critical thinking to academic writing.** North Calorina: Kona Publishing and Media Group.

Verma, A., Dickerson, D., & McKinney, S. (2011). Engaging students in STEM careers with project-based learning-Marine Tech Project. **Technology and Engineering Teacher,** 71(1) 25- 31.

Wilhelm, J., Sherrod, S., & Walters, K. (2008). Project-based learning environments: Challenging pre-service teachers to act in the moment. **The Journal of Educational Research,** 101(4), 220-233.

Wasi, P. (2000). **Preambles. In Office of National Education Commission** (ONEC) (Ed.), Learning reform: A learner-centred approach (i). Bangkok, Thailand: Watana Panit Printing & Publishing.

Wiratchai, N. (2002). **Reforming process for learning quality development assurance and assessment.** Bangkok, Thailand: Office of the National Educational Commission (ONEC), Office of the Prime Minister.