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Improve Science Student Teachers' Attitudes toward English for Science Teacher by Using Peer Instruction at Suan Sunandha Rajabhat University, Thailand

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Abstract

The main goal of this study was to investigate science student teachers' attitudes toward English for science teachers taught by using Peer Instruction (PI). This subject is a requirement course for third year undergraduate science student teachers at Suan Sunandha Rajabhat University, Bangkok, Thailand. Thailand joined the ASEAN community, consisting of 10 countries in Southeast Asia; all the science teachers have been encouraged to improve their English skills since then. This was a case of how we could empower our new generation of science teachers. In this research, there were 46 students taking this course in 2015-2016. It was quasi-experimental design. The quantitative and qualitative approaches were used to collect the data. The science student teachers' attitudes questionnaire was used to measure students' attitudes toward English for science teacher before and after they learned through PI class. The researcher conducted focus group interview to ask students' opinion about PI and their English skills improvement. Inferential statistics and content analysis were used to analyze the data. The results indicated that science student teachers' attitude toward English was significantly higher at .05 confident levels after they studied in PI class. Their opinions were mostly positive and they thought that their English skills especially reading skill was improved and PI helped them working better with others.

1. Introduction

The Bangkok Declaration of 8 August 1967 heralded the formation of the Association of Southeast Asian Nations (ASEAN). While today all ten nations of Southeast Asia are members. Even though there is no mention of a working language, the idea of English as the common language came out automatically. Therefore to accomplish in working in ASEAN countries, the empowerment of English learning for Thai student teachers in science is necessary [12]. Research in the field of language education has indicated that "attitude to language is a construct that explains linguistic behavior in particular" [9]. Studies done by Baker (1992), Garder (1985), and Hohenthal (2003) show that learners' attitudes, apart from opinions and beliefs, towards learning strongly affect their learning behaviors and consequently on their performance. In addition, attitude is a convenient and efficient way of explaining consistent patterns in behavior as is often manages to summarize, explain, and predict behavior [2]. According to Mazur (1997), Peer Instruction or PI is a pedagogical approach in which the instructor stops lecture periodically to pose a question to the students. These questions or ConcepTests are primarily multiple-choice, questions in which the answer options represent common student ideas and main concepts [7]. Peer instruction is considered as one of the primarily cooperative and interactive engagement teaching techniques. Now it has been busing in many universities across the countries [3, 10]. Following all these reasons, this study aimed at improving the attitudes towards English language learning for science student teachers who were studying at Suan Snandha Rajabhat University, Bangkok, Thailand in the second semester of 2015 and first semester of 2016. In order to achieve the objectives above, two research questions were formed as follows:

1. Is there any difference in science student teachers attitudes before and after learning through PI at SSRU, Thailand?
2. What are science student teachers' opinions about using PI in English for Science Teacher class at SSRU, Thailand?

2. Literature Review

Many studies on language attitudes have revealed that there is a strong relationship between attitude and achievement [7, 16, 17]. Researchers such as Fakeye (2010), Reid (2003), and Visser (2008) claim that attitude is a vital factor that influence language performance [4, 13, 18]. In addition, Padwick (2010) as cited by Abidin (2012) states that apart the intellectual perspective, the nature of language learning depends on the learners' motivation and attitude to learn the target language [1]. From the

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literature review, it is apparent that there is strong relationship between attitudes and academic success.

For the process of using PI in class commonly consists of the following components [3, 8, 11].

1. before class.

Students are assigned to complete preparatory work or so called just in time teaching. The goal is to have students learn some of the more basic items, concepts, or definitions before class, so that they do not have to be presented in class, thus creating time for student engagement more.

2. during class

Students engage with questions designed to help them confront and also explore challenging concepts. Often these questions are posed as multiple-choice and students will gain credit for answering these questions with a clicker. The steps should be:

A. Pose a question, students answer individually.

B. Small group discussion where students discuss their thinking and share their analyses with each other.

C. Students all answer a second time, perhaps changing their answer based on group discussion.

D. Class-wide discussion facilitated by the instructor is preferably led by first asking students to share the explanations and discussions they had in their group.

3. after class

The instructor provides clarification of how the question can be analyzed. The correct answer is clearly indicated.

3. Methodology

3.1 Participants

Participants in this study, who were selected by convenient method, were 46 3rd year science student teachers at Suan Sunandha Rajabhat University, Bangkok, Thailand. There were 9 males and 37 females taking English for Science Teacher I and II as required elective courses in second semester of 2015 and first semester of 2016.

3.2 Instrument

This study employed an attitude questionnaire with 47 items to collect the data. The questionnaire was adapted from attitude/motivation test battery as a Likert-Type Scale based on the model of Gardner's [5]. The questionnaire was piloted on 30 students chosen from outside the sample of the study. Cranach's Alpha coefficient was calculated to measure the reliability of the instrument. In order to validate the questionnaire, the researcher had a panel of three experts to check the correspondent of the items and students' opinions.

3.3 Research process

The design was quasi-experimental design for collecting quantitative data. It was one group pre-test and post-test by using a questionnaire to investigate students' attitudes. The focus group interview was used to collect the qualitative data by asking students' opinions about PI after they had learned through the class.

3.4 Data analysis

In data analysis IBM SPSS Statistics version 20.0 was used to analyze quantitative data, students' attitude scores. The paired-sample t-test was used to compare students' attitudes scores. Students' opinions about PI were analyzed by using content analysis.

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4. Results

The findings of the research according to two research questions are shown in table 1 and 2.

Table 1. The comparison of science student teachers' attitude scores

Test	N	Mean	Standard Deviation	t	P
pre-test	46	3.06	0.70	14.78	.00*
post-test	46	4.41	0.40		

P*< .05

According to this result, science student teachers' attitude toward English before learning in PI class had mean score of 3.06 and standard deviation 0.70 while after learning in PI their mean score was higher, 4.41 and standard deviation 0.40. Therefore, it indicated that there was a significant difference between pre-test and post-test scores of their attitudes at .05 confident levels.

Table 2. Students' opinions about PI and English skills improvement

Question	Opinions
Q1: Students' anxiety in English and how can PI help?	*The majority of students stated that they were shy to participate in English class. About 5% of students indicated that they felt nervous while speaking English. All of them agreed that PI helped them to feel more confident to speak English and less shy.*
Q2: Students' desire to learn English and to learn in PI class	*-All students stated that they wanted to learn English as much as they could. They strongly agreed that if they could speak English very well, they could have more opportunity to work outside the country as a science teacher.* *-Approximately 90% of them thought that PI was very useful for them to learn in English class and they wanted to apply this pedagogy to their own class in the future.*

5. Discussion and Conclusion

The findings of this study presented that although the participants perceived pre-test on their attitudes scores as fair, they perceived their scores very high for the post-test. The participants were generally found that use PI pedagogy in their English class was very helpful to improve their attitude toward English for a science teacher. Their opinions about PI were very positive. The results of this study are similar to the study of Ryan in 2015 on peer instruction had positive effect on undergraduate students' attitude toward their learning after learning through PI online course [14]. Also, its result was shown the similarity to Lasry et al. (2008) reported that in their study peer instruction increased the achievement scores of students both in "knowing" and "knowing less" groups [8]. But this finding was different from the studies of Şekercioğlu (2011) and Tokgöz (2007) that found PI has no significant effect on student attitudes towards physics [15,17]. However, those reasons might be because of the differences in students' grade level and subject of the course. Based on the findings, in the context of English as a required subject, although the participants had high scores on their attitudes after learning in PI class; it is still recommended to create an encouraging atmosphere in English classes to reduce students' anxiety in English learning process. This can be done by adding more activities and teaching methods such as cooperative learning, and using technology.

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