

[DOI: 10.20472/IAC.2017.034.039](https://doi.org/10.20472/IAC.2017.034.039)

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INCREASING STUDENT IMPROVEMENT: GIVING AUTONOMY TO STUDENTS OF INTERNATIONAL COLLEGE AT RAJAMANGALA UNIVERSITY OF TECHNOLOGY KRUNGTHEP IN THAILAND THE COMPLETE PEER TEACHING METHOD TO THEIR PEERS IN C

Abstract:

This research assessed the students' improvement of their learning outcomes toward business subjects, specifically in the class of Production & Operation Management, after having peer teaching method by group with complete autonomy. The before and After period of study was implemented in order to compare the expected improvement between the selected groups of students who are assigned to participate in complete peer teaching activity as a group in front of class. To challenge all levels of students in this project, six to seven students are randomly selected into groups in their 3rd year with different rank of GPAs from highest to lowest at International College of Rajamangala University of Technology Krungthep (ICUTK) in Thailand. They are assigned to read the chapter and prepared the presentation to educate their classes in each chapters by using the peer teaching method. Questionnaires were given to 46 students in order to collect useful data. The results indicated the positiveness toward the introduction and implementation of the peer teaching method and showed many improvements in different areas within the semester.

Keywords:

Peer teaching; Students' improvement; Thailand

JEL Classification: A22

Introduction

Since early 1980s, there have been ongoing researches by teachers, scholars and researchers on how to improve commitment, engagement and interest of the students in universities and higher education. This is supposedly to be the ultimate goal of every teachers to produce the best quality of students. Many come up with the unique methods and strategies of getting students involved directly and indirectly. Meanwhile, others started pointing out that simple thing such as firstly enhancing the self-belief of the students is the key motivator for student's engagement (Fazey & Fazey, 2001). Most university teachers insist on teaching the traditional way which is the students normally listen to the teachers. Rotzien (2005) believes that active learning is better in term of enabling students to engage and think critically than the old traditional method. The different form of short writing assignment, hands-on participation and peer teaching are examples to encourage students for more interactions.

In this decade, the quality of Thai students are considered low based on basic observations compared to the past 10 to 20 years when internet technology and smart phone simply did not exist. Students playing on their phones and talking in class are commonly complained by university teachers across the nation. The traditional teaching method, teachers read, prepare and lecture the classroom may not be suitable method to students beyond the year 2016. Brown et al (1997) state that if teacher wants to change the way of student learning then change the method of teaching and assessment. Dochy & McDowell (1997) conducted a study and added that there can never be one specific ideal method for all cases of students and selected method can always have negative effects on teaching and learning. This research is organized and attempted to select new method to implement in real classroom by testing, assessing and measuring the effectiveness in term of **exam scores** and **satisfaction level of the peer teaching method by group** of the students in their third year at ICUTK.

Literature Review

What other people have done to improve the higher education students?

Kuh et al (2005) have conducted a research in at least 20 leading universities in the United States with the results showing tough assessment tasks did not hinder the student engagement as long as such challenges are associated with detailed and swift feedback. Instead, the tough assessment tasks enhance them which link to the deep learning. Hasan et al (2010) state that the focus on the students' motivation is the most important issue in higher education and implied that it leads to their significant academic performance into professional life after graduation. Meanwhile, Harandi (2015) adds that students in higher education are more attentive in the classrooms and eventually lead to

successful learning process when they use and learn by websites, internets, computers and electronic media. Despite the difficult academic methods which have been experimented on students to make them engaged, the form of reward system such as gift and extra score from the competition in class was proposed by Brown (2007).

Berrett (2012) encourages the flipped classroom for teachers of higher education to make their classes more efficient by taking advantage of modern-day technology. Even when the resources in class are limited, the learning outcome of students are met. Schullery et al (2011) strengthen the idea of whether or not using the flipped classroom and mention that this method works efficiently when reducing the size of the classroom to active learning 24 students rather than over 300 students traditional lecture for business course. However, Ash (2012) argues that flipped classroom contains many possibilities of mistakes as this simple model can be defined as a continuation of a broken teaching method if not getting evaluated and being executed with care. Flipped classroom heavily relies on preparation before the actual class. In case of Thai students, not having enough to read the materials or research the topics before class is the most basic problem which Thai higher education teachers are well aware.

The notion of Peer Teaching

One of the ways to improve student engagement is peer teaching as it is broadly used in different forms of higher education. Hartman (1990) implemented the peer teaching method to help the students engaged and mentioned that learning by teaching enhanced them. In term of cognitive skills, students are associated with monitoring, planning and evaluating other students. Tessier (2004) supported the method encourages the students in talking multiple approaches and different roles in order to explain the class materials to their peers. In addition, Vassay (2010) conducted a research in college on peer teaching methodology and discovered that factors such as sense of responsibilities, self-discipline, self-confidence, time management, obedience and ability to express ideas of the students were all improved. Goodlad & Hirst (1989) strengthen that statement and point out the reciprocal advantage in the peer teaching method between the students who teach the class and the recipients of the class. It may seem that the benefit stay with the selected students who run the class in form of the teacher. However, it might be far more beneficial to the students who were in class as well. Since the fundamental concepts, insight of teaching and discovery of meaningful applications are factors for the success of peer teaching, they will bring out the best from the students. On the other hand, students who are in the class felt non-threatening and supportive when discussing and asking the peer teachers because it is much easier to bond with their peers compared with the teacher.

Choi (2006) found out drawback of peer teaching method from his study and argued that the method of peer teaching is quite more complex than many existing studies when the participants are mostly adults. Majorities of the respondents preferred different type of

method. In higher education, the peer teaching students are heavily relied on the experience of the older and wiser teacher. The crucial parts were also mentioned by his participants that the most important thing are the mutual role and contribution between teacher and students.

Challenge and Objective of the study

As mentioned, scholars, researchers and particularly university teachers have done substantial amount of work to find, test and improve the learning condition of students. It would be fascinating to have an idea of challenging them all if this paper's learning process is different than the traditional way of lecturing and teaching the class of 46 students, where most of them have very low interest in learning and tend to pass the class with minimum efforts. Since most researches on student engagement have been conducted in the Western or developed parts of the world such as US, Australia, UK and New Zealand (Zepke & Leach, 2010), this paper is aimed to challenge those Thai and limited number of foreign students in groups to have full autonomy with the peer teaching method by group during their 3rd year second semester in ICUTK in order to increase students' improvement rather than the traditional method.

Methodology

Group of participants

The 3rd year students at their second semester of Marketing and International Business Management major from ICUTK were chosen as the qualified participants. They are not considered neither too small nor large number for class since the section contained 46 students of Thai and few foreign nationals.

Subject	Year	Number of students
Production & Operation Management	3 rd	46

Method design, Procedure and Group Drawing

Two periods are divided into **Before** & **After** period during the time of classroom teaching experiment. Traditional way of teaching in this class is implemented before the midterm and labelled as **Before**-period. Teacher is responsible to prepare the lesson, make PowerPoint presentation and lecture in class from week 1 to week 7.

After the midterm exam, **After**-period begins with implementation of peer teaching method and starts taking action by transferring the autonomy of class teaching to the group of student each week from week 8 to week 15. They are responsible for preparing lesson, making PowerPoint, lecturing and trying to make the rest of the class understand

the subject materials with the supervision of the teacher. The facilitator or teacher would spend 8 weeks testing and evaluating this new method.

This research specifically focus on the calculations of 2 factors; comparison of the midterm vs final score and the peer teaching method evaluation. In fact, the midterm and final exam were designed with the exact same format of 60 questions (20 Multiple Choices, 20 True or False, Fill in the blank) to be able to accurately compare the data. Meanwhile, the method of evaluation is done by collecting data on the satisfaction of peer teaching at the end of semester.

Since 8 weeks are the exact number for peer teaching, one group is expected to contain 6 to 7 students as the group leader holds highest GPA meaning every group contains one top student, one hard working and the rest of bad students. To make it random and fair, the group is drawn from the pot containing name of students in front class.

It is fundamental to design to set the most advanced student to be the group leader and also the teaching assistant. Furthermore, the key to success is that all member in each group must participate and help. Moreover, the meetings of each group are recommended (Renaud et al., 2007). Eventually, university students become the consumers and producers of knowledge after graduation into their working career. In this testing, group of students has been instructed to create their own PowerPoint presentations or use other technological tools each week to pave the way for their peers in business subjects.

Research Question and Hypotheses

Intentionally, the peer teaching method would be implemented and try to replace the traditional one. Can peer teaching method improve the students better than the traditional way in this class? Therefore, this research proposes the following Hypotheses.

H₀ : Test score and satisfaction level in **After** the peer teaching method is not better than **Before**.

H₁ : Test score and satisfaction level in **After** the peer teaching method is better than **Before**.

Types of data

Saunders et al (2009) define **quantitative data** as the form of numbers, graphs and tables with completely no ideas or words. The one of the measurements of this paper is to compare the difference between test score. Therefore, the data will be collected in numbers and percentages. Diagrams and statistic tables may be implemented in this paper.

At the end of the course, **questionnaires** will be given to the each participant to evaluate the effectiveness and level of students' satisfaction of the method of class in order to find

out the feedbacks and learn the limitation or setback. The advantages of using questionnaires are that this method can reflect the participants cognitive process naturally raise the level of interests and reduce the commitment of the participants (Malhotra, 2005).

Measurement and Data Analysis

Regarding the data collected, the test score are in form of number and percentage. Meanwhile, the data for evaluation of the method is in form of interval scale of 1 to 5, 1 as lowest and 5 as highest. Once the final exam is done and questionnaires are filled, this research would put the raw data in Microsoft Excel for storage purpose. After that, they will be transformed into Statistical Package for Social Science (SPSS) to calculate the quantitative data.

Findings and Results

The results of the questionnaires filled in by 46 students who were attending this class from January to May 2017. This is to openly compare the **Before** and **After** the peer teaching method implementation by randomly selected 6-7 students into group. Only 7 out of 46 students have heard of the peer teaching method before this class, which is considered only 15.21%. This leaves another 84.78% of the respondents with no idea of this teaching method.

Results of the test score (Midterm vs. Final)

In education, the midterm and final scores are widely used to judge the student's performance. The midterm score for the class has an average of 12.38% out of the full score of 20%. After peer teaching method, the final score shows an increase of the average at 13.45%. Full score of 20% for both midterm and final allows the calculation to compare and show slight increase which mean success and positivity for using the peer teaching method.

Table 1: Comparison of the midterm vs final score

One-Sample Statistics						
	N	Mean	Std. Deviation	Std. Error Mean		
Mid vs Final score	46	1.0735	2.39442	.35304		

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Mid vs. Final score	3.041	45	.004	1.07348	.3624	1.7845

The table 1 above shows the SPSS calculation for the midterm score which was tested with the traditional method against the final scores which was tested with peer teaching method. After finding the positivity in the score, statistical calculation is needed. Out of 46 students, the **Before** and **After** result of the Mean and Standard Deviation are 1.0735 and 2.39442 respectively with the t-score of 3.041. In addition, the P-value score is only 0.004. This rejects the hypothesis of this research. It indicated that **After** the peer teaching method is better than **Before** by increasing test score.

Level of Satisfaction for the Peer Teaching Method Implementation (Method Evaluation)

Table 2: Level of Satisfaction on students benefit on peer teaching method

One-Sample Statistics						
	N	Mean	Std. Deviation	Std. Error Mean		
Beneficial	46	.7391	.99855	.14723		

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Beneficial	5.020	45	.000	.73913	.4426	1.0357

After giving out questionnaire to 46 respondents, the first question involved asking them whether or not they feel this peer teaching method is somewhat beneficial to students. The **Before** and **After** result score of Mean and Standard Deviation are 0.7391 and 0.99855 respectively with the t-score of 5.020. In addition, the P-value score is 0.000. This rejects the hypothesis since the value is <0.05 .

Table 3: Level of Satisfaction on peer teaching against traditional method

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Better method	46	.4565	1.10969	.16361

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Better method	2.790	45	.008	.45652	.1270	.7861

The second question involved asking them whether or not this peer teaching method is better than traditional method to students. The **Before** and **After** result score of Mean and Standard Deviation are 0.4565 and 1.10969 respectively with the t-score of 2.790. In addition, the P-value score is 0.008. This rejects the hypothesis since the value is <0.05 .

Table 4: Level of Satisfaction on peer teaching against traditional method

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Enough knowledge to teach	46	.4565	1.08948	.16063

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Enough knowledge to teach	2.842	45	.007	.45652	.1330	.7801

The third question involved asking them whether or not this group of students have enough knowledge to teach and use this peer teaching method. The **Before** and **After** result score of Mean and Standard Deviation are 0.4565 and 1.08948 respectively with the t-score of 2.842. In addition, the P-value score is 0.007. This rejects the hypothesis since the value is <0.05 .

Table 5: Level of Satisfaction on student's motivation with peer teaching method

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Motivation	46	.6304	.82620	.12182

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Motivation	5.175	45	.000	.63043	.3851	.8758

The fourth question involved asking them whether or not students are more motivated when using peer teaching method than using the traditional method. The **Before** and **After** result score of Mean and Standard Deviation are 0.6304 and 0.82620 respectively with the t-score of 5.175. In addition, the P-value score is 0.000. This rejects the hypothesis since the value is <0.05 .

Table 6: Level of Satisfaction on students' new knowledge search

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Search Autonomy	46	.4130	.95629	.14100

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Search Autonomy	2.929	45	.005	.41304	.1291	.6970

The fifth question involved asking them whether or not this peer teaching method makes students want to learn or search for new knowledge autonomously. The **Before** and **After** result score of Mean and Standard Deviation are 0.4130 and 0.95629 respectively with the t-score of 2.929. In addition, the P-value score is 0.005. This rejects the hypothesis since the value is <0.05 .

Table 7: Level of Satisfaction on continuation of peer teaching method.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Method Continuation	46	.3043	.93973	.13856

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Method Continuation	2.197	45	.033	.30435	.0253	.5834

The last question involved asking them whether or not the teacher should use this teaching method again in the future. The **Before** and **After** result score of Mean and Standard Deviation are 0.3043 and 0.93973 respectively with the t-score of 2.197. In addition, the P-value score is 0.033. This also rejects the hypothesis since the value is <0.05.

Conclusion

The purpose of this research was to investigate the new teaching method to the students in ICUTK in order to increase the students' improvement inside classroom in aspects such as test scores and evaluation of the peer teaching method. By implementing in real class and measuring the **Before** and **After** the peer teaching method, data was available to be collected by questionnaires from the students after the final exam with clear explanation from the teacher. The findings indicated that hypotheses were all rejected meaning the new method of peer teaching notably outperformed the traditional one. It emphasizes that this new teaching method has challenged and created the positive impacts on the students in Thailand at ICUTK. By looking at exam score of the respondents in this research, the **After** peer teaching method holds higher marks than the **Before** which is similar to work done by Lim (2014) where the result of peer teaching showed enough positivity as the passing rate increased from 83% to 92% compared to the previous year when peer teaching was not applied to the class.

The method in this class has also improved the students in term of completing projects, discussing issues and engaging in learning and doubled their team skills as the teacher acting as facilitator and challenger which is related to the work done by Mumford (2010). Furthermore, the result of the research is also similar to Kwak and Price (2012) where the peer teaching method was positive to the perception of students. They were able to better understand the selected business topic of specific issue as the peer teaching method was implemented against the traditional one. Moreover, more positive result was that students acquired both knowledge and skill in evaluation of peer performance in cooperative

learning environment in term of feedback which is quite important to the peer teaching process (Secomb, 2008).

There are many evidences, academic papers and researches showing positivity in using the peer teaching on different fields. However, they are conducted on Western parts of the world where the culture of students is highly individual (Zepke and Leach, 2010). The characters of respondents in those Western parts are different than Asian students. Therefore, assigning to mostly Thai students in group to teach their peers in real class may be quite a difficult project and the teacher could get criticized heavily by other teachers in Thailand. Despite all these, the results of this research support the peer teaching method utilizing and maximizing the ability of the students with higher improvement, specifically in exam scores and satisfaction of new method more than the traditionally old fashion way of sitting and listening to the teachers in class.

Limitations and Suggestions on future research

A form of simple but quite important limitation for the testing in this research was the fact that one or more students in the group poorly prepared the subject materials, contents and the PowerPoint which is related to research conducted by Bulte et al (2007). Motivation has always been one key for students to reach the deep level of learning. During the semester, half of the groups had to deal with difficulties in motivating others within the same group and also the peer learners in class. In addition, students did not have the authority or toughness to control the peer teaching session in the second half of the semester. To sum up, groups of students who performed teaching of their own to class do not have the experience and knowledge more than the teacher and cannot demonstrate to class from their readings alone despite the improvement in test scores. Therefore, the teachers must provide substantial amount of time, specifically 2 weeks for the first group, for advising in academic, commenting the work in process and dealing with personal issues and possible obstacles inside and outside class before the peer teaching by group in each class.

Since the participants in the peer teaching method by group took place in actual class of the researcher, results in this research were likely to be accurate with close observation. It is impossible to assign such commitment and test the method in other classes of other lecturers in the ICUTK. However, the idea of testing in 2-3 different subjects of the same teacher within the same semester in the future might help understand the effectiveness in a better way for the Thai students in International College in Thailand. More importantly, the amount of time offered to students is highly critical to the success of this and future research.

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