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AC-ESI-2017

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SUAN SUNANDHA RAJABHAT UNIVERSITY,
BANGKOK, THAILAND

RUSSIAN PRESIDENTIAL ACADEMY OF NATIONAL ECONOMY AND PUBLIC ADMINISTRATION
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Dear ladies and gentleman, participants of Academic Conference on Educational & Social Innovations, academics and scholars, presenters of research centers, educational institutes and business!

In the era of globalization, spreading of modern knowledge and forms of education, re-evaluation of human resources for global competitiveness and self-sufficiency, an effectiveness of international collaboration in discussing on actual educational and social issues and challenges, searching for maximum effective solutions of local, regional and global development is timely increasing.

And I would like to express my deep gratitude to partnered journals, educational institutions of Thailand, Russia, Ukraine, Indonesia, Hungary and other countries whose efforts made possible this meeting of scholars and businessmen, interested in effective solution of global economy challenges using local resources of competitiveness and economical, social, cultural and innovative success.

And, of course, I would like to thank all participants for coming here, for their wonderful and useful research. I want to say, that Suan Sunandha Rajabhat University – as a leading public University of Thailand – is very proud to be an organizer of this significant and important conference.

To each participant I wish success, finding a new colleagues and friends, development of scientific and business contacts, new scientific discoveries that are benefit for society, business and government. And also enjoy your time in "golden city of Prague".

Dr. Luodech Girdwichai, professor
President of Suan Sunandha Rajabhat University
Bangkok, Thailand

On behalf of the Organizational Committee, I welcome you to the 2017 Academic Conference on Educational & Social Innovations, in the world most beautiful and interest city of Prague! Our conference always attracts researchers, educators and practitioners in all economic fields and related disciplines in the world.

Participants have found in these meetings an excellent opportunity to share their experiences with colleagues from distance places and often continued to cooperate with them on their subjects of interest.

The AC-ESI – 2017 has been established on a global basis. We have received more than 90 submissions from 7 countries, each submission was peer-reviewed by at least two anonymous reviewers and a total of 55 papers were accepted for presentation in the conference.

Accepted papers are scheduled for presentation in 6 sessions. We would like to express our sincere appreciation to all the reviewers and chairs and members of various committees of AC-ESI -2017 conferences for their precious time and expertise. The welcoming dinner provides the opportunity to honor the best papers and to recognize the contributions of many of the people who made this meeting possible.

Lastly, I would like to express our sincere gratitude to everyone involved in making the joint conference a success. Many thanks go to the organizing committee, keynote speaker and special session organizers, and the organizational committees and reviewers, the conference participants, and of course, to all the contributing authors who will be sharing the results of their research. It is our great pleasure to have you with us at the joint conference, where I hope new ties will be made and existing ones renewed and strengthened.

Please accept our best wishes for a wonderful stay in Prague!

Asst. Prof. Dr. Kongthong Khairtree
Director (Dean) of International college
Suan Sunandha Rajabhat University
Bangkok, Thailand
Dear friends and colleagues!

This conference is a meaningful crystallization of international initiatives among the number of institution towards practical cooperation in interdisciplinary studies, which will be contribute to the strengthening of the national educational systems.

The characteristic of the education in our era is change at the speed of light, which led us to the consensus that experts from many countries and many different disciplines must meet and discuss the phenomena, and then suggest solutions. We should be able to delve deeper by discussing problems across different disciplines as widely as possible, and thus grasping more profound solutions and suggestions.

The motivation for this conference is to help one's country through offering individual expertise and point of view based on one's individual discipline. As we gather from many different countries and many different disciplines, I believe that we should be able to expand the scope of our efforts and must aim at more challenging global contributions.

I hope all the participants of this conference will enjoy and get opportunities to enhance relationships of knowledge exchange.

I would like to extend my sincere gratitude to the organizing committee and especially to my Thai colleagues for given abilities to be a co-organizer and member of organizational board of AC-ESI – 2017, to be involved in the process of new international tradition formation!
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FLIPPED CLASSROOM AND COOPERATIVE LEARNING METHOD IN BUSINESS STATISTICS

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The purpose of this study was to explore the students’ perceptions of teaching approaches using a flipped classroom and cooperative learning. In the 2017, action research was conducted in business statistics class of International College, Suan Sunandha Rajabhat University Thailand. The total of 26 students participated in this study. In the flipped classroom, the researcher created online lessons of her lectures and the students viewed them prior to attending class. Students worked on problem-solving activities in their classrooms. The research findings indicated that the flipped model of instruction was new teaching strategy that moved the lecture on business statistics outside classroom via technology and brought assignments/exercises of business statistics concepts inside the classroom via learning activities. The research findings shown the students engagement in
the flipped classroom and cooperative learning methods were higher than the using traditional classroom. Based on the students' interviews they revealed that using flipped classroom and cooperative learning methods they were able to make learning statistics fun and challenging.

**Keyword:** flipped classroom, cooperative learning, business statistics

### Introduction

International College, Suan Sunandha Rajabhat University (SSRUIC) has the purpose that the teaching and learning process at SSRUIC has to be improved in order to raise the quality of the Graduate. The quality assurance process was employed to ensure the quality of curriculum program offer in the College. Throughout Year 2017, monthly meetings were held with all lecturers. At these meeting the details of course contents were mapped out, paying attention to offer the possibility of reinforcement of concepts. With the intention of encouraging the students' involvement in their learning during classes and after classes, these discussions were predicated by the requirement that all courses offer at SSRUIC have to be student centered learning, constructivist approach, problem-based learning and using information and communication Technology (ICT). SSRUIC lecturers must find the meaningful problem-based learning to enhance students to do to learn inside classroom and outside classroom. As such, this research was conducted in order to explore the students' perceptions of teaching approaches using a flipped classroom incorporated with cooperative learning method in Business statistics subject.

### Business Statistics

Business Statistics is one of the compulsory core subjects in International Business degree program of SSRUIC, all students who enrolled in this program must pass this subject. Normally in a traditional statistics class, a lecturer conducted lesson in the following sequence: a lecturer would begin the lesson by briefly presenting the statistics concepts, explaining the formula or procedures following by working out one or two examples as illustration for students in the class. The lecturer would then assign some time in class for students to work out similar problems and additional exercises would be given as homework to reinforce the learning achieved. If the statistics course was to be student centered learning, constructivist approach, problem-based learning and using ICT, then the tradition teaching and learning had to be changed. This provided a challenge to the lecturer to change her teaching method. Statistics is one of the subjects that most students learn without understanding. The reason might be that with statistics, there is an overwhelming emphasis on the manipulation of symbols and formulas, and because of that it has been too abstract for many students. Teachers expect their students to spend large amounts of time attempting to paper-and-pencil algorithms associated with problem solving, memorize formula and algorithmic computation, but they do not really understand and quickly forget them (Skemp, 1978). This is because learning statistics is more than computation, more than memorizing rules and facts. It is investigation, exploring, experimenting, posing problems and solving problems. Students have to learn and understand the language, including the symbolisms, and grasp basic concepts. Students have to analyze data involving the descriptive statistics and inferential statistics.

The flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Student watched a short video lecture at home before the class session, while the in-class time the students do the exercises, discussions or projects. In 2012, Jonathan Bergmann and Aaron Sams (2012) from U.S.A. created the new method of teaching in order to answer the question on “What if we prerecorded all of our lectures, students viewed the video as homework and then we used the entire class period to help students with the concepts they don’t understand?” Bergmann and Sams recorded their teaching lesson, PowerPoint slide showed including voice and any annotations, converted the recorded lectures into video file and then uploaded online. They believed that recorded lectures might be a way to keep their students who missed class could access them. Based on Bergmann and Sams’ research findings (2012), the absent students loved the recorded lectures. Some students studied in class but they were not able to follow the lessons. When they wanted to complete their homework, they started to struggle because what they wrote down in class during the lecture did not match with they were supposed to do on their assignments. With the video recorded lectures the students were able to watch the video many times at their own pace until they mastered the content. The flipped classroom has been used at high schools and college levels. In a flipped classroom, students watch a video lesson at home and come to class for hands-on activities and real life problems. Bergmann and Sams revealed that flipped classroom model was more efficient than gave lecture and assigned homework. They indicated that the flipped classroom was a better model than the traditional approach. However, they explained the important facts that there is no single way to flip your classroom. Flipping the classroom is more about a mindset: redirecting attention away from the teacher and putting attention on the learner and the learning.

### Cooperative Learning

Cooperative learning is one of the suggested teaching and learning approaches in student-centered classes and its use is consistent with the theories of learning and how children learn mathematics. Slavin (1990) defined cooperative learning as a teaching method in which students work together in mixed-ability groups. Cooperative learning is a group-learning process built on the belief that students learn better when they learn by talking and working together. Cooperative learning involves structuring of the learning environment so that students work together toward defined objectives. In addition, Johnson & Johnson (1991) described that cooperative learning is an instructional strategy that puts students in both learning and teaching roles. Through the use of cooperative learning, students work together as a team on academic tasks, and help each other to learn in order to achieve their common academic goal and acquire social skills. Cooperative learning encourages group interaction using assigned roles, with each member sharing responsibility for the group and the work produced. There are a variety of cooperative learning methods based on the social psychological principles of cooperative learning. Cooperative learning methods have been adapted from different methods to meet the practical requirements of classrooms and to solve
problems introduced by the use of cooperation itself. However, Slavin (1990) explained that one component of cooperative learning method is always the same: the students work together in heterogeneous groups toward a common goal. According to Slavin the essential components of cooperative learning consist of three concepts, namely team rewards, individual accountability and equal opportunities for success. Johnson, Johnson and Holubec (1990) argued that there was evidence that cooperative learning can only be effective when teachers structure and promote all of the principles, namely: clearly perceived positive interdependence, considerable face-to-face interaction and felt personal responsibility i.e. individual accountability to achieve the group’s goals, frequent use of relevant interpersonal and small-group skills, periodic and regular group processing.

Through cooperative learning students can increase their communication skills by interacting with team members. They can become actively involved in the learning process and therefore interested in what they are expected to learn. Research finding by Khairirree (2011) shown that cooperative learning: Maths-Jigsaw do motivate learning-resistant students want to learn, and generate higher performance than would have been achieved in traditional classes.

Cooperative Learning, Flipped Classroom and Action Research in Thailand.

This study was an action research and a case study. The purpose of the study was to explore the students’ perceptions of teaching approaches using a flipped classroom in incorporated with cooperative learning method. The research study was conducted in the academic year January – July 2017. The subjects were 26 first year students of International Business degree program of SSRUIC, Bangkok, Thailand. They are at 19-year-old students. The questionnaire of students’ perception and students’ attitude toward statistics was administered to students in July 2017. The questionnaire was constructed using a Likert scale, and consisted of ten statements about learning statistics using cooperative learning in flipped classroom. The students’ responses indicated the degree to which they agreed or disagreed with each statement on a five-point scale of strongly disagree, disagree, neutral, agree and strongly agree.

The cooperative learning method: Jigsaw incorporate with the flipped classroom method in business statistics was employed in this study. The students in the sample class watched short video lecture and study statistics using software TinkerPlots at home before the class session, while in class time the students do the exercises, discussions or do projects assignment. The cooperative learning method: Jigsaw used in this research study was based on the Student Team Learning model created by Slavin (1991) and his colleagues at Johns Hopkins University. The first procedure of Jigsaw involves the lecturer teaching the lesson or topic through discussion, questions and answers to the whole class. Then, students work in a heterogeneous Home group of four or five members. Each Home group member selects only one section. Next, students from different Home groups who chose the same section meet in an Expert group to discuss and work together until they completed their tasks. Then, the students return to their Home groups and teach their group members what they have learned in their Expert groups. Students take it in turns to teach, starting from Section 1 and ending with Section 4. Finally, the teacher wraps up the statistics lesson and checks the solutions of the tasks before distributing a quiz. Students take the quiz individually, and the scores of all group members were added to be a group score. A weekly class newsletter highlights the top-scoring group and individual improvement scores.

Research Questions

1. What are the components of teaching and learning instruction using flipped classroom and cooperative learning method?
2. What are students’ perception toward learning statistics using flipped classroom and cooperative learning method?

Research Findings

Based on the research findings, in order to implement flipped classroom and cooperative learning method effectively the components of teaching and learning instruction have to include two topics as follows:

1. Webpage and Moodle of SSRUIC for students to search information and follow up lessons and work assignments. The component of the webpage must included information as follows:
   • Students Online Users name;
   • Thailnad Qualification Framework 3 (TQF) including weekly 16-week of JBP1203: Business Statistics, Course outline, lesson plan, and learning objectives;
   • Handouts/lecture notes;
   • Weekly video tape recorded of the lesson conducted during classes;
   • TinkerPlots online activities were embedded throughout the 15 – week;
   • Assignments and homework and problem-based learning questions
   • Quiz/Assessment/Evaluation and Kahoot program and
   • Web Link

2. In order to implement the cooperative learning method: Jigsaw and flipped classroom effectively we have to manage three topics as follows:
   • Students’ social skills
     Students’ social skills, there were some problems at the first month of the duration of research conducted. Because the students were not trained to work together as a team. The students did not help each other as it should be. The lecturer had to develop students’ small group communication, social skills and helping skills. In the third month of study, the students had changed, they enjoyed working in groups, liked to help one another. The students were able to complete their homework assignments.
   • Time management
     Time management, in Jigsaw classes the lecturer found that students learnt by talking, asking questions answering, discussing and teaching their group members. Whenever two or more students attempt to solve a problem or answer a question they become involved in the process of exploratory learning. Students were encouraged to express themselves and to explore their ideas without fear of failure or criticism. However, the lecturer had to control time spent during students worked together in the Expert group and Home group.

Example: The Gold-price
The students searched data of Gold-Price based on their work assignments from the website http://onlygold.com/Info/Search-Gold-Prices.asp. The students import data from internet into TinkerPlots statistics software program.

http://onlygold.com/Info/Search-Gold-Prices.asp

Figure 1: Import data from the Internet into TinkerPlots statistics software program

- Students' knowledge.

Results from the research findings revealed that the students now liked to learn statistics because they were able to do many activities in statistics. The students revealed that when they explored statistics by using TinkerPlots software program the graphs illustrating ideas were not only clear but also made the concept much more basic and easier to understand. In addition, when the students worked in Home group and Expert group, their friends helped them to do the work assigned to them.

The following examples show how TinkerPlots can be used to enhance students to construct their statistics knowledge in flipped classroom.

The students had to study descriptive statistics in their homes before they did their work assignment. They worked as a group using TinkerPlots in computer lab. The display of the students works assignments using TinkerPlots are as follows:

Figure 2: Box Plot and Histogram compare to Mean and Median of Gold-Price in USD

The works assignment of the students used TinkerPlots to show the mean and median values of price of gold in USD compare to the graph of Box plot and Histogram.

Figure 1-Figure 3 showed the works assignments of the students in the same group. They studied descriptive statistics in business using TinkerPlots and flipped classroom methods. With the use of TinkerPlots the students were able to discuss and compare their works assignments in more details.

Students' Perception Toward Learning Statistics Using Flipped Classroom and Cooperative Learning Method

The questionnaire of students' perception and students' attitude toward statistics was administered to students in order to assess their perception toward learning statistics using cooperative learning in flipped classroom. The percentage of the students' feedback are shown in table below.
Table 1 Percentage of students' perception toward learning statistics using flipped classroom and cooperative learning method.

<table>
<thead>
<tr>
<th>No.</th>
<th>Topics</th>
<th>Students' Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Strongly Agree (%)</td>
</tr>
<tr>
<td>1</td>
<td>I like to study IB-Business Statistics in my house and do my assignment with my group members in classroom.</td>
<td>3.8</td>
</tr>
<tr>
<td>2</td>
<td>I like to study IB-Business Statistics by using teacher's explanation in classroom and I will do my assignment in my house.</td>
<td>19.2</td>
</tr>
<tr>
<td>3</td>
<td>I find statistics class boring.</td>
<td>3.8</td>
</tr>
<tr>
<td>4</td>
<td>When I cannot solve statistics questions, I will ask my friends before ask the teacher.</td>
<td>19.2</td>
</tr>
<tr>
<td>5</td>
<td>I like to learn Business Statistics by using cooperative learning: Jigsaw method.</td>
<td>26.9</td>
</tr>
<tr>
<td>6</td>
<td>I will explain statistics assignment to my group members when they do not know how to do it.</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Conclusion

Based on the research finding revealed that the flipped model of instruction was new teaching strategy that moved the lecture on business statistics outside classroom and brought assignments/exercises of business statistics concepts inside the classroom via technology and learning activities. The research findings showed the students engagement in the flipped classroom and cooperative learning methods were higher than the normal classroom. Based on the students’ interviews they revealed that using flipped classroom and cooperative learning methods they were able to make learning statistics fun and challenging.

References


