Cooperative/Collaborative Learning Technique in Theoretical Subjects of Interior Architecture Program

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Abstract

Generally, the objective of teachings-learnings in theoretical subjects of interior architecture programs is focused on transferring theories to students, which usually can be underline for application in design practical subjects. The research objectives are to study concepts and implementations of cooperative/collaborative learning technique in classes by a theoretical subject case study, to propose a guideline for the teaching-learning management in the theoretical subjects and designing interior environment in the classes where harmonize to the teaching-learning management. Results and recommendations were discussed and presented in this research.

Keywords: cooperative/collaborative learning, learning efficiency, theoretical subject

1.0 Introduction

In the past, teaching-learning methods in theoretical and practical subjects of interior architectures in academic institutions are focused on transferring the theories to students for integration with other subjects (Philip mason, 1982 & Niraj Verma, 1997). For example of interior architectural design subject, this subject is high interaction between instructor and students because the teaching-learning methods in this subject are focused on design inspections and consultations in individual and group practices (Andrew Roberts, 2006). In the other hand, teaching-learning methods in theoretical subjects are passive learner, if instructors conduct other teaching techniques such as student-centered learning which target on problem based learning for examples by the students develop their skills and knowledges by themselves, as well as joining problem solutions between instructors and students (Niraj Verma, 1997).

There are many problems in learning process in the classrooms of the theoretical subjects such as an effectiveness of student learning, period of study more than one hour/period, physical environment within the classrooms (one-way teaching by an instructor), etc. These causes lead to shortage of student concentration boring in the classes. Therefore by using collaborative/collaborative learning technique is a direction to develop the teachings-learning to be higher efficiency of the students. However, efficiency of the technique is not conducted only by an instructor, but also comprise of many factors including; methods of teaching, knowledge base and diversity of students in the same class, teaching facilities which are high technologies, and design of the physical environment within the classrooms.

This research presents patterns and methods of teachings-learning by collaborative/collaborative learning technique. The technique could be a guideline for application and academicals development in the future.

1.1. Research Objectives

- To study concept of active learning and cooperative/collaborative in class rooms.
- To test implementations of the techniques in the theoretical subjects.
- To propose a guideline for the learning-teaching management in the theoretical subjects efficiently.
- To propose a guideline for designing interior environment in the classes where harmonize to the learning-teaching management.

1.2. Scope of Research

- Scope of teaching-learning methods in the class: group activities, presentations, and sharing opinions.
- Scope of physical environment in the class rooms: organizing chair/desk positions by student groups and by activities in the classes.
- Scope of teaching technologies: using the existing facilities in the faculty of architecture, urban design and creative arts.
- Scope of theoretical subjects and period of study: theoretical subjects of 1st - 4th student year in year 2009 to 2010, total 4 subjects by comparing the learning results of the students.

2.0 Literature Review

2.1 An effective Learning
The learning with using resources in learning process by focus on using resources efficiently and appropriate operation in time, resources, workforces, and facilities in the an effective teaching-learning (Peter Mortimore & other, 1994).

2.2 Theoretical Subjects
The subjects relate to theories, principle, law, and regulations which explain phenomenon of interests and verifiable. In this research, theoretical subjects mean subjects relate to theories, principle, concepts, philosophy, design process, and design programme in interior architecture design. Four subjects of case studies included:
1.) Interior architecture design concept and criteria 1 (1st year / 2nd semester)
2.) Interior architecture design concept and criteria 2 (2nd year / 2nd semester)
3.) Design theory (3rd year / 1st semester)
4.) Design programme (4th year / 1st semester)

These four theoretical subjects are taught in bachelor degree of Architecture program in Interior Architecture, Faculty of Architecture Urban Design and Creative Arts, Mahasarakham University, Thailand.

2.3 Cooperative/Collaborative Learning Technique
Managing and organizing teaching-learning activities by emphasis on development of student learning's in participations. Improving behaviors of students are to be good members in the classrooms such as learning by searching, solving problems, formulating concept diagrams by case studies, emphasis of interactions by presentations, brainstorming, group activities, and practical simulations in real situations (Gillies, M. R. 2004, Keyser W. M. 2000). "Collaboration is a philosophy of interaction and personal lifestyle whereas cooperation is a structure of interaction designed to facilitate the accomplishment of an end product or goal. Collaborative learning (CL) is a personal philosophy, not just a classroom technique. In all situations where people come together in groups, it suggests a way of dealing with people which respects and highlights individual group members' abilities and contributions. There is a sharing of authority and acceptance of responsibility among group members for the groups' actions. The underlying premise of collaborative learning is based upon consensus building through cooperation by group members, in contrast to competition in which individuals best other group members. CL practitioners apply this philosophy in the classroom, at committee meetings, with community groups, within their families and generally as a way of living with and dealing with other people." (Ted Panitz. 1996).

2.4 Concepts and Related Theories
Including three main concepts which an effective education of students. First are the concepts of the characteristics of students and academic performance. Second are the concepts of teaching students the cooperative/collaborative learning groups. And third are

the concepts of managing the physical environment within the classroom. The concepts diagram was shown in Fig. 1.

2.5 The Concept of the Characteristics of Students with Academic Performance

The two factors affecting student efficiencies are 1.) Characteristics of Student and Family (Hulya ERGUL, 2004). 2.) Factors Affecting Positive Behaviors to the Learning Theoretical Subjects.
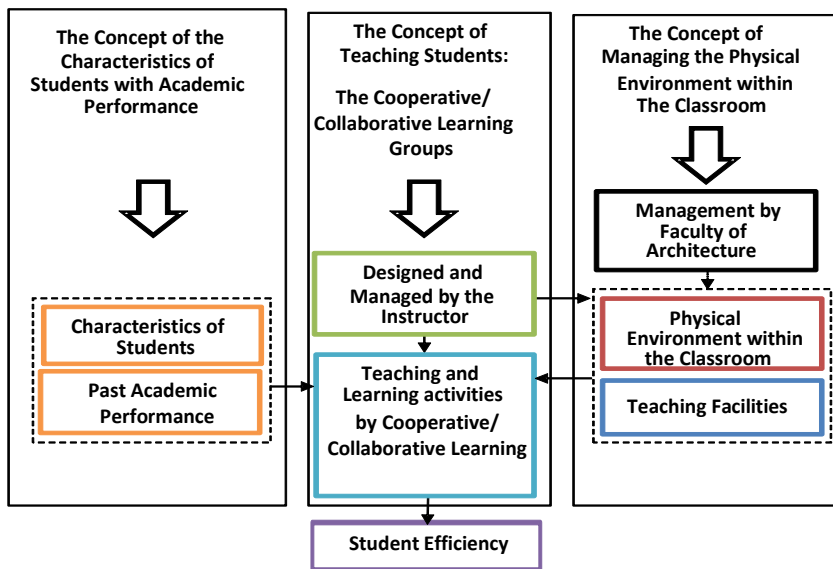

Fig. 1: Conceptual Research Framework and Related Theories

2.6 The Concept of Teaching Students: The Cooperative/Collaborative Learning Groups

The importance of this concept related to Bloom's Taxonomy can be classified in to three dimensions: cognitive domain, affective domain, and psychomotor domain. Factors of designing and managing the most an effective learning, factor of active learning with combination of teaching-learning integration to the cooperative/collaborative learning and student center learning with providing contents of learning by students in talking, writing, and reading (Rogers. A. C., 1997). Reflections, questions, and teachings-learning with movements of small and large groups by emphasis on students to practice and learn during the classes, emphasis on improving skills, abilities related to previous knowledges. Encouraging students for joining between previous knowledges and new knowledges are from practices and requirements of students (Mao-Lin Chiu, 2002).

2.7 The Concept of Managing the Physical Environment within the Classroom

The concept comprises of factors related to organizing elements in classrooms and environment, factors related to ergonomics and managing learning environment. Consisting three components of managing environment included physical environment, imaginary environment, and social environment which are defining behaviors of each student. Combination of the important factors, conceptual framework, and theories related to developing student learning efficiencies in theoretical subjects lead to a guideline and methods which are an effectiveness of student learning (Sarah M. Dinham, 1989). The concept comprise of three main parts: concept of student characteristics, concept of managing teaching-learning by cooperative/collaborative learning, and concept of managing physical environment within the classroom as shown in Fig. 2.
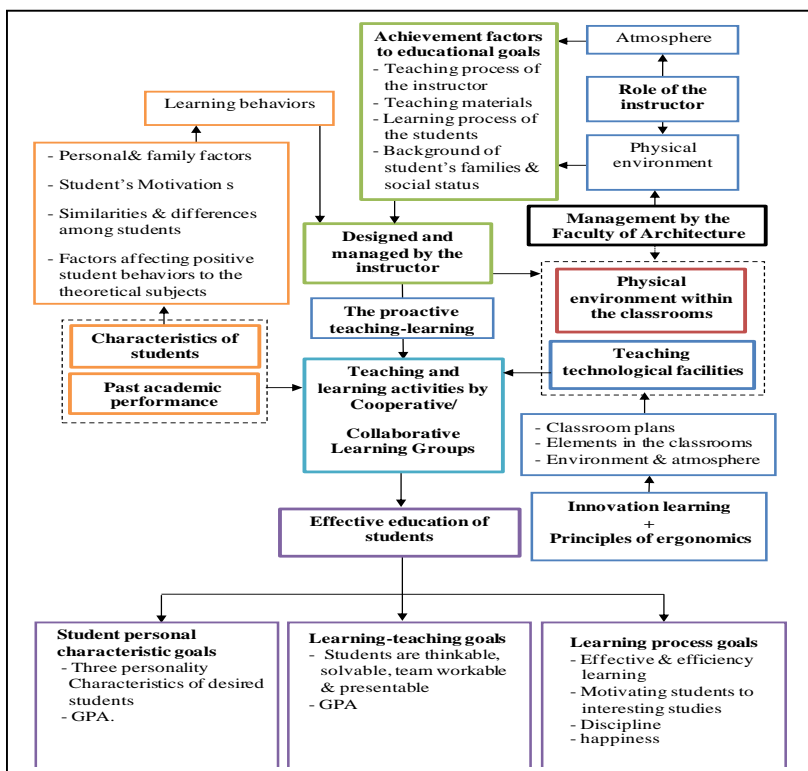

Fig. 2.: Research Framework and Theoretical Framework

3.0 Research Methodology

This research was applied study and operational study. The results of this research could be solved the problems in managing teaching-learning and designing physical environment within the classroom for learning efficiencies of the students.

3.1 Research Assumption

Assumption in this research are: student characteristics, past academic performance, designing interior environments within classrooms with flexibility of group activities, physical environment within the classroom and providing teaching facilities have an effect to student efficiencies though the cooperative/collaborative learning technique in the theoretical subjects as shown in Fig. 3.
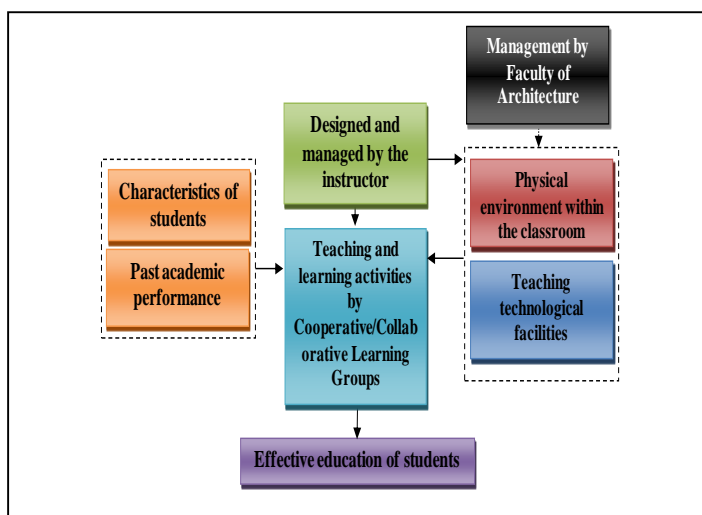

Fig. 3: Research Conceptual Frame Work

3.2 Methods of analysis and interpretations

1) Describing differences of student academic performances were interrelated with student characteristics and past academic performances.

2) Cognitive measures in attitudes for understanding cause of learning behaviors by using average value (percentage).

3) Experimental study in managing teaching-learning and designing physical environment within the classroom, providing teaching facilities. Researcher collected data within designed conditions of the study during the classes.

3.3 Population and Sample
Population in this research was students in major of Interior Architecture, Faculty of Architecture Urban Design and Creative Arts, Mahasarakham University, Thailand. Sample was the students in major of Interior Architecture (1st - 4th year).

3.4 Research Tools
The research tools were assessment forms before and after studies, observation forms, teaching-learning records, and mid-term / final examinations in the theoretical subjects. Managing activities to all classes and using observations during the classes and evaluations at the end of each class.

3.5 Data Collection and Variables
Data from assessments before and after studies, results from mid-term and final examinations, observations by experiments in class activities, and also student scores from individual and group assignments, presentations, assessments between students and the instructor, and assessments among students (table 1).

Table 1: Transforming conceptual variables to be operational variables

Conceptual Variable	Operational Variable
Independent Variable 1) Student characteristics	- Individual characteristics - Culture - Family tradition - Economy
2) Past academic performance	- Total average score from the semester
Intermediate Variable 3) The physical environment within the classroom	- Student learning and using behaviors in the classrooms
4) Teaching facilities	- Computer / Projector / Amplifier
5) Teaching-learning activities by cooperative/collaborative learning	- Lectures - Group learning activities in class - Individual and group project assignments - Class presentations
Dependent Variable 6) Student efficiencies	- Mid-term scores and final scores - Scores of all projects

4.0 Analysis and Results

The analysis by using comparison of average score results between mid-term examinations and final examinations from the four theoretical subjects.

4.1 The study of active learning and cooperative/collaborative learning in the classrooms and experiments of the technique applying in the theoretical subjects

Students were Thai, average age 18 years, male and female were vicinity, aspirations in interior architect profession were high (87%). The research found that student characteristics have an effect on result scores, the characteristics related to individual and family factors which influence learning behaviors. The results were shown in table 2. Increasing scores in final examinations compared to mid-term examinations. Reason was the students begun to study the theoretical subjects in the first part of semesters with their attitudes that "the subjects were difficult, a lot of theories and complexities where made students disliked". After researcher implemented the active learning and cooperative/collaborative learning techniques to the classes in the second part of semesters, the students changed their attitudes to positive by increasing more interests in the subjects, enthusiastic in assignments and presentations in the classes, lead to increasing scores in final examinations.

Table 2: Student score comparisons (mid-term and final examinations)

Semester 1/2009			Semester 2/2009			Semester 1/2010			Semester 2/2010		
Mid-term Exam	Final Exam	Diff.	Mid-term Exam	Final Exam	Diff.	Mid-term Exam	Final Exam	Diff.	Mid-term Exam	Final Exam	Diff.
-	-	-	59.5%	60.4%	+0.9%	-	-	-	48.7%	73.8%	+25.1%
70.3%	90.5%	+20.2%	-	-	-	50.8%	68.5%	+17.7%	-	-	-
47.9%	72.8%	+24.9%	-	-	-	46.2%	95.1%	+48.9%	-	-	-
59.3%	70.3%	+11%	-	-	-	44.9%	58.0%	+13.1%	-	-	-

From the Table 2 researcher collected data from subject 1 to 4 of 1st and 2nd semester in 2009. The first part of semester researcher conducted the method of student-centered learning in the classes. The second part of semesters, researcher implemented the concepts of active learning and cooperative/collaborative learning to the classes. The results shown all the same direction, all scores of the subjects in final examinations were increased from mid-term examinations. Researcher confirmed the results by repeated the same experiments in 2010, the results were the same as 2009.

Constructing relationships between the instructor and the students was the most important. The researcher found that student's faith in instructor has an effect on student intentions and enthusiasms during studying in the classes. Relationships among the students in the class had much an effect on group assignments. The students were learned and shared each other's during group assignments and activities. The research found assignments of student groups with problems in cooperation among the group members had an effect on low scores of the assignments. On the other hand, assignments of student groups with good cooperation among the group members have an effect on high scores of the assignments. The effects of relationships and cooperation among the group members could be seen on group presentations in the classes obviously.

4.2 Design and Management of the Teachings-Learnings

Design and management of teachings-learnings with highest benefits according to active learning in theoretical subjects found that the technique could be lead to student improvements in three domains: Improvement of "cognitive domain", students learned more contents in the subjects. Improvement of "Affective domain" when students had learned new knowledge and improvement of "psychomotor domain" by students took the obtained knowledge to apply the design projects in the classes. Four types of techniques were: 1.) Managing learning activities by using learning media. 2.) Managing learning process by group studies, students shared knowledge to each other in the groups. 3.) Managing learning process by together setting up agreements, and methods of the teachings-learnings in the classes between instructor and students. 4.) Managing learning activities by motivating students. On the other hand, penalties, blames were used in cases of violating the agreements.

4.3 Application of cooperative/collaborative learning

Application of cooperative/collaborative learning technique, researcher considered managing teachings-learnings activities by "learnings of students were center of the teaching-learnings". Managing agreements between the instructor and students are about characteristics of teachings-learnings, learning contents, interactions of students in the classes, talking, readings, feedbacks, questions and also learnings with movements in small and large groups. Emphasizing students to practices and formulating knowledges from the practices within classes. Emphasizing student skills and abilities where match to basic skills of students. Results from observations found, the new knowledges could be linked to the previous knowledge by the students in practices and needs of students as well. There are student assignments both individual and group studies, the assignments were taken two or three minutes per assignment in the classes. Taking home assignments were an opportunity for students to create assignments or projects by themselves, instructor would be an advisor to support or advice students for more understanding in their assignments. Moreover, student learning efficiencies were developed by the technique to higher levels. On the other hand, researcher found that a problem in managing the teaching-learning techniques was instructor's ability to control the classes.

4.4 Basic elements of the teachings-learnings by cooperative/collaborative learning.
The research found: *Speaking and listening:* Instructor's questions before the classes were motivating students for desire in the answers. The instructor conducted more questions during the classes, the students tried to answer (speaking), this activities led to development of speaking and listening skills as well. *Writings:* Helping students for synopsis of new issues in their words by taking notes. The research found that this method suited for large classrooms and suited for the students who need independent learnings. Moreover, this method also needed classrooms with appropriate facilities for writing skills. *Readings:* The assignments of preparing presentations in the classes were improving reading skills of the students. *Feedbacks of thinking:* Preventing going out the classrooms of the students during the class with losing knowledge. The students in the class would present to each other in the class. The students could link past knowledge and new knowledge together by this method.

4.5 Designing instructor's role in managing learning activities and methods of implementing active learning management.
The research found: Managing student-centered and constructing atmosphere of participations in collaborator learning in the classes. The participations would reflect to positive behaviors of student learning. Managing contents and activities in the teachings-learnings could be motivation for students to be success in their study. It was practices of the students for solving problems and self-learning. Time-schedule class plans, learning contents, and learning activities. Emphasizing practices of skills by organizing study plans where specified details of learnings and activities in the class before beginning the class. The course syllabus was the most importance and utilization in managing the teachings-learnings. Managing learning by experiences, practicing thinking process of the students, managing learning by situations, and applying the obtained knowledge for solving problems in the diary life. Designing student evaluating system with clear criterion, standard, justness for classifying the students according to class objectives, the system was included development of students, student learning behaviors, and student activity participations.

5.0 Discussions and Recommendations
Guidelines for designing physical environment in the classrooms where harmonized to managing teaching-learning in theoretical subjects of interior architecture by cooperative/collaborative learning technique for the highest student efficiencies. The results shown as the research hypothesis, "student characteristics and past academic performance, designing interior physical environments within classrooms with flexibility of group activities and providing appropriate teaching facilities have an effect on student efficiencies though the cooperative/collaborative learning technique in the theoretical subjects".

5.1 Guidelines for designing teaching-learning where increased student learning efficiencies.
- Managing learning activities by using learning media.
- Managing learning process by group studies.
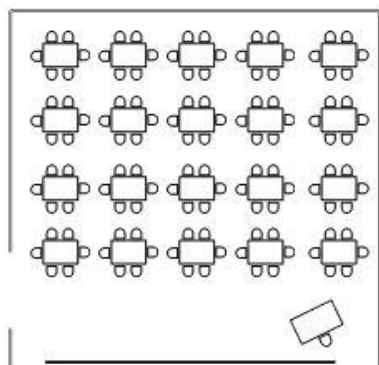- Managing learning process by together setting up agreements.

- Managing learning activities by motivating students.
- Emphasizing student-centered learnings by managing agreements between instructor and students.
- Emphasizing student skills and abilities where match to basic skills of students.
- Managing basic elements completely for improving skills.
- Constructing atmosphere of participations in collaborator learning in the classes.
- Managing contents and activities in the teachings-learnings could be motivation for students to be success in their study.
- Time-schedule class plans, learning contents, and learning activities by organizing study plans before beginning the class.
- Designing student evaluating system with clear criterion, standard, justness for classifying the students according to class objectives.
- Instructor's personality would enhance learning atmosphere, the personality influenced student feelings in learnings.
- Teaching behaviors of the instructor could construct good feelings of the students, to created knowledges, attitude, and skills as defined in the course objectives.

5.2 Guidelines for designing interior physical environment within the classrooms.
Managing physical environment within the classrooms where enhanced teaching-learning process efficiently by arranging layout plan of the classroom. Adapting the traditional classroom to be innovative classrooms as followed: 1.) Arranging desks and chairs in the class by focusing on interactions among students during the class activities as shown in Fig. 4. Target of the class was enhancing student participations in the class fearlessly, creating desires in the learning. Instructor's desk should be located at the suitable location in the classroom. 2) Managing physical atmosphere in the classroom by providing clearness, brightness. The classroom size should be matched to number of students. The classroom should be decorated brightly, teaching facilities should be provided for the teaching-learning conveniently.
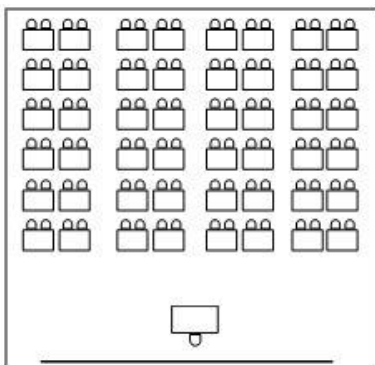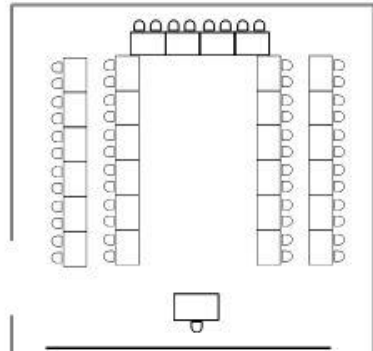

Type A: Classroom layout for lectures   Type B: Classroom layout for a group of 4-6 students
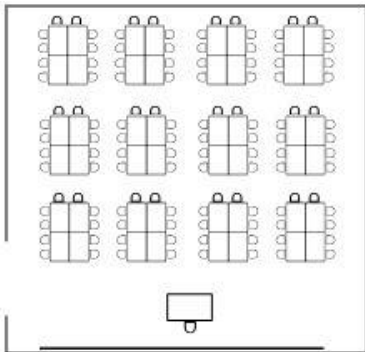
Type C: Classroom layout for large study groups   Type D: Classroom layout for seminars
Fig. 4. Samples of classroom layout according to cooperative/collaborative learning

This research resulted that "student characteristics and past academic performance, cooperative/collaborative learning techniques, designing interior physical environments within classrooms with flexibility of group activities, and   providing appropriate teaching facilities have an effect on student efficiencies though cooperative/collaborative learning technique in the theoretical subjects".

Acknowledgements

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