# CHAPTER VI

# CONCLUSIONS AND RECOMMENDATIONS

This study was to apply social constructivist learning theory in the context of "Community pharmacy course" for fifth year pharmacy students. Social constructivism means that the student joins a knowledge-generating community and in collaboration with others to solve real problems as part of their study. Problem solving and creating new knowledge are important goals by students themselves. In a social constructivist environment, knowledge is individually as well as socio-culturally constructed.

Online Community Pharmacy course at Faculty of Pharmacy, Chulalongkorn University was developed, implemented and evaluated at the end of the course.

The course objectives was set that after finished studying this course, students should be able to explain the proper management of the drugstore in various aspects as general retail management, physical management, marketing management, inventory management, information management, regulatory management, personnel management and quality management.

The course was designed based on the grid coined "Social Constructivist Learning Development Grid (SCLD Grid)" to achieve social constructivist environment. There were both individual activities and interaction activities scheduled in 4 phases.

- Phase I Group-Preparation learning
- Phase II Individual-Preparation learning.
- Phase III Individual-Implementation learning
- Phase IV Comprehensive Phase: Group-Implementation learning

Asynchronous mode of communication such as discussion forum was the main feature/tool for interaction activities.

After the designed course implemented, the experimental posttest only design study was conducted. The study assessed the social constructivist learning environment and the student performance of the two online instructional strategies; Collaborative (CLG) and scaffolding (SCG). The differences of the two were the density and series of the course content, which were expected to construct in-depth and in-breadth learning outcomes.

The samplers were 45 fifth year pharmacy students who enrolled in this online course. The students were equivalently divided into 2 groups taught by different strategies (CLG and SCG). Twenty-two students in CLG were divided into 3 subgroups, each of which studied the same 3 units of content in the same order. Twenty-three in SCG were also divided into three subgroups, whose study content was only one unit but different units were used for each subgroup. The time duration to learn one unit for group SCG was as long as time duration for 3 units of CLG. At the end of the content unit, the packet of reading materials for every topic was supplied to all students. Subgroups of CLG and SCG were rearranged so they could share what they have learned to their new teammates. For students in SCG, members of new subgroups must be consisted of students from every content unit.

CLG, students were set to study the same content, then interact and share understanding with each other. On the other hand, SCG with different information joined in groups and helped each other to learn and develop their understanding of content. (Scaffolding by peers)

The result revealed that average perceived social constructivist environment during the course measured by COLLES was 3.75 $\pm$ 0.52 with no significant difference between CLG and SCG (CLG =3.71$\pm$0.53 vs. SCG = 3.79$\pm$ 0.53; p=0.584). Students in SCG, who had a chance to do the in-depth study of the content but for only one content unit, did not demonstrate any learning disadvantage compared with those in CLG, who learned all of the content but with shorter time period for each unit.

As hypotheses were stated in this study, as follows.

1. Student in scaffolding group (SCG) perceived social constructivist learning environment (SCLE) in the aspects of reflection better than collaborative group (CLG).
2. Student in scaffolding group (SCG) perceived social constructivist learning environment (SCLE) in the aspects of interactivity better than collaborative group (CLG).
3. Student in scaffolding group (SCG) perceived social constructivist learning environment (SCLE) in the aspects of peer support better than collaborative group (CLG).
4. Student in scaffolding group (SCG) perceived social constructivist learning environment (SCLE) in the aspects of interpretation better than collaborative group (CLG).
5. Student in scaffolding group (SCG) had learning achievement better than collaborative group (CLG).
6. Student in scaffolding group (SCG) did not have any learning process (frequency/hits) differently from that of collaborative group (CLG).
7. Student in scaffolding group (SCG) did not have any perception and satisfaction differently from that of collaborative group (CLG).

In summary, both collaborative and scaffolding strategy can achieve social constructivist learning environment. Hypotheses 1 through 5 were rejected. Social constructivist learning environment of scaffolding strategy in the aspect of reflection, interactivity, peer support and interpretation were not better perceived significantly than collaborative group. Student learning achievement of scaffolding strategy was not significantly greater, either. The initial intention of this study was to construct both in-depth and in-breadth knowledge in SCG groups, but the seed the facilitator provided to SCG students could not guided more in-depth development than CLG. Hypotheses 6 and 7 were accepted. Learning process and learning perception/satisfaction did not differ between CLG and SCG.

**Recommendations**

The creation and implementation of online course-based on social constructivist learning should be continued in the future, since the course through the real world application of knowledge, shared experience, and interaction provided numerous educational benefits.

For students to construct their own life-long applicable knowledge, the course developed based on social constructivist learning theory should be created. Both collaborative and scaffolding strategy of this study can achieve both social constructivist environment and student performance. Therefore, either of the CLG or SCG strategy can be applied.

**Future Study**

- This study did not present any difference among different strategies; CLG and SCG. Since Vygotsky (1966) stated that ones could develop more comprehension than their capacity by interaction with more capable peers, then additional research should continually be performed. To clarify the results of scaffolding by more capable peers, the future research should seed more guidance to gain in depth learning outcomes. Students should understand and practice their roles.
- In this study, the results focused on the effect of CLG and SCG on overall performances. There were some interesting issues such as skills or competencies of the students (categorized by Bloom's) which needed to be thoroughly investigated to explain about the effect of online instructional strategy. In this case the instrument developed for measuring those skills, for example, examination should be refined and make more robust.
- The controlled variables for this study were gender, age, computer skills, previous experience related to the content and personality. Additional study which examines other variables or factor related to online interaction may assist in better understanding the application of social constructivist learning environment among students. For example, this study course was implemented among undergraduate pharmacy students. Whether the maturity of participants had an effect to all those outcomes was still questionable. It can be tested when graduate students enrolled to the online course.