

# Chapter 41

## Enhancing Active Learning Pedagogy through Online Collaborative Learning

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### ABSTRACT

*Learner-centered learning theories such as active learning and collaborative learning are highly supported by Web 2.0 technologies and they are augmenting traditional teacher-centered approaches. New teaching pedagogies such as flipped classroom have also embraced the use of collaborative learning where students engage in group-based activities during class time and they embark on asynchronous video lectures after the classroom. However, there is little research on how flipped classrooms can support online collaborative learning. In order to improve online collaborative learning and enhance active learning, this chapter provides some literature review on collaborative learning as well as the critical aspects for online collaborative learning. This chapter also discusses how online collaborative learning can be integrated in a flipped classroom. To that end, the authors recommend further research on how specific online collaboration tools can be applied in flipped classroom.*

### INTRODUCTION

The increased demand for higher education has made online learning more popular and appealing to many stakeholders including working staff and students. Although online learning has gained popularity, it still criticized of being a faceless medium that does little to support social interaction. Social constructivism scholars argue that knowledge is constructed through social activities. Hence, knowledge developed

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through collaborative learning is more than what can be achieved by an individual alone (Brindley, Blaschke, & Walti, 2009; Moller, 1998).

Researchers have suggested that learning is more effective if peers collaborate and share ideas when solving a task as group rather than as individuals (David W Johnson & Johnson, 1989). Similarly, by introducing online collaborative learning environment, it is possible to have social interaction and learning between peers in an online learning environment. However, social interaction experienced in an online learning environment lacks the face to face interactions typical in a classroom environment. This gives online learning a major disadvantage even though its demand continues to rise.

According to Prince (2004), active learning requires students to be engaged in the learning process. Therefore, collaborative learning through group work among students can enhance active learning by changing the traditional teacher-centered learning environment into learner-centered where students take charge of the learning process. In addition, active learning can be enhanced through flipped classroom by devoting students in collaborative work during class time through interactive group discussions or projects and students can watch lectures videos at home (Bishop & Verleger, 2013; Tucker, 2012).

In light of these facts, this book chapter provides some literature review on collaborative learning and presents literature on the critical aspects for online collaborative learning. The critical aspects which have been discussed include: how to analyze collaboration, group formation techniques, students' perceived challenges and intelligent support techniques such as Machine Learning in an online collaborative learning environment. This chapter also discusses how online collaboration tools can be used in a flipped classroom. The authors have suggested on how to improve online collaborative learning in order to enhance active learning and highlighted some areas for future research in the view of improving active learning pedagogy.

## **Overview of the Chapter**

This chapter first examines some literature on collaborative learning and online collaborative learning. Secondly, it explores on methods for analyzing collaboration in an online learning environment. Thirdly, it summarizes how group formation can be done in collaborative learning. Fourthly, it discusses perceived challenges on online collaborative learning and how intelligent techniques such as machine learning can be utilized to support online collaborative learning. Finally, it introduces the idea of flipped classroom as form of active learning and discusses how online collaborative learning can enhance active learning by supporting the flipped classroom teaching pedagogy.

## **COLLABORATIVE LEARNING**

Collaborative learning is an overloaded term with different meanings offered by different scholars. In this chapter, the authors adopt Pierre Dillenbourg (1999) definition where collaborative learning is defined as situation in which two or more people learn or attempt to learn something together. The situation is termed "Collaborative" if peers are more or less at the same level, can perform the same actions, have common goal and work together. Collaborative learning techniques in different learning modes have been experimented and found to be successful as early as the late 18th century (Gaillet, 1994). Collaborative learning technique is the use of group work to learn a task. In the pedagogy of teaching, teachers are always encouraged to assign group work offering the students the freedom to learn from one another.

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