

Using Team-Based Learning in a Computer Engineering Graduate Level Course

In the last two decades, courses in engineering institutions have made a large shift from purely lecture based teaching methodologies towards more active learning styles. Currently, project-based and problem-based learning approaches have become an integral part of several engineering courses via hands-on laboratory assignments and term-long projects. There has been a growing interest in taking this a step further using the “flipped” classroom approach, where course material is given to the students before hand and lecture time is spent on solving problems. A drawback of several flipped classroom approaches is the lack of consensus regarding the methodology and testing techniques. An active learning methodology that is becoming increasingly popular is Team-Based Learning (TBL). TBL is a more structured way to implement a “flipped classroom” approach, and has been shown to be successful in achieving deeper learning among the students. In this work, we discuss our experience of converting a graduate level course in computer engineering into the TBL format. Our goal is to shed light on the approach one can take, as well as the effort spent, in implementing team-based learning. We analyze our class content using the Florida Taxonomy of Cognitive Behaviors, to study the effectiveness of our TBL implementation in achieving deep learning. We use surveys to evaluate student perception towards using the TBL approach, and its effectiveness in developing an attitude that is inclined towards working in teams.