
**Categories:** active learning, cooperative learning, flipped classroom, mathematics

**Summary**

In this brief article, the author discusses a study that he and colleagues conducted to examine the impact and feasibility of using the flipped classroom model in several mathematics classes. The essential features of a flipped classroom, according to the author, are computer based instruction and interactive group activities during class time that reinforce or involve application of foundational knowledge learned in online videos. In order to test the utility of the method, the author and four other teachers developed a flipped classroom model for 130 eighth grade math students. Their central objectives for the study were to determine student attitudes towards active learning, the level of their engagement in class, and how their model of the flipped classroom, if successful, could be improved in future iterations.

The flipped classroom model employed by the author and his colleagues began with video lectures. Each student watched two to three video lectures to gain knowledge about a specific topic. As per the extent of literature, the video lectures had a maximum duration of six minutes. These videos were delivered through the use of Moodle, so that the instructors could monitor the students use, and followed up with online quizzes that instructors could use as formative assessments and students could use to check their understanding. The teachers gave daily marks for online activity in order to provide an incentive for students to come to class prepared.

Class sessions began with teachers providing feedback on the online quizzes and offering brief reviews if they found that they were necessary. The bulk of class time was occupied by two activities. First, students worked in pairs to collaboratively solve problems. These collaborations were followed by group discussions of more advanced problems.

The research plan devised by the author involved two repeating cycles of plan, implement, observe, and reflect. Teachers’ peer observation and self-reflections, and student surveys constituted the data sources for the study. These sources allowed the author and his colleagues to draw several conclusions. First, the video lectures formed a satisfactory mechanism for delivering foundational knowledge, as students performed well on follow-up quizzes. Less successful, however, during the first cycle of the study were the in-class student interactions. In general, students seemed to prefer to solve problems individually rather than in collaboration with a peer. Based on this finding, the author and the other teachers decided to build a competitive active learning element into the class sessions in the second cycle. In the subsequent classes, students worked in pairs to develop the best strategies for solving problems as quickly as possible. The implementation of this element seemed to have the desired effect, as students were, according to teacher observations, more engaged with their peers and more eager to participate in class discussion. These observations were further substantiated by the student surveys: the second cycle surveys showed significantly higher positive attitudes towards the active learning elements of the course than had those taken after the first cycle.
Conclusions

The author offered three brief conclusions drawn from the study. First, he emphasized the importance of consulting the extent research before implementing the flipped classroom, as it had proven crucial to their use and study of the method. Second, the author noted the need to continue to develop creative strategies to strengthen student collaboration and engagement in class. Finally, the author felt that overall the study had validated the use of the flipped classroom and its feasibility in this educational context.

Applications

This article has two main elements that deserve consideration for application at U.D.C. First, despite the fact that this study examined the use of the flipped classroom in eighth grade math classes, it nonetheless illustrates the feasibility of the approach. Moreover, it offers a very accessible description of a straightforward and simplistic flipped classroom model. This isn’t to say that modifications might not be warranted or even necessary. Rather, it points out the potential benefits of even a simple/limited approach. Indeed, the simplicity itself allows for implementation without vast expenditure of time and effort. The second possible application that can potentially be derived from this article is, much like the first, the simplicity of the research conducted by the author and his peers. In essence, the author has presented a blueprint for conducting S.oT.L. research in our classrooms without engaging the level of complexity that would likely lead to inertia. Looked at from this perspective, this brief article shows the teaching and learning research neophyte that such studies can been conducted relatively easily and have considerable value.

Citations of Interest


