The Flipped Classroom

Introduction

In order to adequately prepare students for the end of course exam and ultimately college chemistry, it is important to use class time as effectively as possible. Students are then given homework that they are expected to complete on their own. Often students encounter questions that they are unable to complete and therefore are not able to continue. The need for additional class time for student interaction with the teacher as well as hands-on activities has left many educators, including myself, looking for an alternative way of conducting class. One such method is the flipped classroom. In a flipped classroom, students are exposed to new material at home using videos or reading assignments in lieu of classroom lectures. This leaves class time for conducting laboratories, working on problems with the teacher present and hands-on activities.

Focus Statement

What are the effects of the flipped classroom on the academic achievement of chemistry students?

Data Analysis

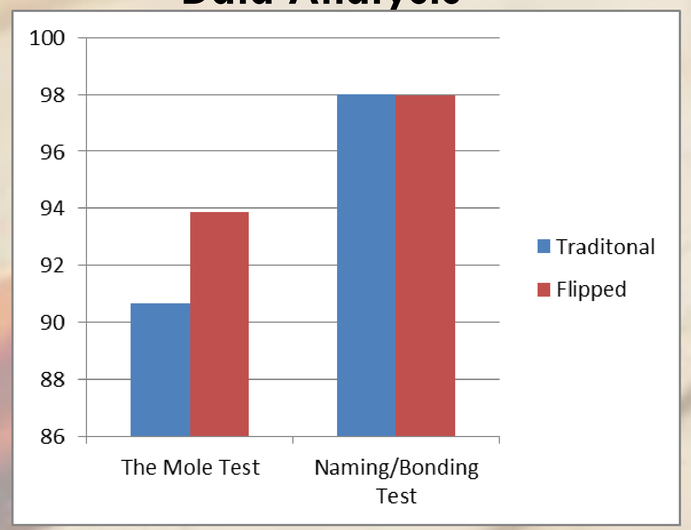

Figure 1. Results of the Summative Exams for Flipped and Traditional Methods (N=26).

Methodology

In this treatment, students were assigned a 10-12 minute video to be watched as homework. Class time was used to complete hands-on activities, labs and work problems with the instructor present to assist. Students were given both a pre and post test as well as asked to complete questionnaires assessing student attitudes about the flipped classroom experience.

What do the experts say?

Flipping the classroom allows students to use classroom time for problem based active learning (Bechman, Thorn, & Zhao, 2014). Homework becomes more meaningful as students are able to pace themselves through lectures. (Mangan, 2013).

Student sample

Research for this study was conducted in an honors chemistry class consisting of 26 students. All of the students were juniors with 16 males and 10 females.

Conclusion

The summative exams showed very little difference in the effectiveness of the different teaching methods. The class was split on whether or not they preferred the flipped lesson over traditional methods. Thirty-eight percent preferred the traditional, while 44% would rather use the flipped method. One student commented, "I learned better using the flipped method because I could go back and replay them whenever I need to."

Eric Swafford
Walker Valley High School
Cleveland, Tennessee

References

Bechman, M., Thorn, E., & Zhao, J. (n.d.). The inverted classroom. Retrieved from http://cese.science.psu.edu/files/InvertedClassroom.pdf

Mangan, K. (2013). Inside the flipped classroom. *The Chronicle of Higher Education, 60*(5), 18-21.