The Effects of a Flipped Fluid Mechanics Course on Student Learning Outcomes

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Introduction

The flipped classroom is a special case of blended learning whereby students learn content online when outside of class and practice solving problems in small collaborative teams when in class [1]. This poster shows our current research effort to examine the effects of the flipped classroom approach on student learning outcomes and engagement with the course material, instructor, and peers. Our earlier studies provide empirical evidence that support the use of online technologies and team problem solving sessions to shift an undergraduate fluid mechanics course from a traditional lecture format to a collaborative learning environment with improved student learning outcomes [2,3] (Figure 1).

We propose our current research to corroborate our initial findings, plus we will examine the level of student engagement in the course.

Research Design and Methodology

Quasi-experimental research design with comparison group

• Data sources: Course exams; Surveys; Classroom Observations; Fluid Mechanics Concept Inventory

Research Status

• Administered Fluid Mechanics Concept Inventory (pretest)

Regression analysis will be used to control for differences among students and to quantify the effect of the flipped classroom approach on student learning outcomes and engagement.

References

