UNIVERSITY OF THE PHILIPPINES

Doctor of Philosophy in Education
(Mathematics Education)

LIEL GEM M. VILLAVER - PONDARA

TEAM-BASED FLIPPED CLASSROOM: EFFECTS ON STUDENT ATTITUDE, MOTIVATION, ENGAGEMENT, AND ACHIEVEMENT IN MATHEMATICS

Dissertation Adviser:

Maria Ana T. Quimbo, PhD
Faculty of Education

Dissertation Reader/Critic:

Ma. Nympha B. Joaquin, PhD
Faculty of Education

12 August 2020

Permission is given for the following people to have access to this dissertation:

Available to the general public	(Yes or No)
Available only after consultation with author/dissertation adviser	(Yes or No)
Available only to those bound by a confidentiality agreement	(Yes or No)

Student's signature:

Signature of Dissertation Adviser:

"I hereby grant the University of the Philippines a non-exclusive, worldwide, royalty-free license to reproduce, publish and publicly distribute copies of this dissertation in whatever form subject to the provisions of applicable laws, the provisions of the UP IPR policy and any contractual obligations, as well as more specific permission marking on the Title Page."

"Specifically, I grant the following rights to the University:

a) *To upload a copy of the work in the theses database of the college/school/institute/department and any other databases available on the public internet;*

b) *To publish the work in the college/school/institute/department journal, both in print and electronic or digital format and online; and*

c) *To give open access to the above-mentioned work, thus allowing "fair use" of the work in accordance with the provisions of the Intellectual Property Code of the Philippines (Republic Act No. 8293), especially for teaching scholarly and research purposes".*

LIEL GEM M. VILLAVER - PONDARA

ABSTRACT

This study investigated the effects of team-based flipped classroom (TBFC) on students' attitude, motivation, engagement, and achievement compared to the conventional classroom (CC). It also analyzed its effects on students with different achievement levels and determined which among the aforementioned student variables predict achievement. The study used a combination of quantitative, Matching-Only Pretest-Posttest Control Group Design, and qualitative approaches. The study used a 100-item researcher-made achievement test, series of ten 10-item readiness tests, the modified attitude towards mathematics inventory by Tapia and Marsh (2000), the mathematics motivation scale by Liu and Lin (2010), and the student engagement instrument by Fredricks et al. (2016). Results revealed that students exposed to TBFC had significantly higher positive attitudes towards mathematics, higher levels of engagement, and higher achievement test scores than CC students. TBFC students also had higher levels of self-confidence, value, and emotional engagement. Among TBFC students, outstanding students showed higher levels of cognitive engagement. Furthermore, the path diagram revealed that attitude, motivation, and engagement are interrelated. Only engagement significantly predicted achievement. Qualitative themes reflected that advanced assignments boost self-confidence, team sharing equates team enjoyment, TBFC has the "we can do it!" drive, reviewing online prepares big time, and sharing means engaging. It is recommended to launch an educational platform in mathematics education for advanced assignments, offer capacity-building sessions for mathematics educators on TBFC, and explore the effectiveness of TBFC in a full virtual set-up.

Keywords: team-based flipped classroom, attitude, motivation, engagement, achievement