GROUPING MIXED ABILITY STUDENTS MATTERS: A PILOT STUDY IN PHYSICS

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ABSTRACT

In this paper, we sought to describe the effectiveness of team-based learning (TBL) when students are placed in mixed ability groups. TBL consists of strategically-formed permanent teams, a Readiness Assurance Process (RAP) and Application activities (Paramelee et.al, 2012). We trialled a class room flipped model that uses many features of TBL and a new grouping approach amongst first year Physics students following a successful preliminary study (Parappilly et.al, 2015). This model used important elements of both TBL and Just in Time Teaching (JiTT). JiTT (Watkins et.al, 2009) provides students with preparatory material prior to class and some questions to answer. For the 2014 study, we randomly formed permanent students groups. For the 2015 pilot, students were placed in mixed ability groups based on their admissions data and students worked together within mixed ability groups for the entire semester. Each group tackled a subset of the quiz questions and completed an in-class assignment. We compared pre- and post- quiz scores using paired-t-tests for 4 separate TBL workshops. It clearly proves that grouping mixed ability students increases learning for physics and their teamwork. The quiz scores improved significantly between pre- and post-quiz and improvements were similar for each of the 4 quizzes ($p<0.001$). We compared the data across two years (2014 and 2015) where the content and delivery were the same for both years. This study presents findings from both years.

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