

An Examination of Effectiveness of Different Approaches to Teaching Mathematics at Foundation Level in Higher Education of UAE

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Abstract

Mathematics is a problem-solving discipline which applies mathematical and statistical methods or techniques to solve scientific, business, economic and financial problems. However, there is a concern about the educational methods deficit in output, teaching and learning in world social science area (Williams and Paynes 2007). This study aims to find out in which ways we could stimulate and enhance students' teaching and learning in studying math, particularly in 'Inverse Functions', one of the most important and widely used topics. We advocate a problem-solving approach to teach the subject, which means no teaching is given in class, instead students do homework exercise in class (Flipped Classroom). The post assessment results are then analysed with 'Mann Whitney U' test which is based on ranking and provide sufficient evidence to support that, the 'problem-solving class' significantly improves students' learning compared to the 'traditional didactic teaching class' and it also enhances students' engagement and enjoyment of learning. Also the results suggest a strong consistency with a similar research on UK market (Zhao, 2019), that students' desire to carry out future study has been increased by problem-solving exercise approach, and the necessity of students completing the self-learning before the class is essential.

Keywords: Scientific Education, STEM, Mathematics/Statistic Teaching, Blended Learning, Didactic Teaching, Problem-Solving Approach (Flipped Classroom)