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**PhD Dissertation Defense**

Entitled

*THE IMPACT OF THE PROPOSED MATHEMATICS ENRICHMENT PROGRAM ON THE UAE STUDENTS' MATHEMATICAL LITERACY IN LIGHT OF THE PISA FRAMEWORK*

by

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Date & Venue

Wednesday, 18 November 2020

5:00 pm; Blackboard Collaborate Ultra

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Abstract

Mathematical literacy is an important skill that students must possess, as it helps students understand and use mathematics in the real world. The main aim of this dissertation is to investigate the impact of a proposed mathematical enrichment program that developed based on the Programme for International Student Assessment (PISA) framework. This assessment is particularly important because it is on the National Agenda as the UAE aspires to be among the top 20 countries in the world in PISA by 2021. An explanatory mixed method design was adopted to achieve the purpose of this study. Subjects included were 102 grade 10 students taken from two schools. In the first phase, a nonequivalent pre–posttest quasi-experimental research method was conducted. Mathematical literacy test and motivation scale were used to collect data. There was a statistically significant difference between the experimental and control groups with an effect size above the mean as indicated by the covariate analysis. Female students recorded greater improvement than male students in all areas of mathematical literacy except for reasoning. However, there was no significant difference in motivation to learn mathematics between the experimental and control groups, nor between male and female students. The second phase included qualitative data collected by perceptions survey. The students showed positive feelings towards their participating in the mathematical enrichment program as revealed by the thematic analysis. The study suggested that to improve students' mathematical literacy, schools should carefully implement the mathematical enrichment program. Findings from this study are expected to serve a larger goal of informing mathematics leaders in the UAE on how to improve the students' mathematical literacy. This study was one step up to fill in some of the gaps in the literature, and in the long term, much remains to be investigated and learned about mathematical literacy.

**Keywords:** Enrichment program, Mathematical literacy, Problem solving, Reasoning, Motivation, Contextual teaching and learning.