TITLE : TUGON: AI-POWERED TUTOR FOR GENERAL MATHEMATICS

ABSTRACT

General Mathematics is a core subject in senior high school, yet many students struggle with misconceptions, repeated errors, and delayed feedback that hinder mastery and increase math anxiety. To address these challenges, the researchers developed *Tugon*, a web-based AI-powered tutoring system designed to make students answer step by step, and deliver immediate and adaptive feedback. The system integrates a sequence of feedback from soft nudges of color-coded progress indicators, to detecting struggles, providing AI-generated hints, and corrective comments to guide learners in identifying and resolving errors as they occur.

This study aims to evaluate the effectiveness of *Tugon* in improving Grade 11 students' problem-solving skills, confidence, and engagement in General Mathematics. Using a quasi-experimental design with 80 students from the University of the East, Manila, the research will compare the performance outcomes after students used *Tugon* for a week. Data will be gathered through pre-tests and post-tests, student confidence self rating, and system analytics, and analyzed using appropriate statistical methods.

By combining intelligent tutoring with structured instructions, *Tugon* offers a personalized and interactive approach to mathematics education. The project seeks to demonstrate how AI-powered feedback can transform General Mathematics learning, reduce student anxiety, and foster stronger foundations for future academic success.