ASSESSING STUDENTS' TRANSLATION SKILLS IN NEWTON'S LAWS OF MOTION REPRESENTATIONS

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ABSTRACT

This study evaluated the translation skills of students concerning Newton's Laws of Motion through a standardized diagnostic test. A key objective was to offer valuable insights for science educators aiming to enhance the quality of physics instruction. The findings are intended to inform the development of effective teaching strategies or study guides to improve students' comprehension and application of scientific concepts. The study utilized purposive sampling, involving 178 Engineering students from various years and programs who had either completed or were currently enrolled in the Physics for Engineers course. The results shed light on the respondents' translation skills across several dimensions: conceptual understanding, problem-solving skills, mathematical execution, and the accuracy of final answers. On average, 33% of respondents demonstrated a strong grasp of the concepts, indicating that while some students are proficient, many struggle with conceptual understanding. This is crucial for science learning, where applying concepts to solve problems using equations is essential. Additionally, 40% of respondents excelled in problem-solving and mathematical execution, though the majority still faced challenges in these areas, suggesting room for improvement. Furthermore, 44% of respondents consistently provided correct final answers, outperforming their problem-solving, mathematical execution, and conceptual understanding skills. These findings underscore the importance of enhancing conceptual understanding to improve respondents' overall problem-solving abilities and mathematical execution.

Keywords: Physics Education, Translation Skills, Standardized Diagnostic Test, Philippines