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Students' Errors in Translating Algebra Word Problems to Mathematical Structure

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Abstract : Translating statements into mathematical notations is one of the processes in word problem-solving. However, based on the literature, students still have difficulties with this skill. The purpose of this study was to investigate the translation errors of the students when they translate algebraic word problems into mathematical structures and locate the errors via the lens of the Translation-Verification Model. Moreover, this qualitative research study employed content analysis. During the data-gathering process, the students were asked to answer a six-item algebra word problem questionnaire, and their answers were analyzed by experts through blind coding using the Translation-Verification Model to determine their translation errors. After this, a focus group discussion was conducted, and the data gathered was analyzed through thematic analysis to determine the causes of the students' translation errors. It was found out that students' prevalent error in translation was the interpretation error, which was situated in the Attribute construct. The emerging themes during the FGD were: (1) The procedure of translation is strategically incorrect; (2) Lack of comprehension; (3) Algebra concepts related to difficulty; (4) Lack of spatial skills; (5) Unprepared for independent learning; and (6) The content of the problem is developmentally inappropriate. These themes boiled down to the major concept of independent learning preparedness in solving mathematical problems. This concept has subcomponents, which include contextual and conceptual factors in translation. Consequently, the results provided implications for instructors and professors in Mathematics to innovate their teaching pedagogies and strategies to address translation gaps among students.

Keywords : mathematical structure, algebra word problems, translation, errors
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