**Analysis of Model Mechanism Testing Types of Elementary School Students**

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**Abstract**

*This study aimed to analyze the types of model mechanism testing performed by elementary school students to obtain insights for effective modeling learning. The mystery tube, a task that involves identifying the structure of a hidden string inside a closed tube, was used to investigate model mechanism testing. Twenty-two sixth-grade elementary school students were purposely sampled, and each participant performed the same task 1-4 times. Data collected included think aloud protocols and behavioral protocols generated by the participants during the task, retrospective interviews conducted after the task, and models expressed through writing or drawings on the practice sheet. The collected data was qualitatively analyzed through an inductive categorization process. The study found that elementary school students' types of model mechanism testing were classified into "data-based testing" and "model-based testing." Data-based testing involves comparing the results obtained through task manipulation with the mechanism to test it, while model-based testing involves externalizing the model and testing the mechanism through simulation. This study provides insights into the modeling process for elementary school students and directions for effective modeling learning.*

**Keywords**

Elementary school students, Model mechanism, Testing types, Modeling learning