One-to-one mapping as a key factor in understanding the cardinality of sets among engineering students.

Miloš Vučić

Faculty of Mechanical Engineering, University of Belgrade
e-mail: mvucic@mas.bg.ac.rs

Abstract. The use of different task formats (related to the same concept) has proven to be a good strategy for eliciting cognitive conflicts and opportunities for deeper analysis of responses. Through its application, we attempted to explore how engineering students deal with tasks related to the concept of set cardinality. The study involved 269 students from two universities: the University of Belgrade and the University of Novi Sad. By analyzing students' responses, we discovered the most common misconceptions in solving such tasks and why understanding the concept of functions (one-to-one mappings) played a crucial role. The results of this research indicate the need for a thorough treatment of the concept of functions in elementary and high school, as understanding this concept serves as a crucial foundation for further acquisition of more complex mathematical concepts.

Keywords: cardinality of sets; one-to-one mapping; misconception; engineering students;

References

[1] **P. Tsamir.** When "The Same" Is Not Perceived as Such: The Case of Infinite Sets. *Educational Studies in Mathematics*, 2001, 48(2/3), 289–307.