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A study on sixth grade students' misconceptions and errors in spatial measurement: length, area, and volume.

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Summary: The purpose of the present study was to portray students' misconceptions and errors while solving conceptually and procedurally oriented tasks involving length, area, and volume measurement. The data were collected from 445 sixth grade students attending public primary schools in Ankara, Türkiye via a test composed of 16 constructed-response format tasks. The findings revealed a wide range of misconceptions and errors such as "believing that all rulers are 30 cm long," "confusing area formula with perimeter formula," "believing a box has more than one surface area," "using the volume formula for surface area," "believing that ruler must be longer than the object measured," etc. These misconceptions and errors could be considered as the evidences indicating the sixth graders' lack of comprehension of the fundamental concepts of spatial measurement and their relationships and the procedures and formulas used for measuring length, area, and volume. The possible causes of such misconceptions and overcoming ways were also discussed.

Classification: F73 G33 D73
Keywords: area; conceptual knowledge; errors; length; mathematical misconceptions; procedural knowledge; spatial measurement; volume measurement
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