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**Generating scenarios of division as sharing and grouping: a study of Japanese elementary and university students.**

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Summary: Elementary school students learn two types of division scenarios: partitive and quotitive. Previous researchers have assumed that the partitive scenario is easier because it reflects the everyday notion of sharing, whereas the quotitive scenario, which represents grouping, is more difficult and is understood gradually in the course of mathematics learning. However, this assumption has not been adequately investigated in empirical studies. The present study examines the assumption in a cross-sectional study. Participants were 336 elementary school students (98 in grade 3, 82 in grade 4, 88 in grade 5, and 68 in grade 6) and 70 university students who performed two tasks. In the preference task, they generated a division scenario of any type consistent with a given numerical equation. In the problem-posing task, they generated a division scenario consistent with both a numerical equation and a picture representing a partitive or quotitive scenario. On the preference task, students at all grade levels preferred the partitive to the quotitive scenario, and this preference increased with students' grade level. On the problem-posing task, younger students (grades 3, 4, and 5) had equivalent success in the partitive and quotitive scenarios, but older students (grade 6 and university) found the partitive scenario to be easier than the quotitive. Implications for mathematics education are discussed.

*Classification:* F32 F33 F35 D52 D53 D55

*Keywords:* division; division scenarios; sharing; grouping; problem posing

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