

Abstract

The Common Core State Standards recommend that students understand the concepts of multiplication and division deeply along with being fluent in recalling facts and executing procedures. In the present study, we sought to design an instructional sequence to help a group of children entering fourth grade develop both conceptual understanding and procedural fluency for multiplication and division. We studied children's proficiency in these areas before, during, and after instruction. We conducted individual pre-assessment interviews, taught seven weekly lessons, and concluded with individual post-assessment interviews. In accord with the literature, we encouraged student interaction, creativity, and communication during our lessons. Lessons 1 and 2 were designed to help students connect skip counting to multiplication by having them skip count on a number line and use a number chart and dice to play a game. Lesson 3 was used to transition the students from skip counting to thinking of multiplication as grouping and repeated addition. Lessons 4 and 5 challenged students to think of grouping in connection with rectangular arrays by creating their own towns with buildings comprised of such arrays. In the final two lessons, students continued to work with rectangular arrays by arranging plastic ants into configurations with various numbers of rows and columns. As they did so, they developed deeper understanding of multiplication, division, and remainders. Students exhibited areas of growth in understanding during our lessons and post-interviews, supporting the idea that students need to make connections among multiple representations and strategies when learning multiplication and division.