Research on the Benefits of Manipulatives

Students with innovative, common sense, dynamic, tactile or kinesthetic learning styles learn best when involved in hands-on tasks, games or cooperative learning (McCarthy, 1987). While using manipulatives, students have fun, which has been proven to increase engagement, motivation and self-confidence. The National Center for Accessing the General Curriculum (2001), in a review of 14 studies, found that “use of manipulatives compared with traditional instruction typically had a positive effect on student achievement.” The effect was consistent across the board but especially beneficial for high-risk, learning disabled and limited English proficient students.

Manipulatives help students make the leap from intuitive to logical thinking, from the concrete to the abstract (Hartshorn & Boren, 1990). Studies have even found that first grade students need tangible objects to count correctly (Steffe, Thompson & Richards 1982), and that those who had manipulatives available during problem solving tasks or tasks with large addition problems scored much higher than those who did not have manipulatives (Steffe & Johnson, 1970; Carpenter & Moser, 1982). Simply put, mathematics achievement increases when manipulatives are used (Suydam & Higgins, 1977). Plus, a meta-analysis of 60 studies found that the long-term use of manipulatives was even more effective than short-term use (Sowell, 1989).

In every decade since 1940, the NCTM has encouraged active student involvement through the use of manipulatives at all grade levels. In fact, in their publication Principles and Standards for School Mathematics (2000), the NCTM explicitly recommends the use of manipulatives in the classroom. Classroom teachers also know that manipulatives work. In a recent survey on instructional materials, 85% of elementary school teachers and 67% of teachers who teach combined grade levels rated manipulatives as "highly effective" (National Education Association, 2002).
References


