



Yale-New Haven
Teachers Institute®

Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2001 Volume VI: Human Intelligence: Theories and Developmental Origins

Multi-Sensory Manipulatives in Mathematics: Linking the Abstract to the Concrete

Guide for Curriculum Unit 01.06.12

by Judith L. Bellonio

Experiential education is based on the idea that active involvement enhances students' learning. Applying this idea to mathematics is difficult, in part, because mathematics is so "abstract." One way of bringing experience to bear on students' mathematical understanding, however, is the use of manipulatives. Manipulatives are objects that can be touched and moved by students to introduce or reinforce a mathematical concept. Manipulatives come in a variety of forms, from inexpensive, simple buttons or empty spools of thread to tangrams and pattern blocks. Typically, it has been the primary grades' teachers who have generally accepted the importance of manipulatives.

Research indicates that manipulatives are particularly useful in helping children transition from the concrete to the abstract level. It is key for the teacher, however, to select the appropriate activities/manipulatives to support the transition. The transition often reflects the developmental process. Further research, in a review of activity-based mathematics learning, indicates that mathematics achievement increased when manipulatives were used.

This unit is intended for 5th and 6th grade students. The area of mathematics that is being covered is fractions. This unit includes lessons that extensively use pattern blocks, tangrams, and Cuisenaire strips. Pre-lesson activities include the making of tangram sets and Cuisenaire strips. In addition, the lessons include interactive Internet activities that coincide with each manipulative type.

(Recommended for Mathematics, grades 5-6.)

<https://teachersinstitute.yale.edu>

©2019 by the Yale-New Haven Teachers Institute, Yale University

For terms of use visit <https://teachersinstitute.yale.edu/terms>