

DOWNLOAD PDF MATHEMATICS FOR ELEMENTARY TEACHERS, PHYSICAL MANIPULATIVES

Chapter 1 : Useful Mathematics Manipulatives to Use with Elementary Students

This leading mathematics text for elementary and middle school educators helps you quickly develop a true understanding of mathematical concepts.

In the article "Virtual Manipulatives for K Classrooms," a virtual manipulative is described as "an interactive, Web-based visual representation of a dynamic object that presents opportunities for constructing mathematical knowledge" Moyer, Virtual manipulatives are distinguished from computer models or pictures by their interactive attributes and manipulability. Why use a virtual manipulative? There are several reasons to use manipulatives. One aspect is the time, cost and space savings over use of concrete manipulatives. Virtual manipulatives are free, available to the entire class, and working with them does not require tables or other large spaces. Virtual manipulatives do require computers, ideally with Internet access, but many can be downloaded and used offline. Students enjoy using virtual manipulatives and find them easy to use CITE. Research has shown that concrete manipulatives help students better understand abstract concepts in math, and comparative studies show virtual manipulatives to be as effective as concrete ones. Some research shows Virtual manipulatives may lead to more complex, richer understandings of concepts than through use of concrete manipulatives CITE. How to use Virtual Manipulatives Effectively The virtual manipulative sites described below are accompanied by lesson plans for teachers describing how to use them effectively in teaching mathematics. Virtual manipulatives are often accompanied by usage instructions and hints to help students use them successfully, making independent use possible. However, researchers and authors caution "Although virtual manipulatives provide some support for individual student use, as with physical manipulatives, students benefit from teacher guidance to help them use the manipulative correctly and connect to the underlying math" CITE. The Center for Implementing Technology in Education lists several factors to consider when selecting virtual manipulatives: Can the level of difficulty be adjusted for different students? What type of feedback do they provide? Will teachers need to provide feedback and support? How clear are the instructions for use? Investigate patterns, triangles and properties of polygons, geometry and measurement; develop spatial skills by using tanagrams, learn estimation strategies Communicate about math using games, use simulation software to investigate distance, rate, and time; investigate data Visualize the concept of multiplication, investigate rate of change, length, perimeter, area, volume, congruence, similarity, and symmetry, and the Pythagorean Theorem Explore vectors; use graphs, equations, and tables to investigate elimination of medicine from the body; explore inscribed figures, linear regression, and linear functions. The purpose of Illuminations is to "provide Standards-based resources that improve the teaching and learning of mathematics for all students" and "provide materials that illuminate the vision for school mathematics set forth in Principles and Standards for School Mathematics ". The range of the numerator is limited to values from 0 to 20 and the denominator is limited to benchmark values 1, 2, 4, 5, 8, 10, and The range of the numerator and denominator is limited to values from 0 to The manipulatives are sorted by grades and linked to the standards set forth by the NCTM. To use, select a manipulative from the grade level you teach and an activity from one of the strands. A strength of this site are the lessons available, and the suggested activities, as in this Geoboard example for PK Use geoboards to illustrate area, perimeter, and rational number concepts.

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Chapter 2 : Teaching Mathematics with Virtual Manipulatives | Tech & Learning

Physical Manipulatives to accompany Mathematics for Elementary Teachers: A Contemporary Approach 9th Edition by Gary L. Musser (Author), Blake E. Peterson (Author), William F. Burger (Author) & 0 more.

Mathematics Manipulatives for Elementary Students: Concrete and Virtual written by: This article gives suggestions on math manipulatives to use and keep on hand in the classroom. Using these multisensory tools with your students can help to promote an active learning environment. As you introduce your students to abstract ideas, they can then find creative ways to represent these math concepts concretely. Hands-on learning math activities can be especially helpful for kinesthetic learners. The effective implementation of useful mathematics manipulatives in a classroom can help to enhance the informal, intuitive approach to learning shared by many children. Math manipulatives can be extremely helpful to elementary math students while they are working in these areas. Use math manipulatives like counters, counting beans, snap cubes and the good old-fashioned abacus to help students get a full grasp on the four basic math operations, addition, subtraction, multiplication and division. The number line and the hundreds chart are two more must-have math manipulatives. Base ten block sets can bring place value to life for first through third graders, and can even help struggling students, in higher grades, increase their fundamental understanding of the subject matter. Fraction tiles and cubes, as well as fraction tower and pizza sets, can help students to gain a greater understanding of abstract math ideas. Math and fraction dice sets, spinners and game pieces can turn a dull math lesson into an exciting game, producing greater student mastery of the topic. Pattern and attribute blocks, along with mats and boards, are wonderful for sorting and patterning activities with these grade levels. When going through lessons that involve geometric figures, it is wise to allow your students to have access to math manipulatives as solid geometric shape blocks, geoboards with rubber bands and tangrams sets. A classroom set of mercury-free thermometers can help students become excited about learning about the weather as math and science come together. Centimeter cubes, rulers and student tape measures can make lessons on the standard and metric systems into true successes. A platform scale and math balance are also essential items to keep on hand in the elementary math classroom. Virtual math manipulatives are interactive, online versions of traditional math manipulatives. Many websites offer free access to a wide variety of virtual tools. Web-based tools that would be useful for lessons that deal with data and probability include virtual spinners and graphing tools. The National Library of Virtual Manipulatives is a popular site, offering students opportunities to create bar, line and circle graphs to represent and display data.

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Chapter 3 : Beckmann, Mathematics for Elementary Teachers with Activities | Pearson

Shop Math Manipulatives and Resources at blog.quintoapp.com ndash a leading online provider of manipulatives and educator solutions for pre-k through 12th grade.

The use of manipulatives has a long history with solid research supporting it. Students may lose the opportunity for deeper conceptual learning if manipulatives are used without further formal discussion, abstraction, and mathematical connection. For many educators, applying this idea proves challenging, in part, because of the abstract nature of mathematics. Any object that students can touch, move, feel, and interact with is a manipulative. They are often thought of as a representation for a concept. They provide a concrete representation that can initially open the door to developing understanding for a challenging topic being studied. What follows is my list, compiled over several years, of my Top 5 Reasons for Using Manipulatives in the Classroom. Top 5 Reasons for Using Manipulatives in the Classroom Manipulatives can provide a bridge between the concrete and abstract levels of many mathematical topics. Educators must carefully and deliberately choose the manipulatives being used as well as the sequence of introducing the manipulatives associated with the development of the mathematical topic being studied to maximize effectiveness. Also, studies suggest that mathematics achievement does increase when manipulatives were used over extended periods of time. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Models can range from the simple to the more complex. Manipulatives provide another representation for the mathematics being studied. Representations has long been one of the process standards for NCTM. Manipulatives support student engagement and differentiation. The National Council of Supervisors of Mathematics in their Improving Student Achievement Series states as one of their four positions on using manipulatives in the classroom: Hattie later cites research on the power of balance in the classroom: Manipulatives provide a foundation around which teachers and students can talk, listen, and do. Make a shift in our thinking “ problems first, teaching second; Progressively withdraw from helping students; and Re-evaluate evaluation. When students use manipulatives to create and use representations to organize, record, and communicate their mathematical ideas, they begin to develop a more positive math disposition and take ownership of their own learning. Do you currently use manipulatives in your mathematics classroom? If so, what benefits or limitations have you experienced? Are the manipulatives you need readily available? Do you have the background and experience to effectively facilitate your students as they use the manipulatives or do you need professional development focused around the use of manipulatives? Manipulatives can benefit the mathematical learning of students at all levels “ from primary through even college classes. But remember, the most often asked question I get from teachers at any level is: Strategy Saturdays Series, Focus: Using Manipulatives in the Classroom Limited to 10 Educators per session This 9 “ day training will take place over 9 Saturdays throughout the school year. There will be 9 sessions focused on elementary grades and 9 sessions focused on Secondary grades. This will allow teachers to see prior, current, and future content to better support intervention and differentiation for students. Districts may choose to send one teacher to each of the trainings or send a different teacher each session. It will be up to the district and school. But only 10 teachers will be accepted for each session to ensure one-on-one support. On-going support via email throughout the school year.

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Chapter 4 : Physical Manipulatives

I have a bit of an addiction to Math Manipulatives. They make teaching elementary math SO much easier. You really don't need a lot of different things in your bag of tricks to get by.

This site is monetized through sponsored posts and affiliate links. I earn a small commission from the sale of products purchased via these links. Please see our advertising disclosure at the foot of this page for more information. They make teaching elementary math SO much easier. These items make my cut for the top 10 math manipulatives for elementary students: These fraction tiles are amazing. They are sturdy and amazing. Forget flimsy number boards. This particular set comes with a thick, hard plastic grid board, and three sets of tiles. One has numbers, then there is a pack of red and blue overlay tiles. It also is handy for multiplication practice. Connecting Cuisenaire Rods Introductory Set: You can teach anything with Cuisenaire rods. Check YouTube for anything you are wanting to teach. I promise you, the answer will be there. Learning Resources Desktop Abacus: Look for an abacus like this one with each 5 separated by color- this way, your child can easily see sets of 5 to make basic math functions easier. I use mine to help with counting, addition and subtraction. It has gears so the hour and minute hands move together as a real clock would. This is the best, sturdiest classroom clock. Base Ten Starter Set: I like this set because each value is color coded. This helps with teaching place value! This set also has little plugs so you can fill them with rice to measure volume with them! Attribute blocks are good for patterning, sorting, and more. These double as math manipulatives, and toys. We use them to help calculate area, to make pictures, and for learning about 2D shapes. Baby Bear Sorting Set: We use our counting bears to tell math stories, for counting of course, simple math and sorting. These are well loved, and often show up as extras in imaginative play. Join the newsletter [Subscribe](#) to get our latest content by email. There was an error submitting your subscription.

Chapter 5 : Top 10 Math Manipulatives for Elementary Students – Only Passionate Curiosity

Math manipulatives are small objects that help with teaching math. They are useful tools for teachers and students. They provide a hands-on way in which to explore and learn.

Chapter 6 : The Top 5 Reasons for Using Manipulatives in the Classroom

Math manipulatives are vital to helping elementary students to develop a strong, concrete understanding of fundamental mathematics concepts. This article gives suggestions on math manipulatives to use and keep on hand in the classroom.

Chapter 7 : Math Manipulatives | Scholastic | Parents

Manipulatives are physical objects that are used as teaching tools to engage students in the hands-on learning of mathematics. They can be used to introduce, practice, or remediate a concept. Use this resource to help your students learn how to use manipulatives successfully.