

KG Physical Science

Properties of Matter

Teacher Background Information – for teacher content knowledge only, NOT student learning goals

Scientists use four basic properties to describe everything: mass, weight, volume and density. Mass is the amount of matter that something has. The mass of an object does not change, even if its shape changes. An object's weight is how heavy it is. Weight is really the pull of gravity on the mass of an object. Gravity's pull on a heavier object is more than on a light object. That's why objects with more mass weigh more. The third property of matter is volume. Volume is the amount of space something takes up. You can put a golf ball into your pocket because it doesn't take up much space; however, the volume of a bowling ball is too large to fit in your pocket. Another property of matter is density. Density describes how tightly packed matter is. The amount of mass that is packed into a given volume tells us whether it is very dense like a bowling ball, or not as dense, like a balloon.

Instructional Implications

We use our five senses to observe the special characteristics, or properties, of objects. Knowing the properties of matter helps us understand our world and all the things in it!

Students need many experiences to describe and manipulate a wide variety of objects.

Encourage children to be observant and to sort collections of objects in many ways.

Science, take apart, and invention centers are an effective way to give students opportunities to explore physical science concepts.

Using a science notebook, students should be encouraged to draw and label what they do to materials and how those materials respond. Start with a familiar operative word such as "stuff" for children at this age, instead of using the word "matter".

Big Idea

Everything has its own special properties.

Essential Question

How are objects and materials the same and different?

AAAS Benchmarks/National and Science Education Standards

Structure of Matter

- Magnifiers help people see things they could not see without them. 5C/P1*
- Objects can be described in terms of the material they are made of (clay, cloth, paper, etc....) and their physical properties (color, size, shape, weight, texture, and flexibility). 4D/1
- Things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.
- Many materials can be recycled and used again, sometimes in different forms. 5E/P2
- Most things are made of parts. 11A/1

Materials/Resources

FOSS: Fabric

Local Connections

Common objects found in the students' everyday world.

Related Scientist or Career Path

Fabric Artist
Weaver
Museum Curator – Ellen Carrlee

ASSESSMENTS

Assessment– ongoing formative,
appropriate for the primary classroom

Science Notebooks

Anecdotal notes – continuum

Photo documentation - of student work

Science Process Skills

Observation
Classification
Simple Investigation
Prediction
Data Collection
Communication

Student Difficulties and Misconceptions

Elementary students may think everything that exists is matter, including heat, light, and electricity. Alternatively, they may believe that matter does not include liquids and gases, or that they are weightless materials.

Children at the Kindergarten level do not understand abstract words such as property, matter, features, and characteristics.