Group KG, A and B

Fun with Art: Embroidery Thread Eggs

Blow up your balloons. Remember, the size of your balloon will be the size of your egg, so unless you are thinking of ostrich eggs, you do not need them to be too big.

Measure and cut strands of your embroidery thread. We used strands about 60 cm long. Depending on how thickly you want to cover your balloon, you will need 10-15 strands of thread.

Pour a few tablespoons of glue into the cup.

Dip the first strand of thread into the glue. Holding the thread over the cup of glue, pull the thread through your finger and thumb to spread the glue along the whole length of the thread.

Wrap the thread over the balloon, covering as much space as you can.

Repeat steps 4 and 5 with more thread, until you have covered as much of the balloon as you would like.
Note: the more you have covered the balloon, the sturdier your egg will be.

Dry overnight. After the glue on the thread has dried COMPLETELY, pop the balloon (using scissors or a knife).

Carefully pull the balloon out through a gap in the thread (you can use your fingers or tweezers). You will be left with a beautiful egg!

Fun with Colors

Paper Towel Butterflies

Materials

Food coloring, ice-cube tray, paper towel

Steps

I mixed up my food coloring and water and filled an ice-cube tray so the Hooligans would have a variety of colors to work with. You can use liquid food coloring for this. The colors are really vibrant, and a little goes a long way. You can also use liquid water colors for this type of project.

Painting the Wings

Each child should receive a paper towel, and set out a variety of instruments for them to transfer the colored water to their paper towels: stir-sticks, pipettes/droppers and paint brushes.

Since you are working with food coloring, be sure to protect your table with a vinyl tablecloth, or an old towel if staining is a concern.

Now the fun begins!

Kids dropped, dabbed, and tapped until their paper towels were completely covered with splotches of color. This activity presents an opportunity to learn about color mixing, and about absorption and saturation.

Making the Butterflies

The kids dropped, dabbed, and tapped until their paper towels were completely covered with splotches of color. When the paper towels were completely soaked, we placed some by the fire to dry, and I took a hair dryer to a couple of them.

I wanted to give you a few options for the body of your butterflies. You can use any of the following:

1. Two bendy-straws
2. One pipe cleaner
3. One twist tie

Gather your paper towel, scrunching it together in the middle, to form your “wings”.

For the twist tie and pipe cleaner butterflies, simply wrap your twist tie/pipe cleaner around the middle of the wings, twist to secure, and shape the antennae.

For the bendy-straw butterfly, stick the straws together with some tape or hot glue, and use a twist tie to secure the wings to the straws.

Glue on a couple of googly eyes, and you are done!

Gather your paper towel, scrunching it together in the middle, to form your “wings”.

Fun with Perfume: Make your own perfume

Put several drops of almond oil.

Add other drops of a fragrance oil.

Add some vanilla powder.

Add glitter for decoration, then mix all ingredients well.

Fun With Perfume: Make Your Own Scented Rock

Mix the dry ingredients together in a bowl.

Stir in the boiling water and essential oil (or other fragrance).

Separate the mixture into balls that are the desired size of the individual rocks, then shape the balls and allow them to dry.

Fun with Chemistry

Frankenstein's Hand

Materials

1. Three tablespoons of vinegar
2. Drinking glass
3. Two teaspoons of baking soda
4. Rubber glove

Steps

1. Pour the three tablespoons of vinegar into the glass.
2. Spoon the baking soda into the glove. Hold the glove by the wrist and shake the powder into the fingers.
3. Carefully attach the glove to the glass, keeping the baking soda in the fingers of the glove.

4. Pull the glove upright releasing the baking soda into the vinegar.

5. Watch the bubbles grow.

Conclusion

Why does this happen?

The chemical reaction happens when vinegar's (acetic acid) reacts with the baking soda's (sodium bicarbonate) to form carbonic acid. Carbonic acid falls apart into carbon dioxide and water. The bubbles are from the escaping carbon dioxide. The CO_2 has nowhere to go except up into the glove causing it to inflate and be super cool.

Tips

Adult supervision is recommended. Gloves are also recommended.

Fun with Cooking: Spider Web Snacks

Our kids love helping in the kitchen, and this spider web snack is a very special treat. Trust me: It is hard to go wrong with a craft that involves two kinds of chocolate!

What you will need

1. Pretzels
2. Raisins
3. Chocolate chips
4. White chocolate baking chips
5. Wax paper
6. Sandwich bag / small ziplock bag (2)

How we did it

Gather the supplies and get ready for some yummy fun!

Put the chocolate chips in the zip-lock bags. Fill two glasses with hot water, then immerse the bag in the water to melt it. FYI: one cup of chocolate chips makes 4-5 treats.

Lay out a piece of wax paper, and organize pretzels in a web-like shape.

Cut a small hole in a corner of the bag, and squeeze out some white chocolate at the center of the web. Then make the web by squeezing out three circles.

Place two raisins at the center of the web.

Now is the time to make the spooky spider. Squeeze some of the melted chocolate out in the center, and make the spider the desired size.

Next place the spooky snacks in the refrigerator for a few minutes.

Once the chocolate hardens, peel of the wax paper, and admire your creation...then taste your delicious treat!

Workshop: Earth, Moon and Sun

Lunar Phases Box Model

Materials

1. One shoebox per pair
2. Cotton ball (30 mm in diameter)
3. Black paint, wooden spit (box)
4. Glue, brush
5. Small flashlight
6. Scissors.

Learning Objectives

Learn about the four main phases of the moon.

Full description

1. Divide the class into pairs, and ask them to paint the inside of a shoebox black.
2. Let them cut a spyhole at the center of each of the four sides. In one of the two narrow sides, they drill another hole, which is just big enough for a flashlight to be inserted from the inside out.
3. Fix a cotton ball, on which little craters have been painted, on a wooden spit at the center of the cover, which is then closed.
4. Next, they light the flashlight. The children can now observe four different lunar phases (full, new, first-quarter and third-quarter) through the four spyholes.

Invisible Light

Materials
1. Infrared remote control
2. Mobile phone with camera

The Sun provides us with light and heat. Without this source, life could not have developed on Earth. The indispensable sunlight looks white to us. White seems to be one specific color, but actually is a composition of many colors. In the same way, orange is a composition of red and yellow, white is a composition of all colors. So sunlight consists of all colors we can see, and a rainbow clearly shows this. When the Sun shows its face on a rainy day, its light is refracted in the water drops and split into its components. All visible colors can be seen in a rainbow. We call this the "visible" light because our eyes can see it. However, above the red line and below the blue line, there are two additional colors, infrared (IR) and ultraviolet (UV), respectively. It is just that our eyes are not made to see those. Above and below these "special" colors, there are even weirder sorts of light. These invisible types either have very high energy, such as X-rays, used in hospitals to see through our bodies; or low energy, such as infrared radiation, whose properties are used in television remote controls. In order to be able to see this special light, we need appropriate instruments. Why does the Sun shine with all this light? In its interior, the Sun transforms hydrogen into helium. This process, known as nuclear fusion, releases lots of energy. This energy keeps the Sun as hot as it is; and like a light bulb in a lamp, the Sun glows because of its high temperature. If you look inside a toaster, you can also see it glow; because it is not as hot as the Sun, it only shines with red light. The Sun, however, is so hot that it shines with all possible kinds of light, including X-rays, infrared and ultraviolet !

Full description

1. Ask the children to hold a remote control and press a button. An infrared signal should be coming out of the remote, but why can't you see it? Is it broken?
2. Now let them do the same thing again, but this time make a movie of it with their mobile phone instead of looking at it with their bare eyes.
3. Ask them to look at the screen: a light signal does appear, the remote still works! The reason they can now see the signal is that the camera of their phone can see infrared light and projects it on the screen as visible light. Human eyes cannot see infrared.

Planets Workshop
Solar System Model

Materials

1. Wooden spheres
2. Transparent strong foil (ca. 10 cm × 10 cm)
3. Paint and brush
4. Plasticine, permanent markers (black, thin, waterproof)
5. Planets and Sun (flat)

Full description

1. Together with the children, paint wooden spheres according to the pictures of the planets: Mercury (3.5 mm), Venus (11 mm), Earth (11 mm), Mars (6 mm), Jupiter (80 mm), Saturn (60 mm), Uranus (35 mm) and Neptune (35 mm). Also paint the Sun (100 mm).

2. Let all spheres dry.

3. Then, draw concentric circles at the outer edge of Saturn's plastic ring. Pull the ring over Saturn and fix it at its equator.

4. Place all planets on the table, at suitable distances from each other.

5. The sizes of the planetary spheres are not all to scale, so that they can be handled better by the students.

Planetary Orbits

Materials

1. Models of the Sun and Earth (box)
2. Yellow rope knotted together (box)
3. Two full bottles of water
4. Chalk

Full description

In order to graphically represent a circular orbit, knot two ropes together and place them around a water-filled bottle and a piece of chalk. Make sure the distance between the chalk and the bottle is such that the rope is tensed.

1. Now move the chalk around the bottle, like a compass, while keeping the rope tensed. This way, a circle forms on the floor with the bottle in the center.

2. Next, remove the bottle and put the Sun's model in its place. Put the model of the Earth into the orbit. This completes the circular orbit. We now have an approximation of Earth's orbit, but not an exact model: the orbit should be elliptical!

3. To construct an ellipse, we need two bottles filled with water, and a piece of chalk.

4. Place the rope around both bottles and the piece of chalk, and tense it again. This time, the rope is shaped in a triangular form.

5. If the chalk now goes around both bottles with the rope tensed, the result is an ellipse. In this model, the position of one of the bottles would represent the Sun and the piece of chalk would be the planet.

6. Now replace one bottle and the chalk with the models of the Sun and the Earth, and remove the other bottle. We have a realistic (although probably exaggerated) model of Earth's elliptical orbit around the Sun!

7. With the help of this method, very different ellipses can be constructed.

8. How does the shape of the ellipse change if we diminish the distance between the bottles?

9. How does the shape of the ellipse change if we increase the distance between the bottles?

10. In reality, the two focal points (bottles) are very close to each other, making Earth's orbit almost circular. Think about it: we do not even notice the varying distance in temperature!

11. Mathematically, the weights or nails in our construction mark the so-called "foci" of an ellipse. The larger their distance, the more elongated the ellipse becomes. If a planet revolves on a very elliptic orbit, its distance from the Sun will vary widely in the course of a rotation around the Sun: sometimes it is very large, sometimes relatively small.

Constellation Workshop

Constellation Shapes

Materials

1. Five stars
2. Five wooden spits of different lengths
3. Plasticine

Full description

1. Stick five stars on five wooden spits of different lengths and place them on a table using plasticine, at different distances from each other, so that from the front they form the shape of the constellation Cassiopeia.

2. Let the children observe from different angles, from the front and from the side, in a darkened room. What do they see? From the front, the stars look like the constellation Cassiopeia, but from the side they form a completely different shape. Apparently, constellations only have their form because we look at them from Earth's perspective. If you could get in your spaceship and look at them from another side, you would notice that the stars are all at varying distances from Earth: they do not actually belong together!

Workshop: Build Column Models of the Greek and Roman Eras

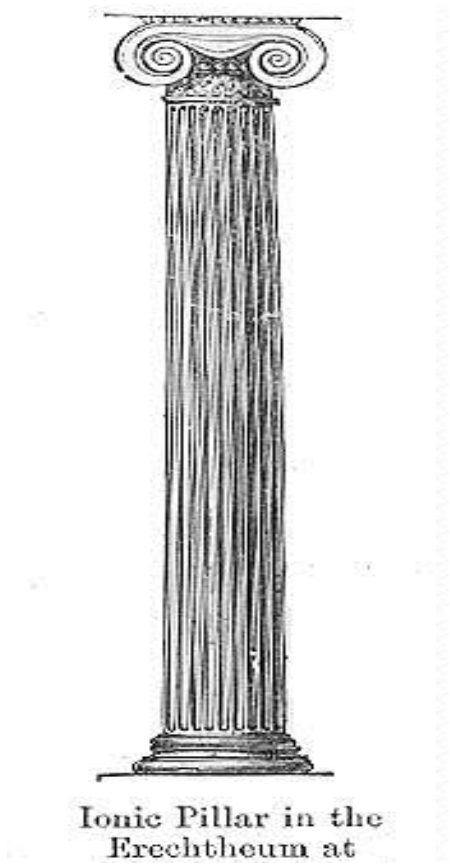
How to make a column of Greek Ion style:

Tools

Canson paper, Crepe paper, Borough paper, colors, tape

Method

1. Wrap Canson paper around drum-shaped body to form a column.
2. Wrap Crepe paper then wrap ends of paper to form a helical crown of Greek Ionic column.
3. Cut Borough paper in a circular shape for the base.
4. Wrap around the column Crepe paper to form the channel column.
5. Assemble all the parts to form the column.



Erechtheion

(Acropolis Museum)

Glass Workshop: Greek and Roman Eras

The *modus operandi* of glass candle cup

Tools

Glass cup, seashell and shellfish, water, clay, glitter, Borough paper, candle wick

Method

1. Pour water in a cup, add shells and glitter
2. Cut Borough paper same size of paper cup, with a hole in the center for the candle wick.
3. Place Borough paper inside the cup, then light the candle.

Pottery Workshop: Greek and Roman Eras

How to make Tanagra figurines

Tools

Clay colors

Method

1. Bring clay colors.
2. Placing clay on Tanagra figurines (female hat, female playing musical instrument, girls taking lesson), all are wearing Greek cloaks.

Team building

Differences

Number of players
No limit

Materials needed

Paper for each participant

Instructions

1. Give each participant a sheet of paper, and tell them to close their eyes and hold the paper in front of them.

2. Instruct them to fold the paper in half, and in half again. Then they should form a triangle with the folded paper.

3. Tell them to rip off the lower right corner.

4. Have them open their eyes and unfold the paper.

Processing

1. Papers will look different. Discuss, with participants, how this illustrates how we are different and alike. Our perceptions and understanding of the same instructions might be different.
2. How does this affect our group? What did you learn from this activity?

World in Motion

Inertia

Purpose

To observe the inertia of an object at rest

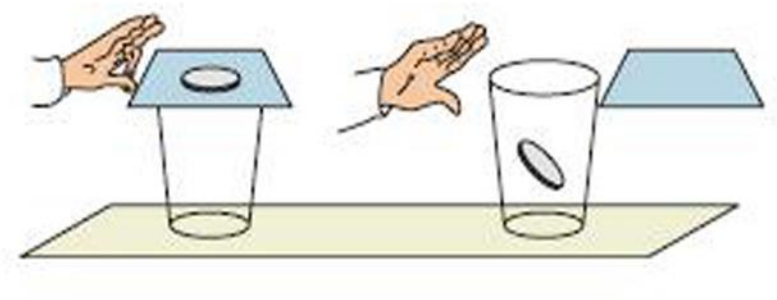
Equipment

Tablecloth, place setting, vase with flowers
Optional: Glass, coin, and card

Description

Perform the "magic trick" of pulling a tablecloth from under a vase filled with flowers.

Hint: Leave some slack in the tablecloth so that your hand (and cloth) will reach a speed before the tablecloth slides from under the vase. This will reduce the time of the impulse, reducing the time that static friction acts on the vase. Pull on the tablecloth slightly downward, to eliminate any upward forces acting on the vase.
VARIATION: "Inertia Coin"



Hidden Forces

Anti-Gravity Water

Materials

1. Tall glass with round rim
2. One handkerchief
3. One water pitcher

The leading questions

How much water, do you think, will leak out through the handkerchief?

Instructions

1. Place the handkerchief over the glass, then push the middle of the handkerchief down the glass.
2. Fill the glass 3/4 full with water into the middle of the handkerchief.
3. Then pull the handkerchief down the sides of the glass making it stretch across the surface of the glass. Grip the ends of the handkerchief at the bottom of the glass.
4. Take one hand and place it over the top of the glass, turn it over with the other hand.
5. Take your time and pull the lower hand away from the glass, the water should remain in the glass.
6. Finally, put your hand over the top of the glass, then turn the glass right side up; remove the handkerchief from the glass and pour the water back into the pitcher.

Follow-up questions

1. Would this experiment work with any other liquid?
2. Would this experiment work with paper towels, napkins, or tissues instead of a handkerchief?

Chemistry behind it

When the handkerchief was stretched tightly across the glass, the holes in it disappear. This allowed the water molecules to bond to the other water molecules which caused surface tension. The reason the water remains in the glass is because the water molecules bond together to form a membrane blocking the openings in the cloth.