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No. 59260

First Look Light Table Kit

Science Standard B – "By experimenting with light students begin to understand that phenomena can be observed, measured, and controlled in various ways" (NSTA)

Science Standard E – "Tools help scientists make better observations, measurements, and equipment for investigations. They help scientists see, measure, and do things that they could not otherwise see, measure, and do" (NSTA)

Large shape transparent buttons

[Standards A, B, E] Students begin to form explanations of the world around them by comparing, describing, and sorting.
Materials: large transparent buttons, light table.

1. Have children describe buttons: Give children a large assortment of buttons in varying shapes and colors. Place buttons on the light table to highlight the attributes. Select one button and model describing aloud the physical attributes of the selected button. (color, shape)
2. Have children compare and describe two buttons: Select two buttons that have different colors and shapes. Invite children to tell how the buttons are alike and how they are different. Repeat the activity by having children take turns selecting two buttons and telling how they are the same and how they are different.
3. Have children sort the buttons by color on the light table: Check for comprehension. Have children tell how the buttons in each group are the same. Encourage children to share their work and to listen as others share their work.
4. Have children sort the buttons by shape on the light table: After children sort the buttons, invite them to name the different shapes (star, heart, square, flower, triangle, hexagon, circle, diamond). Ask children to share how sorting the buttons by shape changed what happens to the colors.
5. Children may choose to sort by rounded buttons and angular buttons or other shape descriptions. Ask children to share how they sorted their buttons.

[Standard A, B, E] Matter can be described as same and different.
Materials: large transparent buttons, light table.

1. Introduce/review the terms: same, different. Put children in small groups around a light table. Give children 5-6 buttons. Ask children to take turns as each one selects two buttons and tell how they are the same and how they are different.
2. Ask children to select 3 or 4 buttons and share how the buttons are the same. Allow them to share their similarities. Ask children how 2 or 3 buttons are different. Allow them to share their differences.
3. Have children problem solve by having them identify attributes that are the same and attributes that are different. Place one button on the light table, have children select a button that is the same in one way and place it next to the first button. Next, have a child select a button that is different in one way and place it next to the second button. Continue the activity until you have a row of buttons. Review with children how each button is the same or different.

[Standard A, B, E] Matter can be described by its location: above, below, in front, behind, or next to.
Materials: large transparent buttons, light table.

1. Review the terms: above, below, in front, behind, next to with the children.

2. Ask children to follow directions in placing the buttons in the correct location.
For example,
The orange button is above the blue button.
The pink button is in front of the yellow button.
The purple button is next to the red button.

[Math NCTM Standard 2] Mathematics is especially useful when it helps you predict, and number patterns are all about prediction.
Materials: large transparent buttons, light table.

1. Model a simple pattern for the children. Start with a pattern like this: a,b,a,b,a,b,a,b
2. Encourage children to say the pattern aloud with you after you have established it.
3. Create a new pattern that is a bit more complicated, such as: a,a,b,a,a,b, a,a,b. Once again, encourage children to complete the pattern with you after you have established the pattern.
4. Once the children are proficient in 2 button patterns, you can add a third button to the pattern. For example, a,b,b,c,a,b,b,c

Small transparent stringing rings

[Standards A, B, E] Students begin to form explanations of the world around them by comparing, describing, and sorting.
Materials: small transparent stringing rings, light table

1. Have children describe the rings: Give the children a large assortment of rings in varying shapes and colors. Place rings on the light table to highlight the attributes. Select one ring and model describing aloud the physical attributes of the selected ring. (color, shape)
2. Have children compare and describe two rings: Select two rings that have different colors and shapes. Invite children to tell how the rings are alike and how they are different. Repeat the activity by having children take turns selecting two rings and telling how they are the same and how they are different.
3. Have children sort the rings by color on the light table: Check for comprehension. Have children tell how the rings in each group are the same. Encourage children to share their work and to listen as others share their work.
4. Have children sort the rings by shape on the light table: After children sort the rings, invite them to name the different shapes (star, heart, square, flower, triangle, hexagon, circle, diamond). Ask children to share how sorting the rings by shape changed what happens to the colors.
5. Children may choose to sort by rounded buttons and angular buttons or other shape descriptions. Ask children to share how they sorted their buttons.

[Standard A, B, E] Matter can be described as same and different.
Materials: small transparent stringing rings, light table

1. Introduce/review the terms: same, different. Put children in small groups around a light table and give children 5-6 rings. Have them take turns as each one selects two rings and tells how they are the same and how they are different.
2. Have children select 3 or 4 rings and share how the rings are the same. Allow them to share their similarities. Ask children how 2or 3 rings are different. Allow them to share their differences.
3. Have children problem solve by having them identify attributes that are the same and attributes that are different. Place one ring on the light table, have children select a ring that is the same in one way and place it next to the first ring. Next, have them select a ring that is different in one way and place it next to the second ring. Continue the activity until you have a row of rings. Review with children how each ring is the same or different.

Reflecting sheets

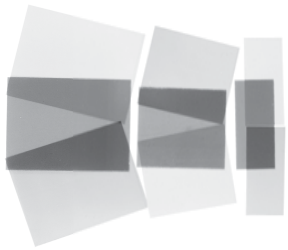
[Standard A, B, E] Light can pass through some objects but not through others. Light can be reflected.
Materials: transparent rectangles, rectangle plastic pieces, reflection sheet, light table.

1. Place children in small groups. Pass out the transparent rectangles, rectangle plastic pieces, and reflection sheet.
2. Ask children to hypothesize, or make a guess:
   - -Which one allows light to pass through?
   - -Which one reflects the light?
   - -Which one will not allow light to pass through?
3. Ask children to use the light table to see if their hypothesis, or guess, was correct.

[Standard A, D, E] The moon is not a source of light but reflects the Sun's light.
Materials: reflection sheets, light table.

1. Have children to first look at the reflecting sheets without the light board. Ask, does is it have a light? Is it lit up on its own?
2. Then turn on the light table, and angle the reflecting sheet so that light reflects from the light table toward the students.
3. Ask the students, does the reflection sheet appear to be lit now? It is the reflection of the light table.
4. Explain: The sun lights the moon up in the same way. We see the moon reflect the Sun's light. That is why it appears to light up in the night sky.

Transparent colored rectangles



[Standard A, B, E] Light can pass through some objects but not through others. Light can be reflected.
Materials: transparent rectangles, rectangle plastic pieces, reflection sheet, light table

1. Place children in small groups. Pass out the transparent rectangles, rectangle plastic pieces, and reflection sheet.
2. Ask children to hypothesize, or make a guess:
   - -Which one allows light to pass through?
   - -Which one reflects the light?
   - -Which one will not allow light to pass through?
3. Ask children to use the light table to see if their hypothesis, or guess, was correct.

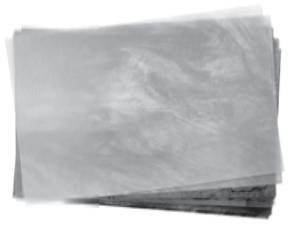
[Standard A, E] When primary colors are combined, secondary colors are created.
Materials: transparent rectangles, light table.

1. Show children the three primary colored rectangle transparencies on the light table. Ask children to identify the three colors (red, blue, yellow).
2. Ask children to hypothesize, or guess, what color they expect to make when red and blue are paired. Allow time for the children totalk with their classmates about what they hypothesize. This is an important part of the scientific process.
3. Place the two colors next to one another, with the rectangles overlapping.
   Red+ blue = purple
4. Repeat this with the other 2 color combinations.
   Red + yellow = orange
   Yellow + blue = green
5. Then allow students to work with colored rectangles on the light table to create secondary colors of their own.

[Standard A, B, E] Describe the differences in matter.
Materials: transparent rectangles (in 3 different sizes), light table.

1. Introduce/review the terms small, medium, large.
2. Ask children to line up the rectangles small to large.
3. Ask children to line up the rectangles large to small.
4. Ask children to find either the small, large, or medium rectangle. This portion of the lesson can be a game. Who can find it the fastest?

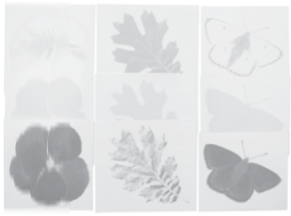
Stained Glass Sheets



[Standard B, E] Light can pass through some materials.
Materials: stained glass papers, light table.

1. After completing the lantern project, children should place them on light table to see the light pass through the "stained glass" windows.
2. Explain to children: Light is able to pass through some items, but not through others.
3. Ask children to identify where light is passing through the lantern. Ask children to identify where light is not able to pass through the lantern.

Color Separation Sheets



[Standard C, E] Identify parts of the plant.
Materials: 3 leaf transparencies, 3 flower transparencies, light table.

1. After learning the different parts of the plant, ask children to separate the 6 plant transparencies into flowers or leaves on the light table.
2. Check for comprehension.

[Standard C, E] Living things are classified. Two classifications are plants and insects.
Materials: 3 butterfly transparencies, 3 flower transparencies, 3 leaf transparencies, light table.

1. After learning about living things, ask children to separate the plant pictures and the insect pictures into two groups, plants or insects.
2. Check for comprehension.

Animal shapes:

[Standard A, C, E] Identify and describe animals.
Materials: animal shapes pack, light table.

1. Place children in small groups with 2 animal shapes.
2. Ask them to identify each animal.
3. Have them describe each animal. Guide them to notice attributes such as: furry, has a beak, long tail, gray, etc.
4. Ask children to find one difference between the 2 animals. Check for understanding.
5. Ask them to find 2 more differences.
   *After successful completion, children can do this activity with 3 different animal shapes.

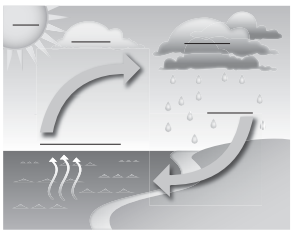
[Standard A, B, C, E] Animals can be sorted by their characteristics.
Materials: animal shapes, light table.

1. Place children in small groups snd give them 5 animal shapes.
2. Ask them to identify the animals. Ask children to describe their animals with their group. Children should focus on animal coat, animal size, where it lives, and anything else that makes it unique.
3. Have children sort the animals into 2 specific groups. Some sample sorts are listed below:
   -animals with legs and animals without legs
   -animals with fur and animals without fur
   -animals that live on land only and animals that live in water
   -animals smaller than you and animals larger than me
4. Check for understanding before moving from one sorting category to the next category.

[Standard A, C, E] Animals live where their needs are met.
Materials: Ecosystem transparencies, animal shapes (2 animals that live on land and 2 animals that live in the water), light table.

1. Identify the animals.
2. Identify the 2 provided ecosystems (underwater, on land).
3. Have children place the animals in the appropriate ecosystem on the light table.
4. Check for comprehension.
5. Ask children to describe how they got their answers. (Note: Most answers should be considered correct.)
   *Once children have proven mastery, add birds to the animals provided. Ask children where they believe the bird should go and why?

Water Cycle transparency



[Standard D, E] The earth reuses the same water in a never ending cycle.
Materials: Water cycle transparency, light table.

Place the transparency on the light table.

1. Explain the water cycle by comparing it to the water in a shower (the large body of water).
   Have you ever been in the bathroom while the shower is running? The steam, or water vapor, looks like white smoke in the bathroom. The water in the shower is warmed. When the water is warmed, it goes into the air. This is water vapor. Just like in the shower, the sun heats up the water on earth. The water goes into the air. It is water vapor too. The water vapor goes into the sky.
2. Explain arrows going up (from where the lake would be) to a light cloud with the sun in the left corner; label arrows "water vapor"
   Once it is high in the sky, the water vapor turns into small drops of water. The drops of water make clouds. Clouds start small.
3. Explain arrows pointing right from light cloud toward dark clouds; label arrows "clouds".
   The clouds get big and heavy, and look darker now. They cannot hold the drops of water.
4. Explain rain falling down to ground with an arrow pointing down with the rain and curved toward the body of water; label "rain".
   When a cloud gets too heavy, it rains or snows. The cloud loses the water drops when they fall as rain to the ground. The rain feeds plants and animals. The water can flow into rivers, lakes, and oceans and the water cycle keeps on going.
5. Review all 4 steps of the water cycle now that it is completed.

All Science Standards taken from NSTA

Standard A Scientific Inquiry -All students should develop abilities necessary to do scientific inquiry.

Standard B Physical Science - All students should develop an understanding of properties of objects and materials, position and motion of objects, light, heat, electricity, and magnetism.

Standard C Life Cycles - All students should develop understanding of the characteristics of organisms, life cycles of organisms, and organisms and environments

Standard D Earth and Space Science - all students should develop an understanding of properties of earth materials, objects in the sky, and changes in earth and sky.

Standard E Science and Technology - All students should develop abilities of technological design, understanding about science and technology, abilities to distinguish between natural objects and objects made by humans, and -sorting: objects can be categorized into two groups, natural and designed.

Standard F Science in Personal and Social Perspectives - All students should develop understanding of personal health, characteristics and changes in populations, types of resources, and changes in environments.