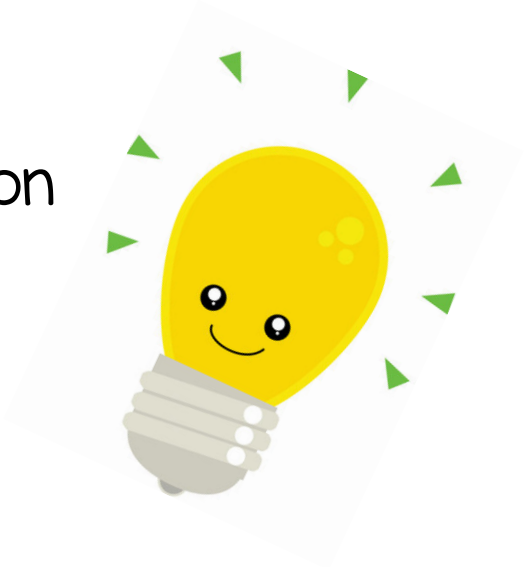
Light Refraction

"Magic Tricks"



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Content: Light

Grade Level: 5th grade

TEKS: 5.6C Force, motion, and energy. The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems. The student is expected to demonstrate that light travels in a straight line until it strikes an object or travels through one medium to another and demonstrate that light can be reflected such as the use of mirrors or other shiny surfaces and refracted such as the appearance of an object when observed through water.

Objective: The students will be able to see that light travels in a straight line until reflected or refracted by another object and how light is refracted when passing from one medium to another.

Materials:

Disappearing Glass	Bending Pencil	Turning Arrow	Rising Coin
• Large clear cup • Small clear cup • Sufficient corn oil to fill large cup	• Pencil • Clear Cup • Sufficient water to fill the cup halfway	• Clear Cup • Index Card • Black Marker • Sufficient water to fill the cup	• 2 Bowls • 2 Coins • Sufficient water to fill 1 bowl • Measuring Tape

Procedures: These demonstrations will all be used in the engaging part of the lesson and will be approached as if they are magic tricks to capture the students' attention.

- Disappearing glass- begin by telling the student we will fill the small cup with oil. However we want to place the cup inside the large cup so it does not spill and make a mess. Begin filling the small cup with oil but "accidently" continue pouring oil until the large cup fills up with the oil. It will look like the small cup inside disappeared.

- Bending pencil- fill a clear cup with water. Say that you will break a pencil by simply adding it in a cup of water. Have the students observe what they see and hold a discussion.
- Turning arrow- on and index card draw an arrow. Show the arrow through an empty cup and the arrow will be pointing the same direction. Then put a cup filled with water in front of the same index card, and the direction of the arrow will change.
- Rising coin- place a coin in the middle of an empty bowl. Have a student volunteer and have them start in front of the plate. The student will walk backwards until they can no longer see the coin. Measure the distance and write it on the board. Now we will make the coin "rise" by adding water to the bowl without moving the coin. The student should be able to see the coin once again and have them move back until once again they can no longer see the coin. Measure the distance and discuss.

Safety Concern: Working with glass around children is always a safety concern, it can become dangerous if students accidently break a glass and create sharp be broken pieces. You can change the glass cups to plastic clear cups. Also, for the rising coin demonstration assure there is a clear path because the teacher or volunteer will be walking backwards.