

Classroom Experiment: TRANSPARENCY

Objective: Introduce students to light and transparency using **action-focused language** to increase their engagement and persistence, and confidence in doing science.

Materials needed to do science:

- Flashlight or a lamp in a dark/semi dark room
- Objects to shine the light at: a thin sheet, a thick blanket, a piece of paper, aluminum foil, plastic wrap, a shirt, a book, a glass of water, paper towel, a leaf, etc.

IMPORTANT NOTE

Students will benefit most if action focused language is repeated throughout the science lesson. Introduce each step by saying "We're going to do science and..." and explain to students that "Doing science means learning about the world." You can incorporate action focused language into any science lesson, so feel free to change the experiment as you see fit. Have fun doing science!



Introduce new concept "Today we will be doing science!"

Begin by explaining to students that they will be "doing science to learn about transparency." Discuss light by talking about where light comes from. Have students brainstorm different sources of light (the sun, a lamp etc.). Explain that light travels from the source, like a lightbulb, and hits objects that we see. Transparency has to do with light. Sometimes light goes through an object and sometimes light can't go through the object so it bounces off of it. Objects that light can go through are transparent. If something is not transparent, then not very much light can go through it, or none at all! You can finish the introduction by explaining to students that we know these things because people did science to learn about the world and about light.

Have students do science by **observing**

Explain to students that "**part of doing science is observing!**" Pass around the first object to allow students observe with their eyes and hands. Is it thick or thin? Is it solid or does it have holes for light to go through?

Have students do science by **predicting**

Explain to students that "part of doing science is predicting!" Remind them that objects that light can pass through are transparent. If something is not transparent, then not very much light can go through it. Have the students do science and guess if the light will go through the first object or not. Will light be able to pass through? Is the object transparent or not transparent?

Have students do science by **checking their guesses**

Explain to students that "part of doing science is checking your guesses!" This activity works best in a dimly lit room, so if appropriate, turn the lights off before the next step. Have students do science and test their predictions by shining the light on the first object. Does any light go through the object? Is the object transparent or not transparent? Why does your child think that is? Was their prediction correct?

Our research has found that action focused language can increase science engagement, persistence, and confidence in kids from diverse backgrounds. It is our goal to increase the amount of action focused language children hear about science to reduce disparities in STEM. We know how hard teachers work, so we wanted to ensure that implementing action focused language in the classroom was as easy as possible. If you have any questions, comments, or concerns, please contact us at www.kidconcepts.org. Thank you for reading!

Best,
NYU Science Initiative

ACTION-FOCUSED LANGUAGE EXAMPLES

- "Today, we're going to do science"
- "Doing science is the process of discovering new things"
- "If we practice, we will get better at doing science."



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