TRAINING MATERIAL

Rainbow Film

Materials

- Shallow pan
- Strips of black paper
- Clear nail polish
- Metallic markers
- Water

Bristol paper works best for this activity. You can use regular construction paper, but a lot of color will bleed from the paper into the water.

The nail polish should be completely clear (no shimmer or glitter), and regular formula (not fast-drying).

Notes to the presenter

Before you begin:

- Fill the pans halfway with water.
- Set up an area to let the strips of paper dry.

Black paper is used for this activity because it absorbs all visible light. The colors that appear are created by the interaction of light with the thin film.

Writing their name with the permanent marker helps visitors find their thin film later. The marker doesn't make the colors appear on the black paper—that's the thin film created by the nail polish.

Safety

Do this activity in a well-ventilated area.

Staff training resources

Video: *Rainbow Film,* vimeo.com/album/3636993

Credits and Rights

This activity was adapted from *Create Some Iridescent Art* in the *DragonflyTV Nano Educator's Guide,* published by Twin Cities Public Television, 2009. The original activity is available at www.pbskids.org/dragonflytv/. It is a modified version of the NISE Network's educational products *Exploring Materials—Thin Film* and *DIY Nano Rainbow Films*, available on www.nisenet.org. Photo of soap bubbles, iStock.com/ all rights reserved.

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EXPLORE SCIENCE

Tips for leading hands-on science activities

Greet your guests
Say “hello,” make eye contact, and smile. People will come over if you look welcoming, available, and friendly.

Let them do the activity
As much as possible, let your guests do the hands-on parts of the activity, and let them discover what happens. (If your activity has a surprise, don’t give it away!)

Encourage exploration
Provide positive feedback and assistance when people need it, but let them experiment and learn for themselves. Don’t insist people do things the “right” way—sometimes learning how something doesn’t work is just as valuable as learning how it does work.

Ask questions
Help people observe and think about the activity. Try to use questions that have more than one answer, such as: “What do you see happening?” “Why do you think that happened?” “What surprised you about what you saw?” “Does this remind you of anything you’ve seen before?”

Be a good listener
Be interested in what your guests tell you, and let their curiosity and responses drive your conversation forward.

Share what you know
Use clear, simple language. Focus on one main idea—you don’t need to explain everything at once! Keep the information basic for starters, and share more with interested learners.

Use examples from everyday life
Familiar examples can help explain abstract concepts. Be aware of different abilities, keeping in mind that children do not have the same skills or vocabulary as adults.

Offer positive responses
If people haven’t quite grasped a concept, you might say, “That’s a good guess,” or “Very close, any other ideas?” Never say, “No” or “Wrong.” You can offer hints or suggestions for things to think about or watch carefully.

Share accurate information
If you aren’t sure about something, it’s ok to say, “I don’t know. That’s a great question!” Suggest ways that people can learn more, by trying another activity or looking up information at the library or online.

Remain positive
Maintain an inviting facial expression, positive tone, and open body language throughout the interaction.

Thank your guests
As your interaction ends, suggest other activities that you think your guests might enjoy.

Have fun!
A positive experience will encourage learning.