

## MESS® Recommended Materials



### Materials to document investigations and experiments

- large chart paper
- clipboards
- markers, crayons, and pencils
- camera
- printer for photos

### Materials to explore motion

- variety of large and small blocks, balls, vehicles, and other toys (be sure to have at least two items of the same size, shape, etc., for ramp experiments)
- three or more wooden dowels
- peg board or plywood sized to use with dowels to make a “cart”
- two or more ramps made of wood or plastic
- materials to place on ramp to create friction such as sand, sandpaper, or carpet
- variety of wheels collected from old toys and machines
- gear set

### Materials to explore magnetism

- variety of magnets including wand magnets, bar magnets, ring magnets, and horseshoe magnets

### Physical Science

- small magnetic and non-magnetic objects such as paper clips, washers, metal lids, and small plastic and wooden objects

#### Materials to explore sound

- assortment of objects to make sounds such as: wooden blocks, sticks, and spoons; metal cans, bowls, and utensils; plastic bottles and bowls
- tuning fork
- bowl for water
- opaque sound canisters
- materials for sound canisters such as: bottle caps, shells, blocks, balls, and bells
- disposable cups for telephones
- cotton string
- paper clips to secure string for telephones

#### Materials to explore light

- flashlights
- lamp or other light source such as an overhead projector
- small shadow theater made from cardboard box, wax or white paper, and tape
- small “mystery” objects
- bag or box to hold “mystery” objects
- mirror

#### Books

Lehn, Barbara. *What Is a Scientist?* Brookfield, CT: Millbrook Press, 1998. Simple text and color photographs describe how scientists learn from their senses, observe details, ask questions, communicate their findings, and have fun as they experiment.

#### Motion

Cronin, Doreen. *Wiggle*. New York: Atheneum Books, 2005. Rhythmic text and cartoon-style illustrations highlighted with bits of photography encourage readers to join in as a dog wiggles through his day. Young children will laugh at his antics and be anxious to imitate his actions.

Dahl, Michael. *Roll, Slope, and Slide: A Book About Ramps*. Minneapolis, MN: Picture Window Books, 2006. Colorful realistic pictures, beginning with a familiar slide, show the many ways we use ramps in our daily lives. Text, while sometimes ample, is appropriate for the illustrations.

Dahl, Michael. *The Tall, Tall Slide*. Minneapolis, MN: Picture Window Books, 2005. Height can be intimidating, but the day is hot, nothing else has been sufficiently cooling, and there is a waterslide at the pool! With some help from friends, a young girl works up the courage to try it.

## Physical Science

Douglas, Lloyd G. *What Is a Wheel and Axle?* New York: Children's Press, 2002. Simple photographs and text in this small-format title effectively introduce the wheel and axle via three examples—wheelbarrow, rolling pin, and wagon.

Fowler, Allan. *Simple Machines*. New York: Children's Press, 2001. Numerous books discuss individual simple machines, but this author provides the basics about levers, inclined planes, wheels, pulleys, wedges, and screws, all in a small-format book. Photographs of familiar objects and appropriately limited text show the machines in everyday use.

Freeman, Marcia. *Push and Pull*. New York: Newbridge, 1997. The large photographs and simple text in this big book show pushing and pulling by different forces (including magnets) and the impacts of the push/pull.

Jenkins, Steve and Robin Page. *Move!* Boston: Houghton Mifflin, 2005. Cut-paper collages and simple text describe thirteen different ways that animals move. Each of the action verbs is printed in large text and provides a great opportunity to teach about print. Additional information about each of the illustrated animals is included in the back.

Llewellyn, Claire. *And Everyone Shouted, "Pull!": A First Look at Forces and Motion*. Minneapolis, MN: Picture Window Books, 2005. The journey to the market requires going up a hill. How will the farmer and his animals manage it? Their hard work, illustrated with colorful cartoon characters, serves as a simple introduction to some basic science.

Mayo, Margaret. *Choo Choo, Clickety-Clack!* Minneapolis, MN: Carolrhoda Books, 2005. While the title suggests this is a train book, each double-page spread features a different form of transportation. Colorful illustrations show the movements and noises made by planes, race cars, boats, and hot air balloons. Text is simple and rhythmic.

Pearson, Debora. *Alphabeep! A Zipping, Zooming ABC*. New York: Holiday House, 2003. A whole alphabet of vehicles and road signs, with active words and upper- and lower-case letters, probably ensures the success of this book with children and teachers. Vibrant geometric illustrations highlight the lively text.

Prince, April Jones. *What Do Wheels Do All Day?* Boston: Houghton Mifflin, 2006. You may think of wheels only as inanimate objects, but great descriptive words and paper-relief illustrations show that wheels are very active parts of our lives.

Rotner, Shelley. *Wheels Around*. New York: Houghton Mifflin, 1995. After establishing that "wheels help us to work and play," the simple text details numerous familiar ways that wheeled vehicles are useful to us. Colorful photographs range from strollers and wheelchairs to trucks and tractors. Lots of details invite close observation.

## Physical Science

Schaefer, Carole Lexa. *One Wheel Wobbles*. Cambridge, MA: Candlewick Press, 2003. Parading to the “biggest wheel of all,” a fun-loving family shows off their various vehicles—each with a different number of wheels. Brightly colored illustrations count off some strange-looking details that invite observation and laughter.

Swinburne, Stephen R. *Go, Go, Go! Kids On the Move*. Honesdale, PA: Boyds Mills Press, 2002. What’s your favorite way to move? Twirling? Rolling? It is probably depicted in the colorful photographs and simple text. Comparative movements with monkeys and dolphins are suggested, too. Photos will not only stimulate imitation, but also serve as conversation starters.

Tolstoy, Aleksei. *The Gigantic Turnip*. Cambridge, MA: Barefoot Books, 2000. The folktale is a classic Russian one, illustrating “pulling” at its funniest. It is a cumulative tale (hence the text looks ample) that allows some counting, a plant life cycle discussion, multiple prediction and sequencing opportunities, and lots of detailed observation. The colorful illustrations in this version are just right for young children. Adaptations include Aubrey Davis’s *Enormous Potato*, Cherie B. Stihler’s *The Giant Cabbage: An Alaska Folktale*, Jan Peck’s *Giant Carrot*, and Denia Lewis Hester’s *Grandma Lena’s Big Ol’ Turnip*.

Wood, Audrey. *The Red Racer*. New York: Simon & Schuster Books for Young Readers, 1996. The chain on Nona’s bicycle breaks. She concludes she needs a new bike, but her parents are not convinced. Wicked thoughts encourage her plots to “lose” her bike. Eventually her parents show her that the bike can be restored. Active illustrations in bold colors add to the drama.

### **Magnets**

Berger, Melvin. *The Mystery of Magnets*. New York: Newbridge Educational Publishing, 1999. Large photographs and limited text in this big book provide basic facts about magnets. Questions to think about and fun facts are included.

Fowler, Allan. *What Magnets Can Do*. New York: Children’s Press, 1995. This small-format book uses photographs and informative text to explain several basic concepts about magnets. Included are magnet shapes, magnetic/nonmagnetic differences, poles, and familiar-but-unseen uses for magnets. The few pages on compasses and electromagnets can be omitted.

Rosinsky, Natalie. *Magnets: Pulling Together, Pushing Apart* (also bilingual: *Imanes/ Magnets: Atraen y Rechazan/ Pulling Together, Pushing Apart*). Minneapolis, MN: Picture Window Books, 2003. The author introduces magnets and encourages children to experiment with them. Great illustrations, fun facts, experiments, and a glossary are included.

**Physical Science****Sound**

Hendry, Diana. *The Very Noisy Night*. New York: Dutton Children's Books, 1999. Sounds during the night keep Little Mouse awake. Most of the sounds are natural ones—an owl hooting, wind blowing—but Little Mouse's active imagination creates possibilities that Big Mouse's logical explanations will not satisfy. The familiar situation and fun drawings should stimulate conversation with young children.

Macken, JoAnn Early. *Sing-Along Song*. New York: Viking, 2004. From the chirping of the robin outside his window in the morning to a quiet "good night" to the moon and stars, a little boy responds to all the sounds he hears during one day. The rhyming text and enthusiastic illustrations make readers want to sing along too.

Martin, Bill, Jr. *Polar Bear, Polar Bear, What Do You Hear?* New York: Henry Holt, 1997. Bright cut-paper illustrations and repetitive text are used to ask different zoo animals what they hear. In the end, the zookeeper is asked what he hears and his reply involves children. But the answers throughout are so contagious that it is doubtful a reader gets that far without everyone imitating the animals!

Mayo, Margaret. *Choo Choo, Clickety-Clack!* Minneapolis, MN: Carolrhoda Books, 2005. While the title suggests this is a train book, each double-page spread features a different form of transportation. Colorful illustrations show various ways to travel and the noises made by planes, race cars, boats, and hot air balloons. Text is simple and rhythmic.

Moon, Nicola. *Tick-Tock, Drip-Drop!* New York: Bloomsbury, 2004. This bedtime story of Rabbit and his friend Mole suggest that it is the common noises in our world that can be both the most distracting and the most soothing. At least rabbit was a good listener! Busy pastel illustrations fit the simple but cumulative text.

Moss, Lloyd. *Zin! Zin! Zin! A Violin*. New York: Simon & Schuster Books for Young Readers, 1995. Jazzy, alliterative verse introduces orchestral instruments and their sounds. Opportunities for simple counting and observation of the busy detailed illustrations abound, but the group nouns that end each verse will be beyond young children's memories. This book is a great accompaniment to a visit to an orchestra concert or a musician's visit to a classroom—or both. 1996 Caldecott Honor Award

Pearson, Debora. *Alphabeep! A Zipping, Zooming ABC*. New York: Holiday House, 2003. A whole alphabet of vehicles and road signs, with active words and upper- and lower-case letters, probably ensures the success of this book with children and teachers. Vibrant geometric illustrations highlight the lively text.

## Physical Science

Pfeffer, Wendy. *Sounds All Around*. New York: HarperTrophy, 1999. This easy-to-understand explanation of sound and hearing talks about how sounds are produced, types of sounds, and how sounds are important to different animals. If the text is too long, it can be read in sections. Several projects and ways to find out more about sound are added. Cartoon-like illustrations show both words for the sounds and children making sounds.

Pinkney, Brian. *Max Found Two Sticks*. New York: Simon & Schuster Books for Young Readers, 1994. Max proves to be a good listener as he uses two tree twigs to imitate the rhythms he hears as he does some unusual “talking.” The oil illustrations and appropriately limited text should encourage close observation and conversation.

Reidy, Hannah. *All Sorts of Noises*. Minneapolis, MN: Picture Window Books, 2005. Colorful cartoon drawings show children and grown-ups as they make and hear noises throughout the day. Words for sounds are splashed across the pages. Ending pages ask children to imitate the noises made by many familiar objects

Robinson, Fay. *Sound All Around*. Chicago: Children’s Press, 1994. Beginning with sounds people can make, photographs and limited text then explain the basics of sound in this small-format book. Topics include vibrations and waves, pitch and volume, and the value of various sounds.

Showers, Paul. *The Listening Walk*. New York: HarperTrophy, 1993. “On a Listening Walk I do not talk,” but that certainly does not mean there are no sounds in this book. A father and his young daughter walk to the park, but she advises in the end that you do not even have to take a walk to hear sounds. All you have to do is keep still and listen. Her observations along the way invite other observations and perhaps imitation.

### Light

Asch, Frank. *Bear Shadow*. New York: Simon and Schuster, 1985. This bear obviously does not understand the concept of shadows! Bear’s shadow scares fish away so he tries—unsuccessfully, of course—to get rid of his shadow. Simple solid shapes and colors make the shadow easy to see in this silly story that subtly invites children to investigate their own shadows.

Carle, Eric, *The Very Lonely Firefly*. New York: Philomel, 1995. At days end, a newborn firefly searches for other butterflies. It mistakes other sources of light—light bulb, candle, flashlight, lantern, animal eyes, headlights, and fireworks—for its own kind. The rewarding conclusion includes flashing lights powered by a replaceable battery.

## **Physical Science**

Cobb, Vicki. *I See Myself*. New York: HarperCollins, 2002. Designed to assist children in making their own discoveries, this book first invites children to “look in the mirror.” From there, simple language/sentence structure and creative illustrations encourage children to experiment with mirrors on their own. Reading the book in pieces allows for participation.

Fowler, Allan. *Mirror, Mirror*. Chicago: Childrens Press, 1994. In this small-format book, photographs show a variety of reflections from still water to fun-house mirrors.

Graham, Joan Bransfield. *Flicker Flash*. Boston: Houghton Mifflin, 1999. Twenty-three short, creatively arranged poems about light describe objects from birthday candles to the sun. Using a variety of type sizes and styles and color strengths, illustrations support each poem’s topic.

Hoban, Tana. *Shadows and Reflections*. New York: Greenwillow Books, 1990. Without any words, the author’s photographs call our attention to the shadows and reflections of familiar objects all around us. Young children may need some clarification about the difference between a shadow and a reflection.

James, Betsy. *Flashlight*. New York: Alfred Knopf, 1997. While this is really a gentle story of how a grandfather gives his fearful young granddaughter control of the dark, it also provides a way for other children to explore dark and light using a flashlight. Nighttime can be difficult to illustrate, but these pictures artistically show the burst of light from the flashlight and the shadows produced in the dark room.

Paul, Ann Whitford. *Shadows Are About*. New York: Scholastic, 1992. Poetic text and gentle, muted illustrations show the many shadows in two young children’s daily activities. The conclusion, that “shadows never stay . . . without a light,” subtly invites children to test this by looking for shadows in their world.

Royston, Angela. *Light and Dark*. Chicago, IL: Heinemann Library, 2002. The author raises some basic ideas about light, although simplifying a complex topic like light is difficult. Particularly useful are the photographs illustrating the sources of light and concepts like reflected light and shadows.

## Physical Science

Stevenson, Robert Louis. *My Shadow*. The wonder of a shadow from a child's point of view was expressed by Stevenson more than a hundred years ago. Today there are several versions, mostly true to the original poem, but now illustrated for children. Particularly useful with young children are these three:

--Illustrated by Penny Dale. Cambridge, MA: Candlewick Press, 1999. A young child, in soft colors, plays a bit mischievously with his shadow.

--Illustrated by Glenna Lang. Jaffray, NH: David R. Godine, 1989. A little girl discovers her shadow and plays dreamily with some animals and their shadows. All are in strong colors and soft lines.

--Illustrated by Ted Rand. New York: G.P. Putnam's Sons, 1990. This version shows an international cast of active children who all have shadows.

Swinburne, Stephen R. *Guess Whose Shadow?* Honesdale, PA: Boyds Mills Press, 1999. "Shadows are everywhere." The author's focused photographs and basic text make you want to be more observant! Simple information fills the book as it gives several shadow/object examples and then invites readers to guess what object makes each additional shadow.

Waring, Geoff. *Oscar and the Moth: A Book About Light and Dark*. Somerville, MA: Candlewick Press, 2008. Oscar is a curious kitten with lots of questions about light and dark. Moth shows Kitten many different sources of light, and explains how shadows are made and why darkness comes at night.

