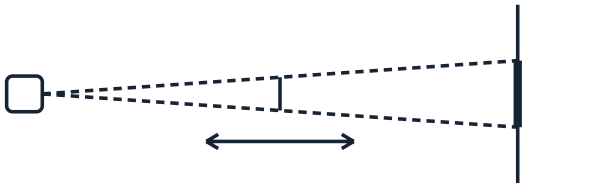
TEACHER COPY

Light, Shadows & Story

Grades 1–3 · 30 minutes · 5-minute prep

Tell your learners: “We will find out how to change a shadow, then use it to tell a story.”



Allow 5 minutes to set up after printing and gathering equipment. Test a visible shadow before learners arrive.

The core time covers a short demonstration, practice, partner storytelling, and oral reflection. Drawing, station rotations, whole-class performances, and investigations need additional time. Student sheets are optional recording tools, not a completion checklist.

Gather

□ One cool LED flashlight or lamp

□ A plain wall or securely clipped white sheet

□ Figure cards and student pages from this packet

□ Pencils and clipboards or firm writing surfaces

□ Teacher-prepared cardstock shapes

□ Optional: transparent plastic, wax paper, cardstock, and teacher-managed foil or mirror

□ Optional: ruler or tape measure for the grade 3 extension

Keep everyone safe

□ Use cool LED lights only; do not use candles, lasers, or hot lamps.

□ Keep beams below eye level and never shine a light into anyone’s eyes.

□ Secure sheets, cords, and stands; keep walking paths clear.

□ An adult handles reflective materials and redirects stray reflections.

Dim the room only as needed. Keep faces out of the beam and walking routes visible.

Print once, then copy

Pages 1–6: one teacher set. Pages 7–10: student masters, grouped at the end for copying.

Copy page 7 for each student. Copy page 8 for each student doing the optional investigation. Copy page 9 for each pair or group. Copy page 10 for each student.

Print at actual size on Letter, or fit to printable area on A4. These activities work from the printed pages.

Whole-class theater

1. Aim one cool LED light at a wall or taut sheet.
2. Mark a performer spot and audience line. Use a few volunteers; seated partners predict, practice shapes, and plan stories.
3. Do not queue every pair in the core lesson. Offer later supervised center turns so everyone can test a shadow.

Small-group stations

1. Prepare one light and vertical screen per group of 3–4 before teaching.
2. Combine roles as needed: maker, narrator, observer. An adult checks light safety.
3. Work simultaneously. Swap maker after each try; add time for full rotations.

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Your 30-minute lesson

4 min **Notice a shadow**

Teacher: Show a card shadow; remove the card and compare.

Children: Point out the light, object, screen, and shadow.

Ask: What has to be present for this shadow to appear?

Listen for: Identify a light, an object in its path, and a screen.

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6 min **Change one position**

Teacher: Move a rigid card toward the light without turning it. Keep light and screen fixed.

Children: Predict aloud, watch, then compare with a partner.

Ask: Predict what will change when this card moves toward the light. Keep the light and wall still. Try it, then compare with your prediction.

Listen for: The shadow grows as the card moves toward the fixed light.

Optional recording: page 7. Oral responses fit the core time.

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8 min **Build a figure**

Teacher: Demonstrate one shape. Use volunteers or prepared stations; offer the cards as choices.

Children: Choose one shape, not all five. Try or observe one slow turn.

Ask: Choose one comfortable figure or shape. Which small turn makes its outline easiest to recognize?

Listen for: Turning the shape changes its outline. Comfortable shapes count.

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8 min **Create a tiny story**

Teacher: Model a three-part story using a shadow change. Invite one brief demonstration.

Children: Rehearse with a partner or group. Use a turn or size change in the story.

Ask: What does your character want, what changes, and how does the scene end?

Listen for: Groups use movement, speech, or signing to show first, next, and last.

For example: First, a card character hides edge-on. Next, it turns to face the light and appears. Last, it turns edge-on and hides again.

Optional recording: page 9. Oral responses fit the core time.

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4 min **Share evidence**

Teacher: Ask the exit questions aloud. Listen for what changed and what was observed.

Children: Point to the setup and say: I changed ___. I noticed ___.

Ask: What did you change, and what happened to the shadow?

Listen for: Use an observed shadow change to explain an idea.

Optional recording: page 10. Oral responses fit the core time.

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Science notes & teaching sources

Four ideas to teach

1. A shadow forms where an object blocks light from reaching a surface.
2. Keep the light and screen fixed. Moving the object toward the light makes its shadow larger; toward the screen makes it smaller.
3. At fixed distances, a larger emitting area can produce a wider partially lit edge. Beam focus alone does not determine softness.
4. Turning an object changes the outline facing the light, changing its silhouette.

Check a misconception

A shadow is a thing that follows you.
A shadow is an area receiving less light because an object blocks the light path.

Dark objects make shadows; light objects do not.
Any material that blocks enough light can form a visible shadow.

Closer always means bigger.
Name what is closer to what. In our fixed light-and-screen setup, the object's distance from the light changes projected size.

Every shadow has a perfectly sharp edge.
The light source's geometry affects edge softness; compare sources while keeping the object and screen fixed.

For a separate Grade 3 session, use a rigid card and pretest a clear-edged shadow. Model measuring from card to screen and across the shadow's widest width before students record three positions.

Model on your own hand; never force or reposition a child's fingers. Accept spoken, signed, drawn, or demonstrated answers. Assess science separately from dexterity and group participation.

Teacher answer notes

1. Identifies the lamp, card or hand, and shadow on the screen. Follow up: point to the object, then its shadow.
2. For example, I moved the card toward the light and its shadow grew. Follow up: what stayed still? Accept other observed changes.
3. The card or hand blocked the light. Follow up: remove it and ask what happens on the screen.

Standards connection

NGSS 1-PS4-3 supporting connection
The materials investigation supports this expectation; it is not a full alignment claim. The indoor lesson does not assess kindergarten's sunlight-warming expectation, K-PS3-1.

Teaching sources

1. Smithsonian Science Education Center: Light Our Way: Grade 1 Phenomenon
2. Smithsonian Science Education Center: Focused Exploration: Light and Shadows
3. Next Generation Science Standards: 1-PS4-3 Waves and Their Applications
4. Exploratorium Institute for Inquiry: Subtle Shifts in Thinking
5. Exploratorium: Facets of Light: Shadows and Light Sources
6. NAEYC: What's in a Shadow?

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This is a lesson kit, not a complete or independently validated curriculum. Find source notes and preparation guides on the Teachers website.

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Try a Turtle or Bird

Turtle

1. Curl all four fingers into one relaxed, rounded fist.
2. Fold the thumb close to the fingers so it does not stick out.
3. Turn the rounded side toward the light to make a compact shell silhouette.

Try a movement: Move the shell slowly forward with a tiny bob.

Check the outline: If the shell looks jagged, relax the knuckles and tuck the thumb closer. This simple pose shows a shell, not separate legs or a head.

Turtle tutorial
shadowpals.com/explore/how-to-make-a-hand-shadow-turtle



One-hand shell pose. Keep the fist comfortable, not tightly clenched.

Bird

1. Turn both palms toward the light and cross your hands at the wrists.
2. Keep the four fingers of each hand straight and together, pointing out as broad wings.
3. Cross and fold the thumbs at the center; raise one thumb slightly to make the head.

Try a movement: Lift and lower both wrists together for a slow flap while the fingers stay grouped.

Check the outline: If the wings look feathery or uneven, bring each set of four fingers together and keep both palms level.

Bird tutorial
shadowpals.com/explore/how-to-make-a-hand-shadow-classic-bird



AI-generated pose illustration. Follow the written hand-position instructions.

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Explore a Cat or Dog

Cat

1. Make a relaxed fist, with the middle and ring fingers curled into the palm.
2. Lift the index and little fingers slightly; curl their tips to make two short ears.
3. Tuck the thumb and turn the hand until both ears show above the round head.



Try a movement: Make the cat look left and right, then twitch one ear.

Check the outline: If the ears merge, open a small gap between them and move closer to the screen for a smaller outline.

Cat tutorial
shadowpals.com/explore/how-to-make-a-hand-shadow-cat

Dog

1. Hold the fingers together and bend the index finger to shape the snout.
2. Raise the thumb for the ear. Keep the middle and ring fingers together; the little finger forms the lower jaw.
3. Turn the hand sideways to the light until the ear and snout read as a dog.



Keep the middle and ring fingers touching. Move only the little finger to open the mouth.

Try a movement: Tilt the head, then move the little finger to open and close the mouth.

Check the outline: If the muzzle disappears, turn the wrist slightly; keep the thumb ear above the snout.

Dog tutorial
shadowpals.com/explore/how-to-make-a-hand-shadow-dog

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Rabbit: an optional challenge

For learners ready to try a more coordinated pose. Choose another shape if this feels uncomfortable; the science and story goals stay the same.

Rabbit

1. Curl the index finger toward the thumb to make the head loop.
2. Raise the middle and ring fingers as ears; tuck the little finger into the palm.
3. Turn the hand sideways to the light until the loop and both ears show.

Try a movement: Make one ear listen, then let the rabbit nibble.

Check the outline: If the head looks like a fist, separate the ear fingers and turn the wrist slightly sideways.

Rabbit tutorial
shadowpals.com/explore/how-to-make-a-hand-shadow-rabbit



Thumb-side view: look for the head loop and two ears.

Rehearse, then share

First, a card character hides edge-on. Next, it turns to face the light and appears. Last, it turns edge-on and hides again.

Assess collaboration separately: did each learner have a way to contribute?

Use one shadow change in your story. Tell, sign, or act it out first; draw later if useful. A narrator can help.

The Bird illustration was created with AI. Other hand references use Shadow Pals' first-party pose model.

INDIVIDUAL STUDENT COPY · DRAW & SHARE

Predict, try & notice

Name: _____

Move the object. Keep the light and screen still.

I think...

I saw...

Draw, tell, point, or show what changed.

Grade 3 only: optional investigation

Grades 1–2: stop here. Tell a partner what changed.

Keep the light and screen fixed. Move the same upright card to three marked positions without turning it. At each, measure card-to-screen distance and the shadow's widest width in centimeters. Repeat a surprising measurement.

Position	Card-to-screen distance (cm)	Shadow width (cm)
1		
2		
3		

What pattern do your measurements show?

INDIVIDUAL STUDENT COPY · DRAW & SHARE

Materials in the Beam

Name: _____ Date: _____

Optional follow-up: 15–20 minutes, outside the core lesson.

1. Keep the light, screen, and test spot fixed.
2. First observe the screen with nothing in the beam. Use this as your comparison.
3. Predict, then test one material at a time in the same spot.
4. Draw or write what you notice. Compare with the empty beam before naming material groups.

Material	I predict	I notice
clear plastic sheet		
wax paper or tracing paper		
cardstock or a book		

After observing, discuss: transparent lets light through clearly; translucent scatters it; opaque blocks it.

Watch your teacher: reflected light

Teacher demonstration: use foil or a small mirror to redirect light toward a second card, away from faces. A reflective material may also be opaque: reflection and transmission describe different behaviors.

Draw where the light went in this box. Or tell your teacher where it went.

SHARED STUDENT COPY · ONE PER PAIR OR GROUP

Make a tiny shadow story

Work with a partner or small group. Share one planner and take turns adding ideas.

Names of our storytellers: _____

First: who arrives?	Next: what happens?	Last: how does it end?

Use one shadow change in your story. Tell, sign, or act it out first; draw later if useful. A narrator can help.

Choose or rotate roles

- □ Maker: holds or moves a shape
- □ Narrator: tells or signs the story
- □ Light watcher: checks fixed positions
- □ Observer: notices a clear movement
- □ Recorder: draws or writes a discovery

Try it together

- □ Our shape moves slowly enough to follow.
- □ Our story has a first, next, and last.
- □ Everyone has a way to take part.

Movement to try: _____

INDIVIDUAL STUDENT COPY · DRAW & SHARE

My shadow discovery

Name: _____ Date: _____

1. Point to or draw the light, object, and shadow.

2. What did you change? What did you notice?

3. What blocked the light? Show or tell.

You can draw, tell, point, sign, or show your answer.