

Everyday investigations · Learning journey

Learning with a grown-up · Ages 4–8 · Flexible participation

What happens when we try something and look closely?

Connect a push or pull to moving a load on a ramp. Then choose an independent floating investigation or a vibration model.

Keep predictions distinct from revealed results. In a test, change one chosen feature while keeping the relevant setup the same. Floating, ramps and sound do not share one explanation.

Teacher sequence

Pushes and Pulls: Explain a pictured force in relation to the helper and object, not just left or right.

At the Ramps poster, point to the cart and describe what is pushing it.

How Ramps Help: Compare route lengths to the same height and describe the ramp's force-distance trade.

Find a ramp in a familiar picture or recall one you have seen. What two levels does it connect?

What to listen for

Listen for a child comparing an idea with an observation, or explaining the limit of a picture-based model.

Pushes and Pulls

How can we tell a push from a pull?

Learning aim: Explain a pictured force in relation to the helper and object, not just left or right.

A five-minute conversation

Start with the pictures before reading the labels. Gina is touching the ball to push it away; Ollie holds the cart's handle to pull it closer. A force is a push or a pull, and it can change how something moves. Ask your child to point, describe or sign what they notice. Follow each arrow together, then read the explanation. There is no need to set up an experiment or answer every question.

Remember: Choose one comfortable way to notice or describe a detail. What do you already wonder about this picture?

Start here: Find the object Gina pushes and the object Ollie pulls.

Explore further: Explain why both arrows can point right while showing different actions.

What is Gina pushing? How can you tell?

Answer cue: The ball. Her raised hoof touches its side, and the arrow points away from her.

Which object is being pulled?

Answer cue: The cart. Ollie holds its handle, and the force arrow points toward him.

Both arrows point right. Why is one action a push and the other a pull?

Answer cue: Look at where the helper is. Gina pushes away from herself; Ollie pulls toward himself. Right does not always mean push or pull.

Keep the idea clear

The arrows show the force on the objects. A push or pull can change motion; it does not guarantee that an object moves. These are two examples, not a test comparing their strength or speed.

Try: Describe an everyday force

Materials: The poster and an adult; optional paper and drawing materials. Describing or pointing is enough.

1. Choose a pictured action or imagine pushing a toy car and pulling a drawer. No physical demonstration is required.
2. Describe where the helper and object are. Trace the force arrow on the object.
3. Swap the helper's imagined side and decide whether right or left alone can name the action.

What this can show: Away from or toward the helper distinguishes these examples. A force can change motion but does not guarantee movement.

Return to it: At the Ramps poster, point to the cart and describe what is pushing it.

Pushes and Pulls · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

force — A push or a pull.

direction — Which way something points or acts.

3 min · Reconnect and wonder: How can we tell a push from a pull? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Find the object Gina pushes and the object Ollie pulls. Introduce force using the poster.

8 min · Investigate or represent: Use “Describe an everyday force.” Let pairs take turns noticing and recording, with adult help and the activity’s stated boundaries.

5 min · Explain and return: Ask the core check: How can we tell a push from a pull? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Explain why both arrows can point right while showing different actions.

Understanding check: How can we tell a push from a pull?

Answer guidance: In the pictured examples, Gina pushes the ball away from herself and Ollie pulls the cart toward himself. Left or right alone does not distinguish the two actions. Away from or toward the helper distinguishes these examples. A force can change motion but does not guarantee movement.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/pushes-and-pulls>

Related story: Gina and the Great Gravity Hug — Continue their questions about how things move and fall.

How Ramps Help

Why might a longer route upward be useful?

Learning aim: Compare route lengths to the same height and describe the ramp's force-distance trade.

A five-minute conversation

Begin with Gina and the cart. Let your child notice where the ramp starts and ends before reading the labels. A ramp is a sloping surface. It supports a load as the load moves upward. Trace the ramp route and compare it with the straight-lift route to the same platform height. A gentle ramp can reduce the force needed, but the load travels farther. Invite a guess, then return to the picture together. There is no need to build a ramp or lift anything.

Remember: We described a push or pull as a force. What is Gina pushing, and how could a ramp help the load reach a higher place?

Start here: Trace both routes to the platform.

Explore further: Explain which feature is visible in the picture and which claim about force comes from the explanation.

Where does the ramp start, and where does it lead?

Answer cue: It begins on the ground and slopes up to the low platform. Follow the cart's route with a finger, words or a gesture.

Which route to the platform is longer: up the slope or straight up?

Answer cue: The sloping route is longer. Both routes reach the same platform height.

Why might a longer route be helpful?

Answer cue: A gentle ramp supports the load and can reduce how much force is needed to move it upward. The trade is moving it over a longer distance.

Keep the idea clear

The arrows show routes, not how large the forces are. A ramp does not remove gravity or necessarily reduce the total work. Steepness and friction matter, which is why the poster says "can help."

Try: Compare two routes on paper

Materials: The poster and an adult; optional paper and drawing materials. Describing or pointing is enough.

1. An adult draws a low platform, a straight route up and a sloping route to the same top.
2. Trace or describe each route and compare their lengths.
3. Explain how a ramp supports a load and can reduce the force needed. No lifting, riding or building a ramp is required.

What this can show: The drawing lets us compare routes. It does not measure force or prove less total work; friction and steepness matter.

Return to it: Find a ramp in a familiar picture or recall one you have seen. What two levels does it connect?

How Ramps Help · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

ramp — A sloping surface connecting different heights.

load — The object being moved or supported.

3 min · Reconnect and wonder: Why might a longer route upward be useful? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Trace both routes to the platform. Introduce ramp using the poster.

8 min · Investigate or represent: Use “Compare two routes on paper.” Let pairs take turns noticing and recording, with adult help and the activity’s stated boundaries.

5 min · Explain and return: Ask the core check: Why might a longer route upward be useful? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Explain which feature is visible in the picture and which claim about force comes from the explanation.

Understanding check: Why might a longer route upward be useful?

Answer guidance: A gentle ramp supports a load and can reduce the force needed to move it up, in exchange for moving it along a longer route to the same height. The drawing lets us compare routes. It does not measure force or prove less total work; friction and steepness matter.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/how-ramps-help>

Related story: Gina and the Great Gravity Hug — Continue their questions about how things move and fall.

Sink or Float?

Can we predict a new object's result before testing it?

Learning aim: Make a prediction, record a floating or sinking result, and compare the two.

A five-minute conversation

Begin with the cork and spoon as results already shown. Name the surface and bottom, then explain that water pushes upward. For a real prediction, an adult chooses a new safe object not shown on the poster and follows the activity below. Welcome an uncertain guess, record the actual result and revisit the idea. Size alone does not tell us what will float.

Remember: Choose one comfortable way to notice or describe a detail. What do you already wonder about this picture?

Start here: Find the cork at the surface and the spoon at the bottom.

Explore further: Explain why one large object's result cannot tell us what all large objects will do.

Which object stays at the surface?

Answer cue: The cork.

Where is the steel spoon?

Answer cue: On the bottom; it sank.

Can size alone tell us what will float?

Answer cue: No. Size alone is not enough.

Keep the idea clear

If trying the poster activity, use a shallow, unbreakable bowl and large, adult-approved objects kept out of mouths. An adult stays beside the child and empties the water afterward.

Try: Predict, test, revisit

Materials: An adult, a shallow unbreakable bowl, a little water and one large safe-to-wet object.

1. An adult chooses one large, clean, nonbreakable object not shown on the poster, such as a suitable plastic toy without batteries or detachable parts, and checks it is safe to wet.
2. Before placing it in a shallow unbreakable bowl, say or draw a prediction: surface or bottom. An adult stays beside the child throughout.
3. Gently test it, record what actually happens and compare with the prediction. Keep objects out of mouths; the adult empties the bowl afterward.

What this can show: Predictions can differ from results. Record what this particular object does, including anything unexpected, without making a rule based on size alone.

Return to it: Describe one thing you would check before predicting what a different object will do.

Sink or Float? · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

float — Stay supported at the surface in this example.

prediction — An idea about what might happen before we check.

3 min · Reconnect and wonder: Can we predict a new object's result before testing it? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Find the cork at the surface and the spoon at the bottom. Introduce float using the poster.

8 min · Investigate or represent: Use "Predict, test, revisit." Let pairs take turns noticing and recording, with adult help and the activity's stated boundaries.

5 min · Explain and return: Ask the core check: Can we predict a new object's result before testing it? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Explain why one large object's result cannot tell us what all large objects will do.

Understanding check: Can we predict a new object's result before testing it?

Answer guidance: A child can make an idea before the test, describe where the object actually ends up and compare the two. A changed idea after observing is a useful outcome. Predictions can differ from results. Record what this particular object does, including anything unexpected, without making a rule based on size alone.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/sink-or-float>

Sound Starts with Vibrations

What moves when a sound begins?

Learning aim: Connect the drum skin's back-and-forth movement to sound and recognize the wave marks as symbols.

A five-minute conversation

Find Gina's drum and point to its stretched skin. Explain that a gentle tap makes that part move back and forth; this movement is called vibration. Follow the drawn sound-wave lines toward the ears in the explanation. The lines help illustrate something we cannot see as lines in the air. Keep participation comfortable and quiet.

Remember: Choose one comfortable way to notice or describe a detail. What do you already wonder about this picture?

Start here: Point to the part Gina taps.

Explore further: Explain why the lines in the air are not strings we could see or touch.

What does Gina tap?

Answer cue: The drum skin.

What does "vibrate" mean?

Answer cue: Move back and forth.

What do the drawn lines represent?

Answer cue: Sound waves traveling through the air.

Keep the idea clear

The wave lines are diagram marks, not visible strings in the air. A child can explore the idea through the picture without listening to a sound.

Try: Represent a vibration

Materials: The poster and an adult; optional paper and drawing materials. Describing or pointing is enough.

1. Use the poster to identify the drum skin. Sound playback is optional and not needed.
2. Move a finger back and forth slowly, or ask an adult to describe that movement, as a model of vibrating.
3. Draw or describe the moving part and separately label the wave marks as diagram symbols.

What this can show: The finger model represents motion; it does not reproduce the drum's exact speed or measure sound. A child need not hear sound to participate.

Return to it: Find another pictured sound-maker in a book. What part might vibrate, and what would we need to investigate to know?

Sound Starts with Vibrations · In the classroom

A 20-minute classroom lesson

Prepare: Read the poster, answer cues and misconception note. Prepare only the materials named in the activity; keep a picture-only or described option available.

Words to explore

vibrate — Move back and forth.

sound wave — A traveling disturbance that can carry sound through a material such as air.

3 min · Reconnect and wonder: What moves when a sound begins? Invite an initial idea; record it without marking it right or wrong.

4 min · Look together: Point to the part Gina taps. Introduce vibrate using the poster.

8 min · Investigate or represent: Use “Represent a vibration.” Let pairs take turns noticing and recording, with adult help and the activity’s stated boundaries.

5 min · Explain and return: Ask the core check: What moves when a sound begins? Accept pointing, words, signing or a drawing. If the learner is ready, offer this optional extension: Explain why the lines in the air are not strings we could see or touch.

Understanding check: What moves when a sound begins?

Answer guidance: The drum skin moves back and forth when tapped: it vibrates. Sound travels through the air, and the drawn wave lines represent that movement rather than visible strings. The finger model represents motion; it does not reproduce the drum’s exact speed or measure sound. A child need not hear sound to participate.

Accept pointing, speech, signing, a drawing or adult dictation. Describe the illustration and use labels/position as well as color. Offer one contrast first, and use the extension when the learner is ready.

A response to keep

My idea or question

What I noticed (date/time if useful)

What I think now / my next question

<https://kiddos.ai/learn/learning-with-gina-and-ollie/sound-vibrations>

Related story: Gina and the Quiet Sounds — Continue with a gentle story about noticing sounds around us.

Our discovery record

Use words, marks, a drawing or an adult's notes. Keep this page with you; nothing needs to be uploaded.

Date / time (if useful): _____

My question or idea

What I noticed

What I think now

What I want to explore next

Stories to continue together: <https://kiddos.ai/books>

Kiddos Books on the App Store: <https://apps.apple.com/app/id6720721998>

Explore the available physical books: <https://www.amazon.com/author/kiddos-books>