

Get Up and Dance

Get up and dance! Explore how different gears push each other and change the dancers' spinning speed in a fun dance competition.



⌚ 30–45 min.

📦 Beginner

🎓 K–2

💻 Hybrid

Teacher Support

Key objectives

Students will:

- Explore how pushing on an object can change the speed or direction of its motion, and start or stop its movement
- Understand that objects push on one another when they touch and that this can change their motion
- Explore how gears of different sizes push each other, which makes them move faster or slower

Things you will need

- LEGO® Education BricQ Motion Essential Sets (one for every two students)
- Dance music (your choice)

Additional resources

[Building instructions book, "A," pages 4 - 10](#)

[Student Worksheet](#)

[Assessment Rubric](#)

Educational standards

- NGSS K-PS2-1
- ISTE 7c
- CCSS.ELA-LITERACY.SL.1.2

Lesson extension

- CCSS.MATH.CONTENT.1.G.A.3

Hybrid learning resources

[Personal Learning Kit lesson plan](#)

Prepare

- Review the online student material. Use a projector to share this material with your students during the lesson.
- Make sure that you've covered the relevant concepts (*i.e., push and pull*) in an earlier lesson.
- Consider the abilities and backgrounds of all of your students. Differentiate the lesson to make it accessible to everyone. See the *Differentiation* section below.

lesson to make it accessible to everyone. See the *Differentiation* section below for suggestions.

Engage

(Whole Class, 10 Minutes)

- Watch the student video [here](#), or access it via the online student material.
 - Facilitate a quick discussion about which type of forces can move gears.
 - Ask the students to describe gears:
 - What do they look like? (*e.g., round, with lots of teeth around the edge*)
 - How do they start turning? (*e.g., with force, such as a push*)
 - Which ways can they turn? (*e.g., clockwise, counterclockwise, this way, that way, or around*)
 - Tell the students that they'll be building a moving dance floor with gears, a DJ Minifigure to push the gears, and Minifigure dancers.
 - Turn to page 4 in building instructions book "A." Show the page to your students and explain what a page number is and why it's important. Point out that the building steps are numbered and that they should be done in order. Explain that each step shows which LEGO® elements are needed and that the number with an "x" shows how many of the pictured element they'll need for that step. Flip through the instructions quickly and show the students where they'll stop building.
 - Distribute a set to each group.
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Explore

(Small Groups, 20 Minutes)

- Have the students work in pairs to build the Get Up and Dance model. Tell them to take turns, one partner searching for the bricks while the other builds, switching roles after each step has been done.
- You can find support for building in the *Tips* section below.
- When the students have finished building the dance floor, have them design and add Minifigure dancers to the gears.
- Now, have them play "freeze dance."
 - Put on some dance music.
 - Start the movement of the model by pushing the black record on the purple gear (*i.e., the DJ's turntable*).

- Tell the students to stop their dancers when they hear the music stop.
 - Stop the music.
 - Play the music.
 - Repeat several times.
 - Have the students try spinning the gears in different directions.
 - How can they make the gears turn faster or slower?
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Explain

(Whole Class, 5 Minutes)

- Gather your students together to share what they've built.
 - Ask the students what they've observed about the movement of the gears. Make sure to cover these points:
 - Turning connected gears in different ways causes them to move clockwise or counterclockwise.
 - A small gear pushing a big gear makes the big gear move slower (*i.e., gearing down*).
 - A big gear pushing a small gear makes the small gear move faster (*i.e., gearing up*).
 - When you connect two gears of the same size, they move at the same speed.
 - For two gears to move in the same direction, there has to be another gear in the middle. This is called an idling gear.
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Elaborate

(Whole Class, 10 Minutes)

- Have your students rebuild their dance floors and experiment with moving the gears to different positions.
 - If time allows, have the students complete the Student Worksheet (Teacher Support – Additional Resources), indicating the fast and slow gears.
 - Allow 5 minutes for the students to disassemble their models, sort the bricks back into the trays, and clean up their workstations.
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Evaluate

(Ongoing Throughout the Lesson)

- As they build, encourage the students to discuss what's happening with the gears and movement.
- Ask guiding questions to encourage your students to "think aloud" and explain their thought processes and reasoning in the problem-solving decisions they've made when building their models.

Observation Checklist

- Measure your students' proficiency in describing the push forces that are at work in the model.
- Create a scale that matches your needs, for example:
 1. Needs additional support
 2. Can work independently
 3. Can teach others

Self-Assessment

- Have each student choose the brick that they feel best represents their performance:
 - Green: I think I can describe what "push" means.
 - Blue: I know I can describe what "push" means.
 - Purple: I can describe what "push" means, and I can help a friend understand, too.

Peer-Feedback

- In their small groups, have the students discuss their experiences working as a group.
- Encourage them to use statements like:
 - I liked it when you....
 - I'd like to hear more about when you....

Tips

Model Tips

- Building shouldn't take longer than 20 minutes. For groups that haven't finished building, pair each student up with a group that has completed their model.
- The students can use the triangles printed on the gears to count the revolutions and help explain why the gear is moving faster or slower.

- and help explain why the gear is moving faster or slower.
 - When a large gear is pushing a small gear, the students can follow the triangles on the small gear to help count how many rotations it moves compared to the large gear.
 - Show the students how to use the wedge end of the Brick Separator to pry the gears from their turntables.
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Differentiation

Simplify this lesson by:

- Asking the students to start by exploring the motion of just one dancer and two gears.

Increase the difficulty by:

- Encouraging the students to place one Minifigure dancer on a large gear and one on a smaller gear, then observing the different speeds of each dancer
 - Ask questions, like:
 - How many times does each dancer turn?
 - Which dancer makes more turns?
 - How could you create a synchronized dance routine?
 - How can you make both dancers move in the same direction?
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Extensions

Math Extension (Note: This will require additional time.)

To incorporate math skills development, the students can build on top of the large gears using LEGO bricks to represent fractional parts. They can do this by counting studs and adding bricks to show a half or a quarter.

CCSS.MATH. CONTENT.1.G.A.3

1:1 Hybrid Learning

Download the Personal Learning Kit lesson plan from the hybrid learning resources

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