

Creative Carnival Games

It's time to create a new game for the school carnival!

🕒 45–90 min. 📦 Beginner 🎓 Grades 3–5



Teacher Support

Key objectives

Students will:

- Apply their existing scientific knowledge of energy transfer and collision to solve a problem
- Engage effectively in a range of collaborative discussions

Things you will need

(one for every two students)

- LEGO® Education SPIKE™ Essential Set
- Device with the LEGO® Education SPIKE™ App installed
- OPTIONAL: Additional materials for brainstorming (e.g., notebook paper, science notebook, etc.)

Additional resources

[Meet the Team: Minifigure Bios](#)
[Assessment Rubric](#)

Educational standards

- All previously-listed
- ISTE 1.3d

Language Arts Extension

- CCSS.ELA-LITERACY.W.4.2

Prepare

NOTE: This lesson will extend over two 45-minute class sessions.

- Review the *Creative Carnival Games* lesson in the LEGO® Education SPIKE™ App.
- Consider the abilities and backgrounds of all your students. Differentiate the lesson to make it accessible to everyone. See the *Differentiation* section below for suggestions.
- If time allows, plan and facilitate the language arts extension. See the *Extension* section below for more information.

PART A (45 minutes)

Engage

(Whole Class, 10 Minutes)

- Facilitate a quick discussion about designing a new game for a school carnival.
 - Talk with your students about creating a game that shows energy transfer.
 - Ask questions, like: *What types of games show energy transfer? What does the energy transfer look like?*
 - Introduce your students to the team and the challenge: brainstorming a new carnival.
 - Distribute a brick set, any additional brainstorming materials, and a device to each group.
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Explore

(Small Groups, 25 Minutes)

- Have your students use the LEGO® Education SPIKE™ App to guide them through their first challenge:
 - Create a new carnival game. Use at least one motor or sensor (i.e., Color Sensor or Light)
 - Your students can use the LEGO bricks supplemented with additional materials to brainstorm. Encourage them to come up with multiple solutions.
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Explain

(Whole Class, 10 Minutes)

- Gather your students together and facilitate a sharing session where they present their initial ideas and provide feedback and suggestions to their peers.

PART B (45 minutes)

Elaborate

(Small Groups, 30 Minutes)

- Have your students build, program, and test the prototypes and ideas they came up with during the brainstorming session in Part A of this lesson.
 - Remind them to use at least one motor or sensor.
 - Encourage them to test and refine their models and programs over 2-3 iterations.
 - You can find coding and building support in the *Tips* section below.
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Evaluate

(Whole Class, 15 Minutes)

- Ask guiding questions to encourage your students to "think aloud" and explain their thought processes and reasoning in the decisions they've made while building and programming.
- Have your students clean up their workstations.

Observation Checklist

- Measure your students' proficiency in applying their existing knowledge of energy transfer and collision to complete the given task.
- 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.
 - Yellow: I think I can design, build, and program a solution.
 - Blue: I can design, build, and program a solution.
 - Green: I can design, build, and program a solution, and I can help a friend do it too.

Peer-Feedback

- In their small groups, have your students discuss their experiences working together.
- Encourage them to use statements like these:
 - I liked it when you...
 - I liked how you...
 - I liked that you...

- I'd like to hear more about how you...

Tips

Coding Tip

- There are no coding instructions or Inspiration Coding Blocks for this lesson.
 - Encourage your students to experiment and find their own solutions.

Model Tip

- There are no building instructions or Inspiration Images for this lesson.
 - Encourage your students to create their own models.
 - If they need additional guidance, refer them to the building instructions for previous lessons in this unit.
- There's no right or wrong model for this lesson.
 - Your students can create entirely new models, find inspiration in the models from previous lessons, or simply recreate models from earlier lessons.

Differentiation

Simplify this lesson by:

- Working together as a class to brainstorm new ideas for a game
- Giving your students the building instructions from previous lessons to use as inspiration for their new carnival games

Increase the difficulty by:

- Using two motors or sensors
- Creating two unique programs so that the game has a simple version and a more difficult one

Extension

- Have your students write descriptions of their carnival games, clearly stating where the transfer of energy occurs, how it occurs, and how collision impacts the

where the transfer of energy occurs, how it occurs, and how collision impacts the game.

If facilitated, this will extend beyond the 90-minute lesson.

Language Arts: CCSS.ELA-LITERACY.W.4.2