

Ideas, the LEGO way!

Use LEGO bricks as a unique way to generate creative ideas.

🕒 30–45 min. 📦 Beginner 🎓 Grades 6–8



Teacher Support

Key objectives

Students will:

- Use an idea generation and creation tool

Things you will need

[LEGO® Education SPIKE™ Prime Set](#)

Additional resources

[Building instructions](#)

[Python Programs](#)

Educational standards

ISTE

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

NGSS

MS-ETS1-2

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Common Core

SL.6.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.6.5

Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

W.8.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Lesson plan

1. Prepare

- Read through the student material in the LEGO® Education SPIKE™ App.
- If you feel it's needed, plan a lesson using the getting started material in the app. This will help familiarize your students with LEGO® Education SPIKE™ Prime.

2. Engage (5 Min.)

- Use the ideas in the *Ignite a Discussion* section below to engage your students in a discussion related to this lesson.
- Use the video to explain the lesson.

3. Explore (8 Min.)

- Explain how to use the Hub as a countdown clock using the 3- and 5-minute programs provided.
- Ask your students to brainstorm individually for 3 minutes.
- Give them 5 minutes to individually sketch or build their ideas.

4. Explain (10 Min.)

- Give your students 5 minutes to share their ideas within their teams.
- Give them 5 more minutes to discuss their ideas and pick the best one.

5. Elaborate (15 Min.)

- Give each team 5 minutes to build their chosen idea.
- Make sure they understand that their build doesn't have to work. It's just a concept.
- Have each team make a video explaining their idea.
- Don't forget to leave some time for cleanup.

6. Evaluate

- Give feedback on each student's performance.
- You can use the assessment rubrics provided to simplify the process.

Ignite a Discussion

Start a discussion about what your students don't like about their mornings. Talk about things they could improve, like:

- How their alarm wakes them up
- How they make breakfast
- How they brush their teeth
- How get dressed

Hint: Use the keywords "automated breakfast" to find online videos to stimulate their thought process.

Have your students watch this video to see what they're about to do.

Building Tips

Prepare Extra Materials

Providing the following materials could be helpful during the brainstorming session:

- Paper
- Scissors
- Tape
- Pencils

Most importantly, encourage your students to use their imaginations!

Combine with LEGO Bricks

Make sure your students understand that they can use these materials in combination with the LEGO bricks, as demonstrated in the video.

Coding Tips

Main Program

Possible Solution

Differentiation

Simplify this lesson by:

- Narrowing the topic to one specific area (e.g., making breakfast).
- Running this lesson as a large group (i.e., the whole class) instead of in teams.
This will make it easier to manage timing between the steps.
- Instead of using the Hub and programs, manage time in a different way (e.g., stopwatch, timer, clock).

Take this lesson to the next level by:

- Facilitating a proper sharing session as a class. This will encourage everyone's participation and level up the quality of ideas.
 - Have a second brainstorming session on another day and evaluate with your students how they've improved from the first session.
 - Incorporate the language arts extension.
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Assessment Opportunities

Teacher Observation Checklist

Create a scale that matches your needs, for example:

1. Partially accomplished
2. Fully accomplished
3. Overachieved

Use the following success criteria to evaluate your students' progress:

- Students generated multiple ideas about a topic.
- Students used various brainstorming materials to help them through the process.
- Students can select ideas according to specific criteria and describe them to peers.

Self-Assessment

Have each student choose the brick that they feel best represents their performance.

- Blue: I've generated lots of ideas for improving my morning routine.
- Yellow: I've participated in a discussion about everyone's ideas and selected the one I thought was best.
- Violet: I've used a quick build to describe my idea and demonstrate its principles.

Peer-Assessment

Encourage your students to provide feedback to others by:

- Having one student score the performance of another using the colored brick scale above.
 - Asking them to present constructive feedback to each other so that they can improve their group's performance during the next lesson.
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Language Arts Extension

To incorporate language arts skills development:

- Have your students use sketches, mock-ups, or other media to present the ideas they've produced during their brainstorming.
- Ask each student to hand in a creative document in which they describe their best idea.

Note: This will make for a longer lesson.