

The Coach

Design, build, and program a training coach to improve the process of mastering something.

🕒 120+ min. 📦 Intermed. 🎓 Grades 6–8



Teacher Support

Key objectives

Students will:

- Design a solution that can help improve everyday life

Things you will need

[LEGO® Education SPIKE™ Prime Set](#)

Additional resources

[Building instructions \(Solution Example\)](#)

[Inventor Notebook PDF](#)

[Python Programs](#)

Educational standards

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.

CSTA

2-IC-20 6-8

Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

2-CS-02 6-8

Design projects that combine hardware and software components to collect and exchange data.

Common core

CCSS.ELA-LITERACY.SL.8.4

Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

Lesson plan

1. Prepare

- Read through the student material in the LEGO® Education SPIKE™ App.
- Plan accordingly, this project is designed to be run over multiple sessions.

Part A

2. Engage (10 Min.)

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

3. Explore (35-55 Min.)

- Have your students work in pairs to brainstorm about something they'd like to become an expert at.
- Ask them to think about things they could invent to help them.
- Make sure they incorporate the use of data in their idea.
- Give them some time to make prototypes with the bricks.

4. Explain (10 Min.)

- Ask your students to build and program their training device.
- Have them put together a demo of their training program.
- Remind them to describe their trainer and their goals.

Part B

5. Elaborate (60 Min.)

- Facilitate a sharing session where everybody gets to present what their training program and what their trainer is good at (or not so good at).

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 how to become an expert at something. Ask relevant questions, like:

- What's something you'd like to become an expert at?
- How do people use apps to master new skills?
- How data is used in training apps to track a person's progress?

Building Tips

Open-Ended Solutions

This project is designed so that every student or team can have a unique solution.

Example Solution

Here's an idea you can use to inspire your students' design process.

Coding Tips

Main Program

Differentiation

Simplify this lesson by:

- Having the teams work on a specific topic (e.g., training for a marathon), this will allow teams to share ideas and help each other
- Providing specific programs you'd like them to use in their projects

Take this lesson to the next level by:

- Asking the teams to develop a real training program for a real person
 - ▷ Have them conduct interviews with the person to identify their needs, then verify whether they've developed an appropriate solution
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Assessment Opportunities

Teacher Observation Checklist

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 can identify the key elements of a problem.
- Students are autonomous in developing a creative and working solution.
- Students can clearly communicate their ideas.

Self-Assessment

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

- Blue: I've successfully created a training program for my favorite activity.
- Yellow: I've successfully created a training program that uses creative ways to solve the problem
- Violet: I've successfully created a training program that uses creative ways to solve the problem and I've presented my ideas clearly.

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.

Language Arts Extension

To incorporate language arts skills development:

- Ask your students to use text, images, sketches, etc. to record their design process, creating an Inventor Notebook to document their work.
- Have them create a website presenting their training program.

Career Links

Students who enjoyed this lesson might be interested in exploring these career pathways:

- Health Science (Medical & Health Careers)
- Information Technology (Computer Programming)
- Information Technology (Game Programming)
- Information Technology (IT Applications)
- Education And Training (Teaching)