

Lunch Box Protector (robotics)

Lesson Overview: Students will build something to protect lunch that is kept in a lunch box.
Suggested Time: 60-90 minutes

Learning Objectives:

- Students will get practice using sensors
- Students will practice building with robotics components

Materials:

Testing Stations:

- Lunchboxes

Building:

- Robotics building materials (Students may want to incorporate sounds or lights as part of their designs.)
- motors
- sensors
- Cardboard
- Paper
- Tape
- Paperclips
- String
- binder clips
- pipe cleaners
- popsicle sticks

Directions:

1. Tell students they will build a lunch box protector for a student whose lunch is regularly being stolen. They can use a variety of materials but must use at least one sensor. Discuss design constraints and criteria. Be sure to mention that the device cannot harm anyone.
2. Have students work in pairs or small groups. They should begin by using a planning document. Students should have access to the lunch boxes so they can test as they build.
3. Have students program and build as they work. They do not need to complete one task before moving on to the other task.
4. Stop for a mid-design share-out to get feedback from classmates and offer tips to each other.
5. Give students time to iterate on their designs.
6. For a final share-out, students can test each other's devices and try to break into them.

Possible Discussion Topics:

- What were the different designs you discussed at the beginning?
- Why did you choose the design you chose?
- Do you have any programming tips for the group?