STEM CAREER ADVENTURES

6-8 grade

Food Safety Inspector: Learning about Disinfectants

Adventure Description:

In this adventure, you will think like a food safety inspector and test the effectiveness of different disinfectants.

Activity

- Teacher note: This activity needs to be done over multiple days. We suggest completing step 1 on a Thursday, steps 2-3 on a Friday, and steps 4-5 on the following Monday. If you are short on time, we recommend not letting the cutting board sit out overnight. You will still be able to get bacteria results, just not as much.

Step 1: Background On Food Safety Inspector (10-15 minutes)

- Ask students what they know about food safety. (Answers will vary, but may include washing your hands before and after handling food, keeping food refrigerated, using clean cooking utensils, etc.)
- Explain to students that public kitchens (like in restaurants) have to be inspected regularly to ensure that they are preparing food safely. If they aren't preparing food safely, people who eat the food could get really sick.
- Food safety inspectors check public kitchens and stop any kitchen that isn't preparing food safely.
- Food safety inspectors make it so we can eat food from public kitchens without being afraid of getting sick.
- Part of running a safe kitchen is using an effective disinfectant. Disinfectants are chemicals that destroy bacteria and stop it from growing.

Step 2: Activity Set-up (15 minutes)

- Explain to students that they will conduct an experiment to test which of 5 disinfectants is the most effective at killing bacteria. Students will then make a recommendation about which disinfectant should be used by restaurants.
- Place students into small groups.
- Give students Handout: Testing Different Disinfectants and read through the instructions.
- Each group will need the following materials:
  - Cutting Board
  - Permanent Marker
  - 1 piece of lunchmeat
  - Sterile gloves
- Have students complete step 1 on the handout.

Please contact Allison Bischoff, Director of Teacher Support, at allison@rozzylearningcompany.com or 314-272-2560 with questions.

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- While students are working, ask them the following questions:
  - Why are we rubbing the lunchmeat on the cutting board? (To add bacteria from food.)
  - Why are we going to let the cutting board sit out overnight? (To let the bacteria multiply and grow.)
  - Why did we use water on one section? (It acts as a control and shows how much bacteria would be on the cutting board without disinfectant.)
- Store cutting boards over night.

Step 3: Conducting the Experiment (20-30 minutes)

- Have students collect the cutting boards from yesterday.
- Give groups the following materials:
  - Gloves
  - Permanent Marker
  - 6 small plastic or paper cups
  - Water
  - 5 samples of disinfectants (See Handout: Teacher Prep for suggestions)
  - 6 cotton balls
- Have students complete step 2 on the handout.
- While students are working, ask them the following questions:
  - Why is it important for your gloves to not touch the cutting board? (You might transfer bacteria from one space to another.)
  - Why do you get a new cotton ball for each disinfectant? (To avoid cross contamination.)
- Once students have disinfected their boards, they are ready to take samples and plate them on agar plates.
- Give students the following materials
  - 6 agar plates
  - 6 cotton swabs
  - Masking Tape
  - Permanent Marker
- Have students complete step 3 on the handout.

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- While students are working, ask them the following questions:
  - Which plate do you expect to grow the most bacteria and why? (The section with water, because there was no disinfectant used, meaning none of the bacteria were killed)
  - Make a prediction about which disinfectant will work the best.
- Once students have sealed all of their plates, collect the plates and store them in a warm, dry place.
- Wait for the bacteria to grow for 2-4 days.

Step 4: Analyzing Results (15-20 minutes)

- Have students collect their bacteria plates.
- Instruct students to complete step 4 on their handout.
- While students are working, ask them the following questions:
  - Which plate has the most bacteria?
  - Which plate has the least?
  - Did the results surprise you?
  - Rank the disinfectants from least effective to most effective.
- Have students compare their results with other groups in the class.
- Have a concluding discussion about the importance of using effective disinfectants to promote food safety.

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Materials List

Provided online:

- Handout: Testing Different Disinfectants
- Handout: Teacher Prep

Not provided (each student or group needs):

- Cutting Board
- Permanent Marker
- 1 piece of lunchmeat
- Sterile gloves (multiple pairs per group)
- 6 small plastic or paper cups
- Water
- 5 samples of disinfectants
- 6 cotton balls
- 6 agar plates
- 6 cotton swabs
- Masking Tape

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