Bacteria in Your Environment

In this investigation you will culture (grow) microorganisms from several different sources that you are exposed to on most days.

Materials
petri dish containing sterilized medium (environment)
incubator
CAUTION: Treat all the petri dishes as though they contained pathogens. Never remove the tops after the medium has been inoculated. Follow these and your teacher's directions closely.

Procedure A: Preparation of the Medium
This procedure will have been carried out for you.
1. Sterilization of equipment. All equipment to be used in this procedure must be sterile, or free from microorganisms. Wash the tongs, flasks, and petri dishes using a detergent. Rinse everything several times with running water. Autoclave the equipment at 170° C to 200° C for at least 15 min.
2. Preparation of the medium. The nutrient agar has been sterilized prior to the lab. The bottles of this mixture need only be heated to liquefy the mixture. After heating the bottles, pour enough of the mixture into each sterilized petri dish to half fill it. Cover each dish with a sterilized lid.

Procedure B: Inoculation and Incubation
3. Obtain one of the petri dishes containing sterilized nutrient agar.
4. Inoculate the medium by doing one of the following:
    a) Use a sterile swab to transfer some dust from the window ledge to the medium.
    b) Let a living insect walk across the medium.
    c) Expose the medium to room air for 5 min. Different students should try different rooms: the classroom, the gymnasium, the locker room, the cafeteria, the corridor of the school, *etc*.
    d) Drag a coin over the medium.
    e) Touch the medium with the tips of your fingers. Do the same with a second medium after washing your hands thoroughly.
    f) Use a sterile swab to transfer some water from an aquarium to the medium.
CAUTION: As soon as you have inoculated the medium, put the top back on. Seal it in place with parafilm. Never remove the top after this time.
5. Incubate the culture in the incubator at 25°C to 35°C. Place it upside down. This keeps the moisture in the medium. Observe the cultures every day for the next 3-4 d. Make careful notes on the shape, size, structure, texture and colour of any colonies that appear.

Discussion Questions
1. How large do you think each colony was when it first started?
2. By what process did the colonies grow?
3. Are conditions in the dish ideal for the growth of microorganisms such as bacteria? How do you know?
4. What procedure produced the largest population of microorganisms? Why is this so?

5. What procedure produced the largest number of different kinds of microorganisms? Why is this so?
6. Mold colonies will generally be fuzzy and larger than bacterial colonies. Which procedures produced mold cultures?