

6-8 Lesson Plans

Healthy By Design

Lesson Overview:

Innovations related to our health are of paramount importance: they can save a life, improve our quality of life, or help us get and stay healthy. In this three-part lesson, students will examine several health-related innovations and design a new innovation to help kids their age follow dietary and physical activity guidelines.

Learning Objectives:

Students will be able to:

- Identify everyday health-related innovations.
- Draw conclusions about the importance of continued innovation related to our health.
- Track and analyze their personal eating and physical activity patterns for one day.
- Identify challenges to following dietary and physical activity guidelines.
- Design an innovation to help kids meet dietary and/or physical activity guidelines.

Academic Standards:

National Science Education Standards (SCES)

Science as Inquiry:

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Life Science:

- Regulation and behavior

Science and Technology:

- Abilities of technological design

Science in Personal and Social Perspectives:

- Personal health
- Risks and benefits
- Science and technology in society

Time Frame: 2-3 class periods

Materials:

- Several everyday health-related innovations, e.g., a toothbrush, hand sanitizer, tissue, deodorant, bike helmet, car seat, bottle of vitamins, diaper, thermometer, etc.
- “Healthy by Design” student activity sheet, one per student
- Access to the Internet



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Procedure:

Part 1

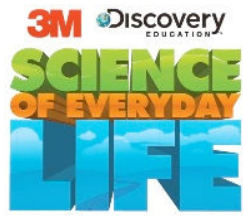
1. Divide students into groups and distribute one of the everyday innovations (see materials list) to each group. Direct each group to examine their object and answer the following questions on a sheet of paper:
 - a. What is the name of your innovation?
 - b. What is it used for?
 - c. How does it work? What is the science behind it? (If students don't know this answer, they can guess or conduct research)
 - d. How does the innovation help people?
 - e. What might people have used before this object was designed or invented?
 - f. How might your life (or the lives of others) be different if your object had not been invented?
2. Have each group present their objects and share their answers with the class. Have student groups brainstorm something all of the objects have in common (they are all related to our health). Have students consider the following: What would happen if the toothbrush had never been invented? What about casts? Or vitamins? Or surgical tools?
3. Ask each student group to estimate how many health-related innovations they use in an average day. Then challenge each group to list all of the health-related innovations they have used in the past 24 hours. For extra fun, award the winning group with toothbrushes (or another health-related innovation!).
4. Have each group share their lists. Which innovation did every group list? Which were unique to certain groups? Which would students call most important? How many would they be willing to live without? Challenge students to draw conclusions about the importance of continued innovation in the area of health.

Part 2

5. Health innovations are generally designed to help us lead healthier lives. Sometimes they can also be designed to solve a problem. Ask students to brainstorm what they know about current health risks for U.S. kids. If childhood obesity is not named, guide students to this answer. Then divide students into groups and direct each group to discuss *one* of the following questions:
 - a. Childhood obesity has tripled in the past 30 years. What are the health risks associated with childhood obesity?
 - b. For the first time in our country's history, this generation could have a shorter life span than their parents. How could childhood obesity play a role in this?
 - c. How can eating a nutritious, well-balanced diet contribute to good health?
 - d. How can regular physical activity contribute to good health?
 - e. Do you think most kids your age eat a nutritious, well-balanced diet? Why or why not?

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6. Come back together and have each group summarize their discussions/answers. Allow students to add to each group's answers. Share with students that innovations are often brought about to solve a problem. Health innovations are particularly important in solving problems because they can often save lives, improve our quality of life, or help us get or stay healthy.
7. Ask students what they think it means for kids their age to eat a nutritious, well-balanced diet or how long kids their age should be physically active each day? Why is what they eat and drink and how active they are so important for their health?

Note: Several resources that answer these questions can be found in the resource section. If there were innovations that could help them follow dietary guidelines or be physically active each day, would they use them?

8. Direct students to go to the U.S. Department of Agriculture's MyPyramid daily food guidance system at <http://www.mypyramid.gov/downloads/MiniPoster.pdf>.

Share with students that MyPyramid is a food guidance system designed to help us eat a nutritious, well-balanced diet and to be physically active regularly. The width of the bands show which food groups should be eaten more frequently than others and the differences within the width of each band reflects the fact that, within each food group, there are some foods that should be consumed more than others. For example, yogurt should be consumed more frequently than ice cream within the milk group. Review the poster, including each food group's slogan and serving recommendations along with how much daily physical activity kids their age should get each day (60 minutes).

9. Poll students to see how many of them follow the MyPyramid guidelines each day. If the number 10 meant they followed the guidelines perfectly and the number 0 meant they didn't follow the guidelines at all, where might students place themselves?
10. If time allows, challenge students to track everything they eat and drink and how many minutes of physical activity they get for a 24-hour period. Then have them come back together to discuss the following:
 - a. Which aspects of the MyPyramid food guidance recommendations are easiest for you (or kids your age) to follow?
 - b. Which are most challenging?
 - c. What obstacles might prevent kids your age from following them on most days?
 - d. Would you say it's easy or hard for you (or kids your age) to be physically active for at least 60 minutes each day?
 - e. What obstacles might prevent kids your age from following them on most days?



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11. Share with students that innovation is “the act of introducing something new.” What existing innovations or technologies already help kids your age (or others) follow the MyPyramid food guidance recommendations or be physically active each day? *Examples include the Nutrition Facts panel, a food scale, a food journal, exercise equipment, a pedometer, electronic food and activity trackers, measuring spoons and cups, exercise video and video games, a jump rope, a trampoline, talking refrigerators, food packaging by serving size, food and activity apps, lunchbox sized servings of fruits and vegetables, colorful, plastic containers for milk, portable yogurt, sneakers, etc.*
12. For each innovation listed, challenge students to identify who the innovation was designed for, how it works, what may have been used before it was designed, and how it helps people.

Part 3

13. For every innovation that they listed in Part 2, a person or group came up with the idea and worked to make it happen. Distribute the “Healthy by Design” student activity sheet which gives student teams an opportunity to design their own innovation. Review the directions with students and give them ample time to brainstorm. You may want to review some of the winning apps in the “Apps for Healthy Kids” contest (see additional resources) to help guide student thinking.
14. Once students have completed their descriptions, have them present them to the class. Have students identify the innovations they would try if actually produced.

Extensions

- Have students design prototypes of their innovations and present them at a school-wide “Healthy by Design” fair.
- Brainstorm other possible innovations related to “How We Keep Ourselves Healthy.”

Additional Resources:

Apps for Healthy Kids gallery of contest winners:
<http://www.appsforhealthykids.com/application-gallery>

Centers for Disease Control - Childhood obesity fact sheet:
<http://www.cdc.gov/healthyyouth/obesity/>

USDA’s MyPyramid: www.mypyramid.gov

3M Healthcare Innovations:
http://solutions.3m.com/wps/portal/3M/en_US/Products/ProdServ/Dir/HealthCare/



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Student Activity Sheet: Healthy by Design

Innovation is the “art of introducing something new.” Health innovations are particularly important because they are often designed to help get or keep someone healthy, save a life, or improve our quality of life. In this lesson, you’ve learned about the problem of childhood obesity and how what we eat and how active we are can help contribute to our good health. But being physically active for 60 minutes each day and following the MyPyramid food guidance system can be challenging for some. In this activity, you will design an innovation to **help kids your age do one or more of the following:**

- Be physically active for at least 60 minutes each day.
 - Eat 6 oz. of grains each day. Eat more whole grains.
 - Eat 2 ½ cups of vegetables each day. Eat more dark green and orange vegetables.
 - Eat 2 cups of fruit each day. Eat a variety of fruit.
 - Get 3 cups of calcium-rich food each day. Choose low-fat or fat-free dairy products.
 - Eat 5 ½ oz. of protein each day. Choose low-fat or lean meats and poultry.
 - Limit fats, grains, sugars, and salt.
1. Complete the following sentence. “It would be easier for me or kids my age to follow the (nutrition, physical activity) recommendations above if: (can be more than one answer)
 2. Share your answers with your partner. Select one challenge from #1 that you are both interested in working on. Write it below.
 3. Now think about a way that you could turn your challenge into a new innovation or new idea. It could be a gadget, a tool, an app, an electronic device, a piece of equipment, an article of clothing, or a new idea. Remember it should be designed to help kids your age do one or a combination of the bulleted guidelines above. Brainstorm as many ideas as possible. Be creative. No idea is a bad one! A great way to start your brainstorming session is, “What If ...”
 4. Review all of the ideas you came up with. If possible, work with your partner to select one innovation that you and your partner would both like to design.
 5. Then on a separate sheet of paper, describe your innovation. Include the name of your innovation, whom it is designed for, how it will work, and how it will help others.