



# Teacher Tools

## Lesson 1 Innovation of our Generation

### OVERVIEW

*In this lesson, students will define innovation and identify innovations that have solved problems or made a positive difference for kids their age. They then will nominate and write a speech for the innovation they feel has had the greatest impact on their generation. Along the way, they will learn about the process of innovation and how a simple problem can lead to an idea that is revolutionary!*

***This lesson is intended for classroom activity, and students who wish to create videos for the 2011 Discovery Education 3M Young Scientist Challenge may consider any subject within the broader categories of How We Move, How We Keep Ourselves Healthy and How We Make a Difference, as presented in the official rules.***



**Length of Lesson:** 2-3 class periods, time outside of class

**Subject Area(s):** Science, Technology, Language Arts, Visual Arts

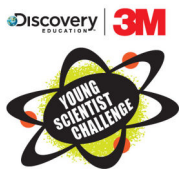
### OBJECTIVES

Students will:

- Define innovation.
- Identify innovations that have impacted the lives of kids their age.
- Research one innovation that has had an impact on their lives.
- Write and present a campaign speech to nominate one innovation as the “greatest in their generation.”

### MATERIALS

- Index cards
- 3-5 objects that impact students lives, e.g., computer, cell phone, toothbrush, etc.
- “Innovation Process” student activity sheet, one per student
- “Innovation of Our Generation” student activity sheet, one per student
- Access to the Internet
- Art materials
- Video cameras (optional)



## PROCEDURE

*Note: At the beginning of the day, divide students into groups and tell them their group will have to go the entire day (or the time prior to the lesson) without the use of one object. Then write the names of the following objects (or other objects that your students would miss) on index cards and have each group select a card: chair, desk, pencil, backpack, calculator, etc. Have student groups try to go at least one full school day without the use of the object.*

### **Part 1**

1. Divide students back into their groups from the pre-class activity. Ask them to discuss and then present answers to the following questions:
  - a. What did you miss most about not having use of the object on your card?
  - b. Could you spend more than one day without the object?
  - c. How would your life be different if the object had never been invented?
  - d. What do you think people used before the object was invented?
  - e. Would you agree or disagree that the object is important in your life? What about your friend's lives?
  - f. Which of the objects on the cards would be most difficult for you to not have in your life?
2. Put the word, "innovation" on the board and ask students to write a sentence, series of words, or pictorial representation of what the word means to them. Have students share their answers. If possible, come up with a class definition of the word. "Innovation" means "the process of making improvements by introducing something new."
3. Given the definition, would students consider the object on their card an "innovation"?
4. Place 3-5 objects in the front of the room that students use on a regular basis. Examples are provided in the materials list above.
5. Present each object and ask students:
  - a. Why do you think this object was invented?
  - b. Does this object have an impact on your life? If so, how?
  - c. In what way does it solve a problem or make your life better?
  - d. Do you think it has more, less or the same impact on your parent's lives?
  - e. Would you be willing to go one day without this object? One week? One month? One year?
  - f. How would your life be different if this had never been invented?
6. After each object has been presented, have students talk in their groups about which object they think has the greatest impact on their lives personally and on their generation.



7. Then give student groups two minutes to come up with as many innovations as they can that improve the lives of those in their generation. Encourage them to think about categories like transportation, entertainment, sports, healthcare, education, communication, food, design, clothing, culture, technology, media, safety and art. Place each category on chart paper and record separate lists for each category to spark thinking.
8. After two minutes, have each group share their innovations. Which innovations were listed more than once? Do students have additional ideas now that they've seen this list?
9. Remind students that for every innovation on their list, a person or group of people started with an idea! They may have said, "What if ..." or "Why does it work like this ..." or "I'd like to try ...". Innovators take different paths to reach the final product but many of them take similar steps. Ask students what steps they think an innovator would take to reach the final product of a new invention. Challenge students to list their ideas.
10. Share the "Innovation Process" student activity sheet with students and review each step. Ask students which steps they think they'd have the most trouble with? Which might they enjoy most? Which would take the longest?

## **Part 2**

11. Have students look back at the list of innovations that they generated in Part 1. Challenge them to think about 5-10 innovations from this list that have the greatest impact on their generation. (You may need to come up with a common definition for their generation, e.g., middle school kids, teenagers, etc.) Have them write their list of 5-10 in their personal order of importance.
12. Tell students to imagine that one object from the list they've generated will be named "Innovation of our Generation;" the innovation that has the greatest impact on kids their age. Students in their class (or the school if you can organize it) will vote based on speeches. Their job is to nominate one innovation from the list and write a two- to three-minute speech explaining why their innovation is deserving of the title!
13. In order to write their nominating speech, they must first research their innovation. Distribute the "Innovation of Our Generation" student activity sheet and read the directions with students. The activity sheet gives guidance on what should be included in the nominating sheet and research points students can follow.
14. Give students ample time and resources to conduct their research. A list of suggested websites is included in "Additional Resources."
15. Once students have completed the assignment, set up a time and venue for them to perform their speeches.
16. Finally, have students answer the following question, "How will continued innovation make your life better?"



## EXTENSIONS

- If possible, have other students vote on the “Innovation of their Generation,” based on the speeches.
- Have students create individual videos for the 2011 Discovery Education 3M Young Scientist Challenge! To learn more about the 2011 Challenge, go to [YoungScientistChallenge.com](http://YoungScientistChallenge.com).

### Additional Resources

A Century of Innovation: The 3M Storybook

<http://multimedia.3m.com/mws/mediawebserver?O0000QqV2&BoHTPphtiptPOArqMA&qV1r5OAr5OAO00000-->

3M/Discovery Education Science of Everyday Life

<http://scienceofeverydaylife.discoveryeducation.com/>

3M Technologies

[http://solutions.3m.com/wps/portal/3M/en\\_US/3M-Technologies/Home/](http://solutions.3m.com/wps/portal/3M/en_US/3M-Technologies/Home/)

Inventive Kids

[www.inventivekids.com](http://www.inventivekids.com)

Invention Categories from Idea Finder

<http://www.ideafinder.com/history/category/index.htm>

Inventions A to Z

<http://inventors.about.com/od/astartinventions/a/FamousInvention.htm>

Lemelson Center for the Study of Invention and Innovation- Invention Playhouse

[http://inventionatplay.org/playhouse\\_main.html](http://inventionatplay.org/playhouse_main.html)

## EVALUATION

You can evaluate your students using the following three-point rubric:

- **Three points:** Thoroughly researched factual information about their innovation using credible sources; developed a well-written, persuasive speech using factual information; presented the speech in a persuasive, lively manner; able to articulate how continued innovation will impact their lives.
- **Two points:** Adequately researched factual information about their innovation using credible sources; developed a fairly well-written, persuasive speech using factual information; presentation could be improved: difficulty articulating how continued innovation will impact their lives.



- **Three points:** Unable to research factual information about their innovation using credible sources; unable to develop a well-written, persuasive speech using factual information; presentation poorly presented; unable to articulate how continued innovation will impact their lives.

## STANDARDS CORRELATION

The National Academy of Sciences provides guidelines for teaching science in grades K-12 to promote scientific literacy. To view the standards, visit this website:

[books.nap.edu/html/nses/html/overview.html#content](http://books.nap.edu/html/nses/html/overview.html#content).

This lesson plan addresses the following national standards (Grades 5-8)

- Science as Inquiry: Abilities necessary to do scientific inquiry
- Science as Inquiry: Understanding about scientific inquiry
- Life Science: Regulation and behavior
- Science and Technology: Abilities of technological design
- Science in Personal and Social Perspectives: Risks and benefits
- Science in Personal and Social Perspectives: Science and technology in society



## **Student Activity Sheet: Innovation Process**

Innovation is the “process of making improvements by introducing something new.” Some innovations have solved problems. Others have made life better for people. Some have even changed the world! An innovation often starts with an idea, or a question, or someone just saying, “What If ...?” Those who innovate often take different paths to reach their end product, but many follow similar steps. Below are 10 steps commonly followed during the Innovation Process.

**Step 1:** Identify the challenge, problem or opportunity.

**Step 2:** Conduct research to learn as much as you can about the topic, problem, alternatives, what’s already been done, etc.

**Step 3:** Brainstorm, brainstorm, brainstorm! Consider as many options as you can!

**Step 4:** Design a solution based on all you’ve learned.

**Step 5:** Create a plan for your solution. Think about how your solution would work and everything you would need, including materials, information, time and resources.

**Step 6:** Create a model, sketch, or prototype of your solution.

**Step 7:** Test your idea.

**Step 8:** Evaluate and make changes based on your evaluation. (Steps 4-8 may need to be repeated)

**Step 9:** Build your innovation!

**Step 10:** Make sure your innovation has a name. Share it with others!



## Student Activity Sheet: Innovation of Our Generation

During this lesson, you and your classmates listed many innovations that have an impact or make life better for kids your age. But which one has the **greatest** impact?

You just may be able to help others answer this question! Your challenge is to choose one innovation that you think has the greatest impact on kids your age and to write a two- to three-minute speech on why it should be given the title, "Innovation of Our Generation!"

In order to write your speech, you will need to do a little research. Go to the websites your teacher provides or, with your teacher or parent's permission, find some of your own. Use the questions below as a guide to help write your speech. Then use what you learn to write your speech. Make sure it's persuasive! Your innovation just might win!

- Who designed or invented your innovation?
- When was it designed?
- What did people do before it was designed?
- What problem does it solve?
- How does it make life better for kids your age?
- How many kids use it?
- How do they use it?
- How does it work? What is the science behind it?
- What challenges did the innovators face? How did they overcome them?
- How has the innovation changed people's lives?