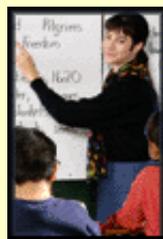


## CREATIVE INTENTIONS

Grade: Fifth Grade

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## OVERVIEW

This lesson provides students the opportunity to use creative thinking and problem solving skills and engages them in a real-life situation. Students may work individually or with a partner to design a new invention or idea for their community to solve the problem of people driving around lowered gates at a railroad crossing.

## SUGGESTED TIME ALLOWANCE

45-55 minutes

## OBJECTIVES

Students will be able to:

- Recognize the serious danger of vehicles driving around lowered gates.
- Design a new invention to solve the problem of vehicles driving around lowered gates.
- Realize that citizens need to follow safety precautions as suggested in the safety messages.

## SAFETY MESSAGE:

- Whether you are in a vehicle, on a bicycle or on foot, you are required to obey the railroad warning signs, flashing lights and gates.

National Academic Content Standards addressed by this lesson.

## **MATERIALS**

- Railway warning devices overhead
- Invention handout for each student
- Pencils

## **VOCABULARY**

Consequence

## **PROCEDURES**

### **TEACHER PREPARATION:**

Familiarize yourself with the background information on trespassing and signs/signals, (Track Facts , Myths & Realities, and the Die Hard If You're Dumb brochure, Pages 4 - 6, with information on signals) as well as with the railway warning devices overhead. Have all student materials ready before beginning the lesson.

### **MOTIVATION:**

Begin with a discussion: *Have you ever seen anyone disobey a stop sign? Why do we have stop signs? What are some consequences that could occur if someone disobeys a stop sign? Today we are going to look at some warning signs that need our attention when we see them or serious consequences could occur.*

### **ACTIVITY:**

1. Discuss the railroad safety background information while displaying the warning devices overhead. Focus on the slogan, "Stay Off! Stay Away! Stay Alive!"
2. Explain to students there is a problem in their community surrounding a railroad crossing. This particular crossing has flashing lights and gates that lower when a train is approaching. The problem is that drivers keep driving around the lowered gates and the locomotive engineers are reporting a high incident of

"near misses."

3. Tell students it is their job to design and create a device or an idea that will stop this from happening before someone gets hurt. Give students the invention handout and let them work in pairs or alone.

## **CONCLUSION:**

Have students share their ideas and inventions, explaining why their device would work and any problems they may encounter if they were able to carry out their plan.

## **HIGHER ORDER THINKING**

To assure students are using critical thinking skills, present problems such as this at an appropriate place within the lesson: *Who in the community might object to your ideas of trying to stop people from driving around lowered gates? How will you fund your project? (Consider that yours may not be the only community in need of this device!) Is there a chance it may fail sometimes? How would you insure that it fails at a low percentage rate?*

## **ASSESSMENT**

- Class discussion (Recognize the serious danger of vehicles driving around lowered gates. Realize that citizens need to follow safety precautions as suggested in the safety messages.)
- Completion of invention project, alone or with a partner (Design a new invention to solve the problem of vehicles driving around lowered gates.)

## **EXTENSIONS**

**Social Studies:** Research the history of railway signs. *When was the first active, or flashing lights warning device?*

**Arts:** Design a poster that would help sell your invention/idea to your community and its leaders.

## TEACHER RESOURCES

Background Information on Trespasser Safety (Track Facts and Myths & Realities)

Background Information on Signs and Signals ( Die Hard If You're Dumb brochure, Pages 4 - 6)

David's Run Video

David's Run Video Clip (Quicktime Required)

Video Utilization Tips for David's Run

## NATIONAL ACADEMIC CONTENT STANDARDS

These standards are provided by the Mid-continent Regional Educational Laboratory (McREL) online publication, Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education. <<http://www.mcrel.org/standards-benchmarks/>>

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The following standards are addressed by the activities of this lesson:

### **Health:**

Level II: Upper Elementary (Gr. 4-6)

Standard 5: Knows essential concepts and practices concerning injury prevention and safety

Benchmark: Knows safety rules and practices to be used in home, school and community settings

### **Language Arts**

Level II: Upper Elementary (Gr. 4-6)

Standard 2: Demonstrates competence in the stylistic and rhetorical aspects of writing

Benchmark: Uses descriptive language that clarifies and enhances ideas (e.g., describes familiar people, places or objects)

### **Life Skills: Thinking and Reasoning**

Level II: Upper Elementary (Gr. 4-6)

Standard 5: Applies basic troubleshooting and problem-

solving techniques

Benchmark: Identifies issues and problems in the school or community that one might help solve

## **Science**

Level II: Upper Elementary (Gr. 4-6)

Standard 15: Understands the nature of scientific inquiry

Benchmark: Knows that scientific investigations involve asking and answering a question and comparing the answer to what scientists already know about the world

Standard 16: Understands the scientific enterprise

Benchmark: Knows that people of all ages, backgrounds and groups have made contributions to science and technology throughout history

To see related standards for your state, search [Achieve's Clearinghouse](#):

< <http://www.achieve.org/achieve/achievestart.nsf/Search?OpenForm> >

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Name \_\_\_\_\_



**DIRECTIONS** – Follow the steps below and help your community design a railroad crossing device that will save lives.

**Step One:**

**The Problem:** People in your community are driving around lowered gates at a railroad crossing. The locomotive engineers are reporting many “near misses” with vehicles to your local police department. You have been asked to try and solve this problem for your community with a unique idea or a new invention. Good Luck!

**Step Two:**

**The Cause:** What causes this problem? What are the future possibilities of this problem?

**Step Three:**

**Brainstorm:** List as many ideas as you can possible think of for solving this problem. Don’t let anything stand in your way during this step. Think of the unique and even the impossible—you never know where it may lead you.

**Step Four:**

**Think:** Look at your brainstorming list. Rank your ideas from best to average. Try combining some of your ideas to come up with new ones.

**Step Five:**

**Design:** Put your ideas down on paper. Draw the invention with different parts labeled, or write your new idea out in paragraph form.

**Step Six:**

**Analyze:** Will your invention really work? Is it practical? Is it too large? Will it be too expensive?

**Step Seven:**

**Share:** Share your invention or new idea with your classmates. Look for unusual combinations among your class members to design a class solution.