Science Fair

Cooperative teams use the scientific method to solve a mystery and develop their own projects

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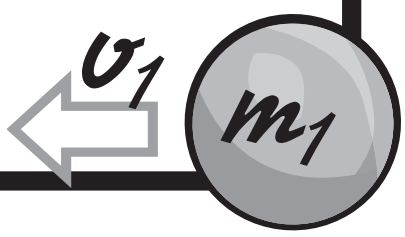
Welcome to Science Fair!

Your students are about to become detectives as they investigate the disappearance of the science fair projects at Brightsville School. Throughout their investigation they collect clues, gather evidence, and use logic to solve the mystery.

To find out where the science fair projects are hidden and who took them, your students first learn to think like scientists and use the scientific method to solve problems. Then they are shown how to use these skills to make a good science fair project. A whole class science fair project and directions for planning your own science fair make a nice culmination to the unit.

Science Fair is designed for students in grades 4–8. This unit is quite flexible in that you can adjust the amount of support you give your students. It can be quite challenging for students in eighth grade, and yet still be successfully completed by fourth graders. Students work in groups and individually, and they are assessed daily in both group work and individual assignments. The combination of "hands on" activities and thrill of solving a mystery make *Science Fair* an exciting and motivating experience.



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Purpose and Overview

What is *Science Fair*?

Science Fair is a cooperative group role-play in which student investigators use the scientific method to solve a mystery. As they uncover what happened to the science fair projects at Brightsville School, the investigators learn how to state a problem, form a hypothesis, conduct controlled experiments, make graphs and analyze data, and form conclusions. They also learn how to write a science fair notebook and how to create an attractive display board to create an award-winning project.

The excitement begins when students learn that all the science projects for the Brightsville School Science Fair have mysteriously disappeared and all that is left is a letter challenging them to solve the mystery. In the letter, the thieves hypothesize that your students will not be able to figure out who took the projects or where they are hidden. During a typical day, students get a brief lesson on a portion of the scientific method or an aspect of a science fair. In investigative teams they work on a **Clue Card Activity** that reinforces the day's lesson and earns them **Clue Cards**. Students then work independently on **PI Assignments**, which also reinforce the lesson. The PI (Private Investigator) Assignments earn steps that teams use to move around the **Map of Brightsville School**. As teams enter the different wings of the school, they receive Wing Maps and Descriptions that provide visual and written details of what is inside the rooms of the school. In addition, teams get special clues each day called **Eyewitness Evidence**. Students enter the information from Clue Cards, Eyewitness Evidence, and Wing Maps and Descriptions in their **Investigator Notebooks**, which they study and use to eliminate suspects and locations where the projects may have been hidden. By working together and using logic, teams can solve the mystery and learn if the hypothesis made by the thieves on the first day is correct.

What do students learn?

The activities within this unit are correlated to national and state education standards. To obtain specific standards information for *Science Fair*, go to www.teachinteract.com or contact us at 1-800-359-0961.

By using *Science Fair*, your students will:

Knowledge

- Understand and apply the steps of the scientific method
- Know how to select a science fair project
- Know how to evaluate science fair projects

- Identify parts of a science fair notebook
- Identify parts of a science fair display board

Skills

- Identify a problem and form a hypothesis
- Conduct a controlled experiment
- Make observations
- Graph and analyze data
- Write a science fair notebook
- Create an attractive display board
- Use judging guidelines to improve projects
- Use logic to solve a mystery

Attitudes

- Gain confidence as they learn to use the scientific method
- Feel excitement as they observe and conduct science experiments
- Feel satisfaction and excitement as they solve the mystery
- Feel satisfaction as they complete a science fair project

How are students organized?

Students work in Investigation Teams. There can be no more than six teams and no more than six students per team. Four students per team is recommended. There are also independent activities (PI Assignments) that students complete each day in addition to the team activities.

How much time is required?

Science Fair requires 12 days of class time. Each lesson is approximately 50 minutes. The optional whole-class science fair project adds five to eight days to this time frame. See the Unit Time Chart on page 14.

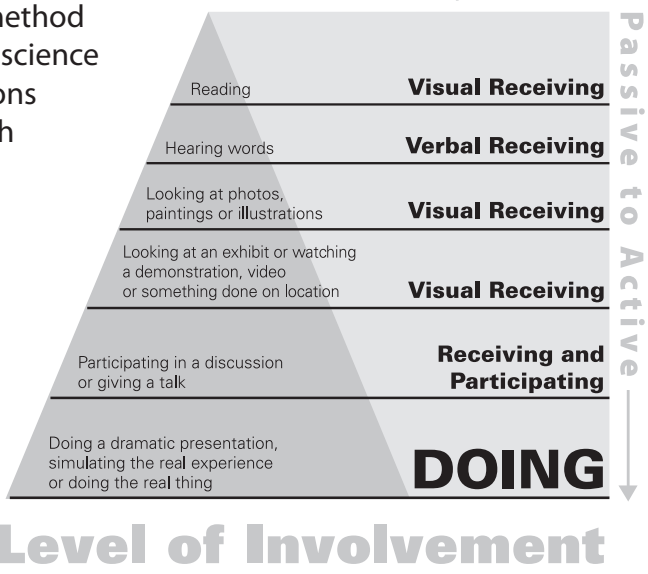
How is learning assessed?

Students are assessed four ways. First, there are daily assignments done by each student. These give you an accurate evaluation of each student's understanding of the concepts presented in the daily lessons. Second, there are group activities that allow you to observe how well students perform "hands on" work and how well they cooperate in groups. Third, there is an

authentic assessment where students use the scientific method to solve a problem. Finally, there is a formal multiple-choice test for students to take at the end of the unit.

Why use *Science Fair*?

Using *Science Fair* is a fun and exciting way to take students step by step through the scientific method and show them how it applies to a successful science fair project. There are clear, concise explanations of each step of the scientific method, and each step is reinforced by individual assignments and hands-on team activities. The mystery format keeps students actively involved in the scientific method as they collect clues and use logic to solve the crime. Students are assessed daily and will be able to use their knowledge of the scientific method to complete a successful science fair project. Students will enjoy the challenge of solving the mystery and working as a team toward a common goal.



Adapted from Edgar Dale's "Cone of Experience"

Differentiation

Science Fair offers many ways to differentiate instruction. It is flexible enough to use with young students, yet can be challenging for older ones. Each lesson is reinforced with individual assignments and group work. There are numerous hands-on activities and a variety of ways to learn about, and experience, science.

Here are some ways to differentiate this unit:

- Provide small group support while the rest of the class works independently.
- Have students work in pairs on independent work.
- Vary the amount of support, making lessons easy or more challenging.
- Vary points awarded based on student abilities and quality of work.