

RESEARCH EXPERIENCE FOR TEACHERS I: SUMMER 2002

Prepared by:

Claire Godlewski
Oneida Middle School
Schenectady City School District
Schenectady, New York

Sixth Grade Science

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"Casting" The Best Line / Science Fair

Grade Level: Intermediate Elementary-this unit could be adapted to suit the curricular needs of children of the fourth, fifth, or sixth grade.

Setting: The content of this unit will be delivered through a combination of independent, small group, and whole class activities in a heterogeneous classroom and in the computer lab.

Duration: 6-8 weeks

Theme: An integrated science, language arts, and technology unit during which students create and complete a science fair project.

Rationale:

Although the language arts and technology are treated as separate disciplines, it is impossible to transmit the content of any other discipline without the use of one of the language arts. Integrating this subject with science and technology through the Science Fair experience presents a way to successfully delivering the content of these disciplines simultaneously.

The activities in this unit draw their objectives from the science, language arts, and technology NYS Standards and the core curriculum. In language arts, the targeted competencies include the ability to express, to explain, and to narrate, as well as the skills of acquiring, interpreting, applying, and transmitting information. In science, targeted competencies include questioning, researching, planning and implementing experiments, gathering and compiling data, communicating results, as well as developing positive science attitudes. In technology, targeted competencies include accessing and retrieving information via the Internet, creating tables and graphs using Excel spreadsheets,

and reporting information using word processing. This is accomplished by choosing to deliver the curriculum goals through the process of using the Scientific Method to produce a Science Fair project. Using science experiments and computer technology as methods of delivering the curriculum keeps the unit focused on things students enjoy doing and provides students with choices and a personal investment in their school work. This personal investment on the part of the students makes this unit predominantly child-centered.

Overview:

To begin this unit, the teacher will take the students to the computer lab and complete a "guided tour" of the scientific method and materials science presented in the research included in the "Casting" The Best Line PowerPoint slide show, as well as become familiar with using computer technology.

Students will be allowed to choose their Science Fair topics and work at their own pace. Some of the activities are to be done in a large group, some in small groups, and some on an individual basis.

The first activity will be a model of the scientific method presented to the class. The model being used is the "Casting' The Best Line PowerPoint slide show. A class discussion follows the presentation. Next follows a computer activity involving a scavenger hunt through the slide show to answer questions dealing with how the scientific method was used throughout the research presented in the slide show. This is followed by a class discussion on materials science and another computer activity involving the photos presented in the slide show and listing materials represented in the photos. The students then choose a material they would like to know more about, pose a science fair question concerning that material, follow the scientific method to plan and complete an experiment involving that material, compile

data observed while completing the experiment, research the material and write a paper based on their research.

To bring the unit to a close, the students will orally report the results of their projects to the rest of the class. All student projects and experiments will be on display in the classroom. Parents and other classes will be invited to come and share in our Science Fair.



"CASTING" THE BEST LINE ACTIVITY

GOAL: Students will have an understanding of scientific method and how it's used in the "real world".

OBJECTIVES: Students will be able to name the steps of the scientific method, recognize these steps as they are used in the PowerPoint presentation, and, working with a partner, use the slide show to complete a scavenger hunt activity sheet.

MATERIALS:

"Casting" the Best Line PowerPoint presentation
Computer Lab access/projector
"Catch" My Drift worksheet
pen/pencil

PROCEDURE:

1. Present slide show with explanation of scientific method.
2. Conduct 5-10 minute class discussion of scientific method.
3. Explain "Catch" My Drift activity.
4. Allow students 15-20 minutes to complete "hunt".
5. Share results through large group discussion.

EVALUATION:

Did students complete worksheet accurately (85%)?
Can students explain the steps of the scientific method?

NAME: _____ DATE: _____ PERIOD: _____

"CATCH" MY DRIFT?

After participating in the "Casting" The Best Line activity, use the slide show to complete the following "Catfish" Hunt.

1. What is the title of the slide where you would find the question this research project is trying to answer? _____

2. What is the question? _____

3. What is the title of the slide where you would find the project goals? _____

4. Name 2 of the goals.

5. Write a hypothesis for this research using the "If..., then..." format.

6. What's the title of the slide where you would find the conclusion? _____

MATERIALS? WHAT MATERIALS??? ACTIVITY

GOAL: Students will have an understanding of how to use the computer, Internet, to complete the Materials? What Materials? Worksheet.

OBJECTIVES: Students will be able to use the Internet to locate and record information. Students will demonstrate an understanding of what Materials and Materials Science are.

MATERIALS:

Access to computer lab
"Casting" The Best Line PowerPoint presentation
Materials? What Materials? Worksheet
Pen/pencil

PROCEDURE:

1. Teacher will lead discussion of what materials are and what materials science is.
2. Teacher chooses one of the photos in the presentation and then has students orally identify the materials they see in the photo.
3. Students complete the Materials? What Materials? Worksheet using the www.crc4mse.org/MEL/Index.html website.
4. Discuss, as a class, what students discovered.

EVALUATION:

Can students define Materials Science?
Were students able to complete worksheet with at least 85% accuracy?

Can students use Internet independently to complete the assignment?

SCIENCE FAIR ACTIVITIES

GOAL: For students to follow the scientific method to complete a science fair project.

OBJECTIVE: Students will choose a topic and complete a science fair project to present to the rest of the class.

MATERIALS:

Science Fair Manuals/Diaries

PROCEDURE:

1. Dispense Science Fair Manuals. The remainder of the activities, except for the actual Fair, are in each student's Science Fair Manual.
2. Complete the Science Fair Schedule.
3. Follow completed schedule and conclude the unit with the student's presenting their projects.