



Drexel-SDP GK-12 LESSON

Lesson: Prepare and Deliver a Presentation on a Science Fair Project

Subject Area(s) Science and Technology

Associated Unit Science Fair Project

Lesson Title Lesson: Prepare and Deliver a Presentation on a Science Fair Project

Grade Level 6 (5-8)

Lesson # 1 of 2

Lesson Dependency None.

Time Required 30 minutes

Summary

In this lesson, students will be introduced to steps to prepare and tips to deliver a successful presentation.

Engineering Connection

Effectively communicating complex subjects to a wide audience is one of the most important skills in being a successful engineer. Without understanding the broader impact of an engineering breakthrough, new ideas may not be developed to their fullest potential. For example, an engineer who designs a material that tolerates tremendous pressure may want to communicate this information to scientists who engage in deep-sea exploration. Communicating new engineering ideas allows partnerships to form across disciplines.

Keywords

Presentation, scientific process, science project

Educational Standards (PA)

- Science: Inquiry and Design 3.2: Process Knowledge (3.2.B) and Science, Technology and Human Endeavors – Consequences and Impacts (3.8.C)
- Math: Statistics and Data Analysis 2.6

Pre-Requisite Knowledge

Averages and interpreting numerical data. Prior experience in note-taking is preferred.

Learning Objectives

After this lesson, students should be able to:

- **Know the ordered list of points to include in an oral presentation**
- **Know the criteria upon which an oral presentation is evaluated**

Introduction / Motivation

How do you go about convincing someone you have a really great idea? Or that you just learned something interesting and important? Engineers and scientists are often asked to give a presentation as part of their work. The audience may vary from being colleagues (who are generally conversant in the subject of the presentation) to the general public (who are generally unfamiliar with the topic at hand). The point of a good presentation is to educate and inform the audience of new developments and challenges of a particular topic, regardless of their level of familiarity. In this lesson, you will learn how to prepare and deliver a scientific presentation.

(It is commonly accepted that people like to be told things, rather than reading them. Moreover, listeners don't merely want to be informed, they want to be entertained and stimulated as well. That's why presenters are repeatedly reminded not to read off their notes – it makes them seem unprepared and uninteresting. This lesson gives the general format and tips for a successful presentation.)

(In addition, there are few better ways of taking command of information than by preparing a presentation on the subject. In this lesson, it is emphasized that one of the best ways to gain mastery of a new or unfamiliar subject is to teach it to an audience. The activity following this lesson will require students to practice the presentation skills addressed in this lecture.)

Lesson Background & Concepts for Teachers

Below is a guideline for giving a presentation, specific to the topic of a 6th grade science fair project. Underneath each heading is the numbered step of the scientific inquiry process to be discussed. Ask the students to take notes.

Introduction: Give the title of the talk, all group members' names, grade, the school and the teacher. Speak LOUDLY. In fact, yell.

Purpose: State exactly what project is investigating. Steps in the scientific inquiry process:

1. Define the problem. (We studied the human heart rate.)
2. Formulate a research question. (Who has the faster heart rate: boys or girls?)

3. State the hypothesis (We thought that girls have the faster heart rate because...)

Procedure: Tell what was done, slowly and clearly, step-by-step, beginning at the very beginning. Use visual aids: Charts, pictures, graphs and diagrams. Point to your display, but stand aside when doing this. Step in the scientific inquiry process.

4. Design an experiment. (We used the Xplorer to measure the heart rates of three boys and three girls in the classroom and average the heart rate of each group to compare them).

Results: Explain the results. Use charts, graphs, etc. for emphasis. Step in the scientific inquiry process:

5. Collect data. (Make a table of the resting heart rates for the three girls and three boys and record the data on the blackboard)

Conclusion: State in the conclusions you can reasonably draw from the experiment. What have you learned? Use the quantitative data you have obtained.

6. Analyze data and draw conclusions (Review how to compute an average, then take the averages for the boys' and girls' heart rates. Conclude which is faster, and offer possible explanations why, such as, the boys were more/less excited to participate in the study, etc.)

Future Work: Tell how the project could be continued or expanded.

Questions: Ask for questions. Think and answer slowly. If you don't know the answer, it's okay – just tell the person you will look into the answer to their question. Offer to speak to anyone with very involved questions after the talk.

Tips:

Speak slowly.

Speak loudly!

Speak with enthusiasm – if you don't look like you're enjoying your talk, no one else will, either.

Look at your audience.

Practice, practice, then practice some more

Dress neatly and stand up straight.

Don't chew gum or candy.

Relax and enjoy the conclusion of your project with this talk.

This lesson can be practiced with the accompanying activity.

Vocabulary / Definitions

Word	Definition
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Scientific Inquiry	The process by which scientists ask questions, develop and carry out investigations, make predictions, gather evidence, and propose explanations.
Research Question	The main question a scientific investigation aims to answer
Hypothesis	An educated guess for the outcome of the research question
Experiment	A procedure designed to test the hypothesis
Analysis	Evaluating and drawing conclusions based upon data collected
Quantitative Data	Numeric information that is measured.
Pasco Xplorer	Electronic handheld data collection device

Associated Activities

Science Fair Presentation Activity

Lesson Closure

Follow with the Science Fair Activity, then the Science Fair Presentation Activity

Assessment

Lesson Summary Assessment

Ask to see the students' notebooks to ensure they have recorded the lesson notes. Ask the students if they can give examples of any good or bad presentations (e.g. school assemblies) that they can recall. Ask the students why they thought it was good or that it was bad.

Follow with the Science Fair Activity and the Science Fair Presentation Activity

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