



Drexel-SDP GK-12 ACTIVITY

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

Subject Area(s) Science and Technology

Associated Unit Science Fair Project

Associated Lesson “Lesson: Prepare and Deliver a Presentation on a Science Fair Project”

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

Grade Level 6 (5-7)

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Activity Dependency None

Time Required Four 30 minute preparation sessions, then 60 minutes to deliver the talks

Group Size 3

Expendable Cost per Group \$0-\$2

Summary

In this ongoing activity, students will be introduced to the scientific (inquiry) process and assigned a project group as well as a scientific question to ask and investigate. This activity requires some extra curricular supervision, as the students are taken out of the classroom in their small project groups to get some personalized teaching time on topics relevant to their project, and extra supervision when conducting their experiment. Some of the activity, such as explaining the scientific process, can be conducted in lecture format to the entire class.

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

Science fair, presentation, scientific process

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:

- **Deliver a 5 minute talk on a topic**
- **Prepare visual aids for a presentation**

Materials List

Each group needs:

- Paper or display boards
- Markers and pencils
- PowerPoint or other presentation software

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 job. 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 activity, you will 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. This activity asks students to practice the presentation skills addressed in the accompanying lesson.)

Vocabulary / Definitions

Word	Definition
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

Procedure

Background

It is recommended that the instructor first have the students complete their science fair project (see the accompanying lesson for the science fair project in this module). The instructor can then give concrete examples of the points to talk about in each section of the talk. Because students of all ages are typically very nervous about giving a presentation, it is recommended to start with a very small talk from each student on one of the topics addressed below.

Before the Activity

Have the students practice their delivery (clarity, volume, posture) by following the outline below to give a short, personal talk:

- a) What is your name?

- b) How old are you?

- c) What school do you go to?

- d) Where were you born?

- e) If you were not born in Philadelphia, when did you move to the city?

f) Now, pick one of the following topics:

- 1) Instructions for making your favorite sandwich or some other recipe
- 2) A review of a movie you recently saw
- 3) A review of a new music album
- 4) Your opinion of the war in Iraq
- 5) What you think are important qualities for the president of the U.S. to have
- 6) What you want to be when you grow up

...if you picked #1, write out the list of ingredients you will need, why you chose the ingredients you did, and the steps to make the sandwich.

...if you picked #2, describe what happens in the movie, and list three reasons why you liked it or didn't like it. Also describe if the movie is suitable for younger children.

...if you picked #3, describe what style of music it is, how the album compares to the artist's previous body of work, and why you like it or don't like it.

...if you picked #4, describe to what extent you agree with the war in Iraq. Describe what you would like to see happen, and the steps the government could take to fulfill your plan.

...if you picked #5, describe in some details at least three qualities you think are most important for the president of the U.S. to have, and why.

...if you picked #6, describe what you want to be and the steps you plan to take to fulfill your plan

Introduction:

Your answers to questions a) – e)

Outline:

“Today I am going to talk to you about.... “ and state the topic you have selected from the list

Body:

Speaking slowly and clearly, make a short presentation about the notes you have written about your topic.

Remember, the audience knows NOTHING about you or your topic, so start from the beginning. Pretend you are trying to explain something to your little brother or sister.

Conclusion:

“In conclusion, I have spoken to you today about <how to make a _____ sandwich> <my review of the new movie _____><my review of the new album by _____><why I think the war in Iraq is _____><the qualities of _____, _____, and _____ I think are important for the president of the United States to have><how I will go about becoming a _____ when I grow up>

With the Students

Have the students prepare their talk over four, 30 minute sessions with their group members. During this time they will prepare any presentation materials necessary.

As each student presents, ask the others in the audience to complete the questionnaire below:

Presenter Name: _____

Topic: _____

- Message
 - a. Did you capture the main idea? Yes/No
 - b. What was the main idea?
 - c. Where you confused at any time during the presentation? Why?
- Speech
 - a. Volume (Could you hear the speaker? Did they mumble?)
 - b. Tone/Pitch/Pace (Did the presenter vary their voice? Did these qualities match the message?)
- Body Language
 - a. Eye Contact (Did the speaker make eye contact with you? Did they make eye contact with others?)
 - b. Stance (Is it confident? Do they move around too much?)
 - c. Hand gestures (Were they appropriate or distracting? Were they large enough for the audience?)
 - d. Did you see any distracting habits If so, what are they?
- Any other comments?

Next, have the students following the guidelines given in the accompanying lesson plan to prepare their science fair talk.

After the talk provide some positive feedback, followed by constructive criticism as to how the students can improve their “stage performance” the next time.

Safety Issues

- Be aware of cables and cords that might cause one to trip

Troubleshooting Tips

Ask the student to start over, now or later, if they are too nervous to give the talk. Briefly interrupt the talk if the instructor sees issues that can be resolved during the talk (e.g. volume, posture).

Investigating Questions

Ask the students what similarities they can draw between their presentations and those that a teacher makes every day. Ask the students what presentation techniques (repetition, slides, drawing on board) they find helpful and why.

Assessment

Pre-Activity Assessment

None

Activity Embedded Assessment

Each student completes a comment form for the talks given during class.

Post-Activity Assessment

Evaluate the students individually on:

- Work completeness (use of vocabulary, presentation of experimental data, visual aid materials as necessary)
- Constructive use of time to complete science fair presentation

Activity Extensions

Incorporate short oral presentations into language arts, social studies, and even math. Ask the students to stand up and explain their logic or approach when answering a question. Have the student draw diagrams on the board to illustrate their solution. Ask students to summarize essays they have written in front of the class.

Owner

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