



Lesson 22: Presenting a Summary of a Statistical Project

Student Outcomes

- Based on the data collected by students or on a sample set of data (for cases in which collecting data was not possible), students communicate conclusions based on the data distribution.

Lesson Notes

This is an exploratory lesson. As indicated in previous lessons, students build up to this lesson. In this lesson, each student has an opportunity to present a summary of his or her statistical study. Students should be reminded that their presentation should focus on the four-step investigative process. It is this process that defines a statistical study for students at this grade level.

MP.3

If students carried out the process outlined in previous lessons, this lesson is a formal presentation day in which they either display and explain their posters or are provided a few minutes to explain their statistical study. If there is not enough time for students to formally present their study, organize a gallery walk. Hang posters around a classroom and allow students to view as many as possible. Encourage students to take notes as they read the posters. Provide each student with a general template (see a suggested template below) to summarize at least one poster as part of a whole class discussion. Conclude the gallery walk with a short discussion of what they saw and what questions interested them. Ask students if there were any studies that surprised them. (Often a statistical study confirms a conjecture; there are times, however, that data lead to conclusions that were not expected.)

The audience for the presentations may vary. In most cases, the class is the audience. However, this type of project allows for other formats. It might be possible to use this day as an opportunity to invite parents to listen to the presentations, or school administrators or other available teachers.

Anticipate that problems will arise. In the event that there are students who did not complete Lesson 17 or were not able to collect data on their own, the posters or presentations can be based on data obtained from an outside source. It was pointed out in each of the lessons leading up to this presentation day that students were to advise their teachers about their progress. Students presenting a study based on data they did not collect must give proper credit to the source of that data on their poster or in their presentation.

Formal speaking is a comfortable and exciting experience for some students. For other students, it is an intimidating and possibly frightening experience. Teachers should use their best judgment in terms of organizing the formal presentations. If there are any students who need a little more structure in sharing their ideas, the following partially completed table could be provided to these students. Use it to help them organize their thoughts. The posters provide a format for students to present their ideas without formally presenting their studies.

Presentation Outline

A statistical study involves the following four-step investigative process:

- Step 1: Pose a question that can be answered by data.
- Step 2: Collect appropriate data.
- Step 3: Summarize the data with graphs and numerical summaries.
- Step 4: Answer the question posed in Step 1 using the numerical summaries and graphs.

Now it is your turn to be a researcher and to present your own statistical study. In Lesson 17, you posed a statistical question, proposed a plan to collect data to answer the question, and collected the data. In Lesson 21, you created a poster or an outline of a presentation that included the following: the statistical question, the plan you used to collect the data, graphs and numerical summaries of the data, and an answer to the statistical question based on your data. Use the following table to organize your presentation.

Points to consider:	Notes to include in your presentation:
(1) Describe your statistical question.	<i>"My statistical question is"</i>
(2) Explain to your audience why you were interested in this question.	<i>"I am interested in finding an answer to this question because"</i>
(3) Explain the plan you used to collect the data.	<i>"My plan for collecting data to answer my question was..."</i> <i>"I was able to collect my data as planned." (If you were not able to collect the data, explain why.) Explain any challenges or unexpected reactions in collecting your data.</i>
(4) Explain how you organized the data you collected.	<i>"Let me explain how I organized my data and prepared my summaries."</i> <i>Students might use a table to summarize the data or organize data in a list that could be used to prepare a dot plot or a box plot.</i>
(5) Explain the graphs you prepared for your presentation and why you made this graph.	<i>"I developed a dot plot to start my statistical study because"</i>
(6) Explain what measure of center and what measure of variability you selected to summarize your study. Explain why you selected these values.	<i>"I selected as a measure of center the (mean or median). I selected this measure because"</i>
(7) Describe what you learned from the data. (Be sure to include an answer to the question from step (1) above.)	<i>"Let me tell you the answer to my statistical question..."</i>

Evaluation of Posters

Various evaluation techniques are possible. Given that students' work involves several steps, including how well students display and organize their work, it is recommended that a well-defined rubric be developed for this work. A sample rubric is available at the American Statistical Association's website:

<http://www.amstat.org/education/posterprojects/index.cfm>.

Rubric designs are highly dependent on the process used to complete this project; therefore, the final rubric design should be a teacher decision. Assessment of the project should provide students with feedback regarding the statistical question, the collection of the data, the summary of the data by graphs and numerical summaries, and the conclusions reached in answering the statistical question.

Closing Exercise (10 minutes)

Final thoughts on this module and the statistical study are encouraged with the closing questions provided to students.

Closing Exercise

After you have presented your study, consider what your next steps are by answering the following questions:

1. What questions still remain after you concluded your statistical study?
2. What statistical question would you like to answer next as a follow-up to this study?
3. How would you collect the data to answer the new question you posed in (2)?

Encourage a discussion around these questions, or if time is not available for a discussion, encourage students to write their responses.

Lesson Summary

Statistics is about using data to answer questions. The four steps used to carry out a statistical study include posing a question that can be answered by data, collecting appropriate data, summarizing the data with graphs and numerical summaries, and using the data, graphs, and summaries to answer the statistical question.

Template for Lesson 22: Summarizing a Poster

Step 1: What was the statistical question presented on this poster?

Step 2: How was the data collected?

Step 3: What graphs and calculations were used to summarize data?

Summarize at least one graph presented on the poster. (For example, was it a dot plot? What was represented on the scale?) Summarize any appropriate numerical summaries of the data (for example, the mean or the median). Also indicate why these summaries were selected.

Step 4: Summarize the answer to the statistical question.