LESSON PLAN:
Reading and Interpreting Charts

Preparation

Learning Objective
Students will learn to read tables, pictographs, bar graphs, pie charts, and line graphs.

Pacing
60–90 minutes

Suggested Readings
Sample graphs in the activity masters

“Where Will the Walkman Take Sony?”
by Achieve3000

Lesson Overview
In this lesson, students learn how to read several types of graphs and charts, a critical reading skill for math, science, and social studies course material. Students warm up by completing a survey about their media habits. You then use the data from the surveys to create a table, a pictograph, a bar graph, a pie chart, and a line graph. (Masters are provided.) Along the way, you describe and model graph-reading strategies, like reading the title and labels, looking for high and low numbers, and looking for patterns.

Next, you guide students as they work together in small groups to complete a graph-reading activity. Students apply their graph-reading skills when they complete the Thought Question that is part of the article “Where Will the Walkman Take Sony?” The lesson closes with a whole-class wrap-up discussion and the vocabulary journal process using new terms learned in this lesson.

Do Before Teaching
1. Prepare copies of the Student Survey and the Practice Activity: Bar Graphs, one each per student.
2. Be prepared to display the following masters: Table; Pictograph; Bar Graph; Circle Graph; Line Graph; Steps for Reading Graphs, Charts, and Tables; Practice Activity: Bar Graphs.
Resources

Create a Graph
(http://nces.ed.gov/nceskids/createagraph/default.aspx) This website from the National Council of Education Statistics (NCES) is an easy-to-use graph generator that students can use to create their own graphs.

How Teens Use Media
(http://webcache.googleusercontent.com/search?q=cache:7t6bHkusaWcJ:blog.nielsen.com/nielsenwire/reports/nielsen_howteensusemedi_june09.pdf+genres+of+music+preferred+by+teens&hl=en&gl=us) This June 2009 report from the Nielsen Company contains a variety of graphs, charts, and tables on topics that are relevant to teens.

Teaching Routine

Before Reading

Introduce Lesson: Bell-Ringer Activity (5 minutes)

- Introduce the lesson with a Student Survey. As students enter the room, distribute a copy of the Student Survey to each one. Ask them to complete the survey and then turn it in. Tell students that today they will learn several ways to represent data such as the data you just collected.

Provide Direct Instruction and Modeling (20–25 minutes)

- Model creating a table. Display the Table master. Tell students that one way to represent data is to put it in the form of a table. Tell them that the first thing this table needs — and that all graphs, charts, and tables need — is a title that tells readers what is being represented. Give your pictograph a title, such as “Leisure Activities of Students in [Name of Class].”

Point out that the table is made up of rows (horizontal) and columns (vertical). Tell students that a table needs labels or headings for the elements, or variables, being shown on the chart. This one already has two labels: Activity and Number of Participants. Quickly tally the data on the surveys directly on the master (in the margin next to the list of activities) and write the number of participants for each activity in the appropriate box.
• Model creating a pictograph. Display the blank Pictograph master. Tell students that a pictograph (also called a pictogram) represents data in the form of pictures or symbols. Give your Pictograph a title, such as “Top Five Leisure Activities of Students in [Name of Class].” Tell students that you’ll need to list the categories (the five top activities that students chose) below Activity. Under Number of Participants, you’ll need to represent the number of people who chose each activity.

Based on the data you collected and tallied earlier, fill in the pictogram for the top five activities that your students selected, using a simple stick figure to represent two persons. Point out the key to your students. Explain that the reason your figure represents two persons instead of one is that this allows you to present more data in less space. For odd numbers of participants, let one half a stick figure represent one person.

Title: Top Five Leisure Activities of Students in Mr. Lindsey's Class

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports</td>
<td>🧑‍🦱🧑‍.scenes</td>
</tr>
<tr>
<td>Talking on Phone</td>
<td>🧑‍.scenes</td>
</tr>
<tr>
<td>Time with Friends</td>
<td>🧑‍.scenes</td>
</tr>
<tr>
<td>Music</td>
<td>🧑‍.scenes</td>
</tr>
<tr>
<td>Texting</td>
<td>🧑‍.scenes</td>
</tr>
</tbody>
</table>

Key 🧑 = 2 people
• Model creating a bar graph using the Bar Graph master and the same data you used in the pictograph above. Tell students that a bar graph also can be used to represent data visually. Give the graph a title. Point out the labels. Draw the bars and label each one at the bottom of the graph. Your finished bar graph might look something like this:

![Bar Graph Example](image1)

• Model creating a pie chart using the Pie Chart master. (You will need to use all the data from the survey in the pie chart. When complete, your pie chart will have ten segments, unless some categories received no votes.) Tell students that a pie chart shows data as it relates to the whole. Give the pie chart a title (“Leisure Activities of Students in [Name of Class]”). Draw slices (segments) for each category and label each segment. Tell students that the numbers in the pie chart should add up to the total number of votes, or 100%. Your complete pie chart might look something like this:

![Pie Chart Example](image2)
Model graph and chart reading with a line graph. Tell students that another way to represent data is with a line graph. A line graph is used to plot data over time. Tell them that the data you collected at the beginning of class is not suitable for a line graph, but that you have a line graph based on different data to show them. You will use this graph to teach them skills for reading graphs and charts.

Tell students there are four steps for reading charts, graphs, and tables. Model using the Line Graph master.

1) **Look at the title. What is the topic?**
(Average Daily Video Game Use)

2) **Look at the labels or headings. What are the variables? What’s being measured?**
(Horizontal variable: years Vertical variable: time; hh=hours, mm=minutes, ss=seconds Lines: males and females, ages 12–17)

3) **Look at the highs and lows.**
(Highest value=approx. 44 min. for males, 2005 Lowest value=approx. 6 min for females, 2003)

4) **Look for patterns and trends.**
Who uses video games more, males or females? (Males)
Is usage for males increasing, decreasing, or staying the same? (increasing, after a dip in 2007) What about for females? (about the same)

Tell students that now that they have a good overview of the graph, they are ready to use it to answer other related questions they may need to answer.

**Small-Group Practice (10–15 minutes)**

- Display the master Reading Graphs, Charts, and Tables for students to reference while completing the following activity.
- Have students work in small groups to complete the Practice Activity: Bar Graphs. Divide students into small groups and distribute copies of the activity. After most have completed the task, display the activity and go over their responses in a whole-class discussion.
During Reading

**Student Practice (15–25 minutes)**

- Next, have students complete the 5-Step Literacy Routine with “Where Will the Walkman Take Sony?” Students will read and interpret a table in the Thought Question (step 4).

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**The 5-Step Literacy Routine**

1. **Before-reading Poll** — Brings students’ prior knowledge into the classroom as they make connections and express opinions about the topic of the day.

2. **Article** — Students derive information from nonfiction articles differentiated to their levels. Repeated exposure to vocabulary and embedded strategy support enables all students to participate in classroom discussions. Access to grade-level text and activities ensure that students have frequent interactions with grade-appropriate complex text.

3. **Activity** — Students demonstrate successful close reading of text by responding to text-dependent questions that require higher-order thinking skills.

4. **After-reading Poll** — All students express their opinions again, based on the reading they did that day, with teachers requiring students to provide evidence for their opinions. Teachers then facilitate discussion and debates in the classroom.

5. **Thought Question** — A critical-thinking activity guides students to write in more formal scenarios with the intent to either argue or inform about a situation or narrate an event.

After mastering the concepts at reading-level, students have the opportunity to complete the same Article and Activity at grade level. They can also review their Poll results from both before and after reading and reflect on how their readings and experiences affect the evolution of their opinions.

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**Extra Support**

While most of the class is engaged with their article and the 5-Step Literacy Routine, you may wish to provide additional small-group or individualized instruction based on student needs and your own instructional goals. Such instruction could include reteaching the lesson strategy by presenting it in a different way or working on a particular state standard or skill.

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**After Reading**

**Whole-Class Wrap Up (5-10 minutes)**

- When all students have completed the 5-Step Literacy Routine (or at least the first two steps), bring the class together to review the lesson, discuss any questions students have, and provide any necessary reteaching.

- Have students enter new vocabulary in their vocabulary journals and indicate their level of understanding for each of the new terms learned in this lesson.
Lesson Extensions

- Have students bring in examples of charts, graphs, and tables from their textbooks. Ask students to analyze them using the four steps for reading graphs, charts, and tables.

- Have students conduct a school survey on a topic of their choosing, ideally on an issue that is relevant to students at the school. Divide them into groups and have them decide how best to display the data. Then have students create a graph in the form of their choosing and present it to the class. Ask them why they chose the form they chose. Have the class discuss and vote on how best to display the data. Then submit the best graph, chart, or table to the school newspaper or find another suitable way to publicize the data, such as a display in the hallway or cafeteria.
### Student Survey
Which of the following activities do you participate in most during your spare time? Circle two.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watching TV</td>
<td>Reading</td>
<td>Exercising / playing sports</td>
</tr>
<tr>
<td>Playing video games</td>
<td></td>
<td>Spending time with friends</td>
</tr>
<tr>
<td>Talking on the phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texting</td>
<td></td>
<td>Listening to music</td>
</tr>
<tr>
<td>Using the Internet</td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>
# Pictograph

**Title:**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key** 🧑‍♂️ = 2 people
Bar Graph

Title: __________________________

Number of Participants

Activities
Circle Graph

Title: _____________________________
Line Graph

Average Daily Video Game Console Use—U.S.

Steps for Reading Graphs, Charts, and Tables

1. Look at the title. What is the topic?
2. Look at the labels or headings. What are the variables? What's being measured?
3. Look at the highs and lows.
4. Look for patterns and trends.
Practice Activity: Bar Graphs

Average Monthly Time Spent Using Internet—U.S. (hh:mm)—January–March

1. What is the topic of this graph? ____________________________________________

2. What are the variables? ___________________________________________________

3. What are the high and low values? _________________________________________

4. What patterns or trends do you see? _______________________________________

5. What conclusions can you draw from this graph? ____________________________

Source: The Nielsen Company