



IRON FOR BREAKFAST

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Lesson Summary for Grade 3

This third-grade cross-curricular physics lesson focuses on nutrition and the magnetic properties found in iron. Students are challenged to use scientific thinking. To understand magnetism, students experiment and observe which objects are attracted to a magnet. They use the evidence to construct an explanation as to what common property the objects attracted to a magnet possess.

Students use scientific tools to collect and analyze data. A magnet and magnifying lens are used to collect and observe the iron in the cereal. In the math portion of the lesson, students collect and analyze data from cereal box labels and organize the information into a bar graph. The bar graph serves as a source of scientific communication that makes comparing and contrasting data simple.

Incorporating science across the curriculum makes students aware of scientific connections and applications. Learning about the magnetic properties of iron and making the connection with dietary iron helps students see that science is a part of their daily lives. Seeing the iron in cereal is a concrete learning experience students don't soon forget.

Science Activity: Iron for Breakfast

Students use magnets to extract food-grade iron filings from iron-fortified food, discuss the reasons why food manufacturers add iron to food, and review good nutritional practices.

Source: Gertz, S.E.; Portman, D.J.; Sarquis, A.M. *Teaching Physical Science through Children's Literature*; McGraw-Hill: New York, 1996; pp 107–117. (ISBN 007064723-2)

Key Science Topics

- nutrition
- magnetic properties of iron

Ohio Proficiency Learning Outcomes for Science:

1. Create and use categories to organize a set of objects, organisms or phenomena.
6. Evaluate a simple procedure to carry out an exploration.
7. Identify and/or discuss the selection of resources and tools used for exploring scientific phenomena.
19. Analyze and/or evaluate various nutritional plans for humans.

Set up a display of various magnets and magnetic toys for students to explore a few days before the Science Activity so they gain a clear understanding of the magnetic properties of iron. In small groups, have students brainstorm words and ideas related to magnets.

Since the word “metal” is usually mentioned, take time to ensure that students understand that magnets are attracted to metals containing iron. (Cobalt and nickel are two other metals that can have magnetic properties.)

As described in the Science Activity, ask students to bring in a box of their favorite cereal the week beforehand. Motivate students by pretending to eat an iron object. After listening to their comments, direct them to read the ingredients on the cereal label. Ask students if they can think of a way to prove that some cereals do contain iron. In groups, have students experiment with a magnet and iron-fortified oatmeal by following the directions on the flip cards in the “Iron for Breakfast” lesson. Have students discuss their findings and the importance of iron in a healthy diet.

Mathematics Activity

Students graph the amount of iron in various cereals.

Review the purpose of bar graphs. Using large chart paper, label three graphs for fat, calories, and iron. Tally the number of various cereals students brought in. Let students take turns reading the cereal labels for fat, calories, and iron. Graph (or have a student graph) the values of the five most popular brands by coloring the bars. Ask the following questions:

- Which cereal would you choose if you needed more iron in your diet?
- If you wanted to eat more low-fat foods, which would be a good choice?
- If you wanted to limit calories, what would you pick?
- Do the cereals with the most calories have the most fat?

Ohio Proficiency Learning Outcomes for Mathematics:

24. Make or use a table to record and sort information and make identifications, comparisons, and predictions from tables, picture graphs, bar graphs, and labeled picture maps.

Writing Activity

Students listen to a story, discuss good nutrition, and write a story summary.

Ask students to brainstorm in groups their ideas of “good” breakfast foods. Display a food pyramid and review the meaning of balanced meals. Discuss how the ideas fit in with what nutritionists consider healthy. Read aloud *Gregory, the Terrible Eater* by Mitchell Sharmat (ISBN 0-02-782250-8). After reading, discuss examples of what Gregory and his parents thought was “good food” for breakfast at the beginning of the story, and at the end. Have students write a summary of *Gregory, the Terrible Eater*. The summary should include the main characters, setting, problem, events, and solution.

Ohio Proficiency Learning Outcomes for Writing:

- c. Write an organized and logical response that flows naturally and has a beginning, middle, and end.
- f. Write a response that shows an awareness of spelling patterns for commonly used words.
- h. Use legible writing in print or cursive.
- i. The correct use of capital letters (beginning of sentences and proper nouns) and

end punctuation should be evident.

Art Activity

Students illustrate a story summary.

Invite students to illustrate their summaries of *Gregory, the Terrible Eater* by Mitchell Sharmat using colored pencils or crayons.

Social Studies Activity

Students learn what foods are eaten in different countries and locate them on a map.

Discuss with students how the culture we are raised in determines the foods we eat. Read aloud *It's Disgusting and We Ate It!* by James Solheim (ISBN 0-439-05660-8). This book describes true food facts from around the world. Have students use maps of the world to locate the different countries mentioned. When describing the location of the various countries, have students use cardinal directions as well as name which hemisphere the country is located in.

Ohio Proficiency Learning Outcomes for Citizenship:

7. Demonstrate map skills by identifying selected major reference points on the Earth, locating major land forms and bodies of water, and using a number/letter grid system to locate places on a map.