



### ***“The Greatest Distance is Sound”***

**Reference to Tennessee Science Standards:**

- ✓ Physical Science – (GLE 0507.11.1) Design an investigation, collect data and draw conclusions about the relationship among mass, force, and distance traveled.

**Materials:**

Hammer or a piece of wood the size of a hammer, baseball bat (aluminum and/or wooden bat), and ruler

**Before the Game: (the teacher should demonstrate the activity first)**

With the students in small groups, hold the bat horizontally with one hand. With your other hand, pick up a hammer or piece of wood. Strike the bat at points that are one inch (2.5 cm) apart. Have the students write down where they predict baseball players want the ball and bat to meet. Start at the heavier end of the bat. Listen to the sound the bat makes each time you hit it (note all changes of sound as you move from one end to the other). Have the students try this as well. Then, have the groups record their results and compare.

1. What did you notice about the sound of the bat each time you hit it?
2. Where is the spot that makes the clearest, most solid sound?
3. Measure how far this spot is from the thick end of the bat (inches or centimeters).
4. Why do you think this spot is called the “center of percussion?” (Hint: Which band instruments are called percussion instruments?)

**At the Game:**

1. Observe the sound that Redbirds players’ bats make. Are these sounds different from the sounds of your bat? Do ground balls sound different than fly balls?
2. Have various students close their eyes for one hit at a time (students will need a partner with their eyes open). Have these students attempt to determine the distance that the ball travelled based on the sound off of the bat. Have your students track the difference between their “guess” and the actual distance of the ball.

**Beyond the Game:**

1. Experiment with other sports equipment (e.g. tennis racquet, racquetball racquet, hockey stick, etc.) to find the “center of percussion.” Graph your findings.
2. Why do professional players use wooden bats whereas, collegiate players down through little league use aluminum bats? Note that collegiate baseball players are now slowly being required to switch from aluminum bats to wooden bats. Why?
3. Which type of bat would you like to use and why?



### **“Nutrition at the Game”**

*Students will be able to determine if they are able to eat a balanced meal at a baseball game and give suggestions on what products they would have available at the game that would be healthier taking into account if the product is feasible based on product cost, preparation time, and shelf life.*

**Reference to Tennessee Science Standards:**

- ✓ Embedded Inquiry: Select and use appropriate tools and simple equipment to conduct an investigation. (GLE 0507.Inq.2); Organize data into appropriate tables, graphs, drawings, or diagrams (GLE 0507.Inq.3);
- ✓ Life Science - Flow of Matter and Energy: Demonstrate how all living things rely on the process of photosynthesis to obtain energy (GLE 0507.3.1)

**Materials:**

Paper and pen/pencil, nutritional pyramid, corresponding movie:

<http://www.watchknowlearn.org/Video.aspx?VideoID=32917>

**Before the Game:**

Introducing the nutritional pyramid - go through many examples with the students.

Have the students monitor everything they eat for a week, while classifying each item as they note it. They will find that some items have two and three different classifications; you may have to discuss portions with the students.

At the end of the week have the students determine if they ate a well balanced diet. "What could they do to make their diet better?"

**At the Game:**

List consumable products seen at the game. Create a list of items that are observed or consumed.

**Beyond the Game:**

- 1) Create a class list of food items seen/consumed at the game.
- 2) Discuss where do the products on the list fall within the food pyramid?
- 3) Did the students find a complete meal at the stadium?
- 4) What did they eat? Was it a balanced meal?
- 5) Have the students brainstorm ideas of items that can be sold at the game taking into account the cost, preparation time, handling, shelf life, etc.
- 6) Was the nutritional food more expensive than the “fattier” foods?

**Further work:**

Have the students get into small groups and write a persuasive letter to the Memphis Redbirds’ Concessions Coordinator regarding items your group believes would be healthier, and feasible.



## “Ice Cream You Scream We All Scream For Ice Cream”

### Reference to Tennessee Science Standards:

- ✓ Embedded Inquiry: Explore different scientific phenomena by asking questions, making logical predictions, planning investigations, and recording data. (GLE 0507.Inq.1); Identify and interpret simple patterns of evidence to communicate the findings of multiple investigations. (GLE 0507.Inq.4)
- ✓ Physical Science – Matter: Design and conduct an experiment to demonstrate how various types of matter freeze, melt, or evaporate. (GLE 0507.9.2); Investigate factors that affect the rate at which various materials freeze, melt, or evaporate. (GLE 0507.9.3)

### Objectives

The students will be able to research information on the history of ice cream. The students will create ice cream in the classroom and observe the change in the properties form liquid to solid.

### Materials

Books and Internet sites about the history of ice cream, and ice cream maker and ingredients needed (based on specific maker being used), corresponding video: <http://www.watchknowlearn.org/Video.aspx?VideoID=28353>

### Before the Game

The teacher will lead a discussion asking the students how they think ice cream is created and what ingredients are needed. A class list of ingredients will be created on the board with the student’s ideas. The students will research in small groups through the use of books and internet web sites the history of ice cream and how it is currently developed in the United States. The teacher will then lead a discussion on what information was found allowing each group to present their findings. The class will compare and contrast their predictions along with their findings.

### At the Game

The teacher can purchase samples of Dip-N-Dots and regular ice cream so students can observe the properties of each

### Beyond the Game

The students will create and enjoy ice cream in the classroom while discussing and observing how the properties of the materials change form. Students will discuss how different flavors and colors of ice cream could be created and how different ingredients would affect the property of the ice cream. Students will brainstorm and create a new classroom flavor.

### Evaluation Method

The students will be evaluated by their participation in the research and presentation of the information along with their participation in the creation of the actual ice cream.