

Classroom Activity

Cafeteria Trash

Standards

Science (K-3): Science as Inquiry 1, 2, 3, 4; Properties and Structure of Materials 1; Ecology 8; Interactions Within the World Around Us 3; Technology and Its Influence on the Environment 1

Language Arts: 2, 3

Math: 1, 2, 3, 4, 5, 6, 9

Social Studies: Civics 4; Economics 1

Skills

Recording data, calculating, classifying, following directions, experimenting, measuring, predicting.

Integrated Subjects

Math, Language Arts, Social Studies

Purpose

The students will make predictions about trash generation.

The students will collect and record data to test their predictions.

The students will complete an analysis of their results.

The students will graph the results and present their findings in an oral presentation.

Background

Briefly discuss the similarities and differences between cafeteria trash and the types of trash found at home and in other areas of the school.

Preparation for Lesson

Ask custodians to collect cafeteria garbage in clear plastic bags (1 bag, double bagged, for each small group). If your school uses washable trays instead of Styrofoam trays, you will need a bag of cafeteria garbage for all of your small groups. You will need to decide if you want the garbage collected just from your class or several classes. The following lesson will focus on the garbage collected from all classrooms on one day. (Identify numbers of classes.)

What you need:

Collection of Styrofoam trays

1 bag of cafeteria garbage for all but one group (double bagged)

Large scale (from health room)

1 roll of butcher paper

Student log sheets

Pencils

Rulers

Scissors

Construction paper

Glue

What you do:

Whole group: Discuss what kinds of items will be found in cafeteria garbage. List these items on the board. Ask children to record their predictions on what item(s) there will be the most of. Why? Leave room for actual results later. Explain that all groups but one will be examining the contents of the bags (without opening the bags) and listing the different items found in their bags. The group without a bag

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will be in charge of counting all the Styrofoam trays used by children in grades 1 – 3 on one day. (Tray counters will need to wear rubber gloves.) If your school does not use Styrofoam trays make sure that all the small groups get a bag to examine.

Small groups: One group will count and record the number of trays thrown away on one day.

The other groups will be examining their bags and listing different kinds of garbage found there. Call on one group at a time to bring its bag to the large scale to be weighed. Weight should be recorded both in student logs and on the board by the group's number.

Example:

Group 1	Group 2	Group 3	etc.
6 lbs.	13 lbs.	8 lbs.	

Whole group: In log sheets, have class record the number of trays that were counted, and add together the pounds that were weighed by the other groups.

(Stress that these numbers represent only 1 day's cafeteria trash.) **ex. 259 trays; 75 pounds = 1 day

Math: Graphing cafeteria garbage

Whole group: Using the figures for 1 day, figure out amounts for 1 week (5 school days), 1 month (4 weeks), 3 months, 6 months, 9 months. Because this activity is done at the beginning of the school year, I had my third-graders use calculators to do the multiplication. Actual results from one class were:

1 day = 75 lbs.	1 day = 259 trays
1 week = 375 lbs.	1 week = 1,295 trays
1 month = 1,500 lbs.	1 month = 5,180 trays
3 months = 4,500 lbs.	3 months = 15,540 trays
6 months = 9,000 lbs.	6 months = 31,080 trays
9 months = 13,500 lbs.	9 months = 46,620 trays

Discuss with class how to best show these results to other people in the most effective way.

Introduced: lb. = pound 2,000 lbs. = 1 ton

(Some suggestions were: a graph, an extra large graph, instead of counting by 1's, as on home trash

graph, count by 100s, or 500s.) After deciding how you want to do the graph, assign jobs to each group. (To balance out the amount of work that each group does, you can assign a group the job of portraying 1 week's worth of discarded trays along with 9 months of garbage; another group will do 2 weeks of trays and 6 months of garbage, etc.) Use one color of construction paper to cut out 3" x 3" squares to show the number of discarded trays, and a different color of paper to show the pounds of garbage. (In this class we decided that each square would be worth 500 trays or 500 pounds. You need to discuss what to do in the event that a group needs to show a figure less than 500.) In 3rd grade the squares were already drawn on the paper. Each group had to figure out how many squares to cut out.

Record results on logs and on board.

Math – Small groups: Children will work together in their groups to figure out how many squares they will need to represent their trays and pounds of garbage. Each group will show the teacher their numerical results before they are permitted to cut out the colored squares. (Because some groups will be cutting a lot of squares they may cut them out in strips rather than individually.) When they have the correct numbers of squares cut out they will glue them in a straight row (to represent a bar on the graph) on the butcher paper.

Whole group: When the bars are completed (with title, labels for time periods, etc.) display them in the room so the children can get the full effect of the very large numbers. Preparation for Lesson 4: (See attached CAFETERIA TRASH sample questions)

Discuss what happens to trash and garbage after it's thrown away. List ideas on the board (ex., recycling center, landfill, burned, dumped in ocean, compost pile, etc.) Explain that you will be taking a closer look at some of the ways to dispose of trash.

Assessment

Science Logs, Oral Presentations, Graph Analysis, Mini-essays.