

Data Sets: Reducing Waste

GENERAL INFORMATION

OBJECTIVES

1. Students use data that they have collected to make technological exercises more meaningful and fun.
2. Students use science to understand math calculations and computer software.
3. Students are part of the scientific process, which will give value to the results of the study.

QUESTIONS

How can we reduce waste (reduce, reuse, recycle)? What are the costs for not reducing waste? What are the benefits for reducing waste?

VOCABULARY

Data, line/bar graph, pie chart, table, spreadsheet, analysis, deduce

ACTIVITY MATERIALS

Data set found at: butternutvalleynaturecenter.com/DataSets.htm

METHODS

INTRODUCTION

Preview the main points of the activity and give students an idea of what they will be doing in this exercise. Tell them they will be using data collected at BVNC during the “Reducing Waste” activity. During the activity, students explored methods for reducing waste. They made observations about their own trash generated during the field trip. They then sorted trash into what could be reused or recycled and what would go to the landfill. Trash was weighed and the data recorded and posted on the Butternut Valley Virtual Nature Center. Review these steps of the exercise to refresh their memory. Point out that using the information they gathered from the activity will help them to be better stewards of the environment.

ACTIVITY

It is the students’ task to analyze the data collected and communicate the results. First, access the data found at the BVNC website. The data are presented in a simple Excel spreadsheet and include date, grade, school, # students, total weight, and weight per student. Have the students discuss what analyses would be interesting and meaningful. Examples include measuring the least average amount of trash according to grade level, school, season, or year. The students may have to add additional columns of data for

Teacher’s Corner

Grade Level(s)

8th – 12th

Time

20 - 40 minutes

Learning Expectation(s)

3.1: Students will use technology tools to enhance learning, increase productivity, and promote creativity.

3.2: Students will use productivity tools to collaborate in constructing technology enhanced models, prepare publications, and produce other creative works.

5.2: Students will use technology tools to process data and report results.

6.1: Students will use technology resources for solving problems and making informed decisions.

Learning Expectations(s)

8th grade

SPI 0807.Inq.3-5

Biology I

SPI 3210 Inq.1-7

SPI 3210.Math.1

Integration:

Computer technology, biology, math

Data Sets: Reducing Waste

ACTIVITY (cont.)

analysis (e.g. if measuring average trash per season they will have to add a column indicating fall or spring). Have the students prepare charts, tables, or graphs to depict the results if time allows.

DISCUSSION

Lead the students in a discussion of their results and explain the trends. For example, if average trash per grade level was lowest for 1st grade, then the students may deduce that 1st graders do not eat as much as older children and therefore they have less trash. For seasonal trends, perhaps winter diets contain more food than spring diets because the body wants to build fat reserves for cold temperatures. Finally discuss why reducing waste is important for the environment.

ENRICHMENT - COMPUTER TECHNOLOGY AND SCIENCE

Computer technology – have the students research the topic of human produced waste and present their findings, results, and conclusions in a power point presentation.

Science - Explore the steps of the scientific methodology and discuss how they were met in this exercise. For example (some steps were performed at BVNC):

- Make an observation (e.g. People produce a lot of trash.)
- Ask a question (e.g. Do some people produce more trash than others?)
- Form a hypothesis (e.g. Ninth graders produce the least amount of trash of all grades.)
- Test the hypothesis (e.g. Weigh trash for each class and separate by grade.)
- Analyze the data (e.g. Calculate average weight of trash for each grade.)
- Form a conclusion (e.g. Ninth graders do not produce the least amount of trash.)
- Communicate the Results (e.g. Ninth graders produce the most amount of trash and therefore 9th grade classrooms should be the target for waste reduction workshops.)
- Make a new observation and continue (e.g. First graders produce the least amount of trash.)

ACKNOWLEDGEMENTS

- Copyright © 2008 Healing Stones Foundation. All rights reserved.
- Activity developed by Allison Mains and Melissa Squirlock; July 2008.

