Activity name: What Are We Throwing Away Around Here? Analyze Your School's Trash Stream

This activity is meant to provide a real-world application of the ATEEC Recommended Core Curriculum's math, science, technical, communications, or critical thinking knowledge and skill concepts identified by ATEEC Fellows as necessary preparation for environmental technology occupations.

Appropriate for which course(s)? Technology Studies or other high school course including careers.

*Concept/skill learned (i.e. from K/S Tables):*data collection, understanding of waste stream

Approximate time to complete activity: 1 class session (4-50 min)

Source of idea or activity (for published source, please include author, title, publisher, date): Ray Wishart, Moseley High School, Lynn Haven, FL.

*Materials/resources needed (equipment, print media, electronic media, videos, supplies, etc.):*One day's worth of classroom trash. Plastic sheeting to protect floor. Boxes or another method for separating trash. Scales for measuring weight (possibly a bathroom scale or a lab scale). Methods for estimating volume: formulas for the volume of a cylinder; 5 gallon containers; calculators; etc. Decide from activity how you will measure volume.

Math, science, technical, communication knowledge/skill concepts addressed: Translate real world problems into math relationships, recognize order using numbers, compare numerical values for decision making, estimate answers, use calculators, apply ratios and proportions, manipulate and substitute variables to solve formulas, use formulas, apply concepts for volume in basic figures, verify and replicate experimentation, interpret and evaluate laboratory analysis results, determine what personal protective gear is required for safety, maintain accurate records, demonstrate safe handling procedures, demonstrate technical writing skills, use surveying data and techniques.

Cognitive Level(s): Application

SCANS skills addressed: Reading, writing, arithmetic, mathematics, listening, speaking, decision making, problem solving, reasoning, acquires and evaluates information, interprets and communicates information, participates as a member of a team, negotiates to arrive at a decision.

Learning Objectives: Students will analyze the trash generated in their classroom and write up a report or presentation that explains their results.

Primary Instructional Methods: Problem solving task.

Instructional Events: Students will analyze one day's worth of trash from their classroom. Students will take a classroom bucket of trash, put it on plastic to protect the floor, and then devise a method to measure the volume present. Students will then devise a method that they will use to sort the trash. Students will sort the trash and evaluate volume based on their plan. They will then record their data and be ready to present it either in written or oral form. Class discussions with an eye toward the following questions could follow up on this activity.

Discussion topics/things to make explicit to students:

- Did you find any hazardous materials?
- Are there any opportunities for using alternate waste materials here?
- What type of jobs would this activity relate to?
- Did you look for plastic recycling codes? Should you have looked for them?
- Did you calculate percent of aluminum, paper, plastic?
- Is you garbage at home different? Why?
- How does this compare to county, beach cleanup, etc.

Description of activity:

The purpose of this activity is to have students determine what kind and amount of trash by category your school throws away. The best way to do this is to line the can with a plastic bag before school starts and wait until the end of the day to collect the full bag. You should make sure your custodial staff is aware of what you are doing, sometimes they get helpful and dispose of your collected "raw data material" before you can complete the activity.

Cover the floor with paper or plastic sheeting and dump out the trash to be sorted. Equip the sorters with gloves and goggles before they sort (good time for a safety lecture). Have the students sort the trash by category, such as office paper, cans, paper towels, gum, etc. Have other students weigh the total amount of each category while a third group writes down the data. Depending on your final desired outcome you can collect trash from various points around the school and to make a better estimate of what your school throws away per day.

Extension activities could include:

- the students can use this data to create a recycling plan for the school, then present their plan to the school administration or school advisory council
- and/or - have the students determine ways to reduce the trash output for the site

- work with a math teacher to sort and interpret this data in many different ways including averages for the school, per student, total per category, etc.
- students can devise their own method to measure trash volume and then use their method to complete the task
- students can research where the trash goes once it leaves the school site
- attempt to get a trash stream analysis for your area and determine how your school's trash compares to the average trash, or how much of the total your school contributes
- possibly bring trash from other sources and do the same activity
- bring in a waste system operator to discuss trash, or do a field trip to the final destination of the trash

- Reference to "Oiling of America" activity to collect an analyze oil waste from cars (http://www.)
- Clean up different materials with paper towels to note differences in absorbancy and clean up procedures with different materials

Assessment Recommendations: Students designed data report or data chart, title, purpose, procedure, data, conclusion.

Activity submitted by: Ray Wishart

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