

Waste Audit

I. Standards and Objectives:

Standards

7.3S.1: Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct a scientific investigation that uses appropriate tools and techniques to collect relevant data.

7.2E1: Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste or renewable and nonrenewable resources.

Learning Objectives: By the end of this lesson...

- students will understand the kind and amount of waste that are produced at school
- students will be able to identify the different natural resources that went into making the materials that are in the school's garbage
- students will know how to carry out a scientific investigation to examine the school's lunch garbage.

Materials needed for lesson:

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| Lunch trash Gloves for students and teacher 4 containers, each one labeled with one of the following: "Plastic, Metal, Food, Paper" | A scale 4 clipboards for recording data 4 cameras for documentation Tarp |
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II. Lesson sequence:

Opening:

Review: The teacher will review quickly the "where is away?" process and renewable/nonrenewable resources.

The teacher will then lead students into the cafeteria for the waste audit. Once in the room, the teacher will explain the different categories and pump the students up for how FUN waste audits are. The teacher will demonstrate the sorting and explain the weighing of the materials once it is sorted. (10 minutes)

Main Activities: The waste sort! During the sort, the students who are recording write down observations of what is found in the trash. Once we have the trash sorted and weighed, these same students will write down the weights for the categories.

During the sort, the photographers will make sure all of the categories have been documented. They will also take photos of their classmates as they sort garbage. (40 minutes)

Closing: The audit will take us to the end of the period, so we will only have enough time for cleanup and for turning in the cameras and clipboards for the following day. (5 minutes)

III. Assessment/Evaluation

The assessment will be a short writing assignment, answering one of the following questions:

What did you learn during the audit today?

What was the most surprising piece of trash you found today?

What did you learn about our school during the waste audit today?

Expansion: Students could choose to evaluate their home garbage and report on it.

Lesson: Evaluate the data, make predictions and recommendations, and begin work on a presentation that will be shared with the school.

I. Standards and Objectives:

Standards

7.3S.1: Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct a scientific investigation that uses appropriate tools and techniques to collect relevant data.

7.3S.2: Organize, display, and analyze relevant data, construct an evidence-based explanation of the results of an investigation, and communicate the conclusions including possible sources of error.

7.2E1: Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste or renewable and nonrenewable resources.

Learning Objectives: By the end of this lesson...

- students will make basic graphs that display the data from the audit
- students will be able to explain the results of the audit to someone else (in writing)
- students will be able to summarize their experience and make recommendations for the school

II. Student Background Knowledge and Experience

Students will need to know how to work with digital photographs

Students will need to know how to create graphs on the computer or by hand

Students will need to know how to use presentation software

III. Classroom Environment and materials required for lesson

Room arrangement: A projector with screen at the front of the class, table groups of 5 students for activities. Students will be sitting with their groups.

Materials needed for lesson:

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| Waste audit data sheets (from clipboards) Computers for students to use to work on their presentation | Large pieces of paper Colored pencils and markers Cameras from previous day |
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IV. Lesson sequence:

Opening:

Review: The teacher will remind students of the previous two days' lessons and discuss the waste audit. Students will have an opportunity to discuss the waste audit with the table groups.

The teacher will ask students about the audit from the previous day: What surprised them in the garbage? What was different from your predictions? What did you predict accurately?

Main Activities: Students will be broken into groups to begin the data analysis: 30 minutes

Group 1: Graphs! This group, the math whizzes, will create our graphs and write a short description of the information.

Group 2: Photos: This group will choose the best photos, make sure each group member has at least 3 photos to caption, and will caption them

Group 3: Recommendations: this group will look at some photos from the audit and will look at some observations from their classmates and will write recommendations for the school. Do they see a lot of plastic utensils in the trash? If yes, then maybe the school could look into reusable, metal silverware, etc.

Group 4: Natural resources: This group will write a short summary about natural resources: Which resources were used to make the things they found in the trash? Which are renewable and which are nonrenewable? Write a definition of renewable and nonrenewable for the presentation

Group 5: Where is away? This group will summarize, for the presentation, what happens when something is thrown away. Students can use their homework from the first day's lesson to aid them in this task.

Group 6: Alternatives to throwing things away: This group will provide examples of things that can be done (think: the three R's) to reduce the amount of trash the school produces. (Similar to the recommendations group, but more general)

Once students have worked in their groups for 30 minutes, they will break into different groups to explain, verbally, what their group worked on. One person from each group will form a new group together to talk about their progress. (10 minutes)

Closing: Students will share their progress with the class. The class will continue work on the presentation the following day and will present to the student body during lunch within the week.

V. Assessment/Evaluation

The teacher will assess the small group discussions during class and will evaluate the final project contributions from each student and group.

Expansion: Students could present their data to the school board, PTA, or other school group.