A CAMPUS NEEDS ASSESSMENT FOR ETNA ELEMENTARY

Grade level: 6

Standards-based Connections Set and Learning Objectives for the Campus Needs Assessment

English/Language Arts:

Reading Comprehension
2.4; Listening and Speaking 1.3, 1.4, 1.5, 1.6; Writing Strategies 1.1, 1.2, 1.3, 1.4, 1.5; Writing Applications 2.2; Written and Oral Language Conventions 1.0, 1.3, 1.4, 1.5

L.O: Students will read and take notes on "What are Earth's Living Resources" in Discovery Works in order to understand different natural and material resources.
L.O: Students will read and take notes on "How Can Renewable resources be Conserved?" and "How Can Renewable Resources Be Conserved?" in Discovery Works in order to understand how to classify resources as renewable and non-renewable.
L.O: Students will read "Recycling Matter" in Discovery Works and answer comprehension questions regarding cycles in nature.
L.O: Students will write an essay comparing the cycles in nature to man's efforts to recycle.
L.O: Students will develop questionnaires and surveys in order to conduct face-to-face interviews about the waste management process at the school.
L.O: Student will practice and employ appropriate interview techniques in order to effectively communicate orally and gather information.
L.O: Students will participate in discussion groups to summarize findings from the waste audit, form generalizations, and propose solutions.
L.O: Students will prepare written and/or oral reports using all available technology showing the waste management process at Etna Elementary, its impacts on the waste stream, and propose solutions.

Math:

Number Sense 1.2, 1.4; Statistics, Data Analysis, and Probability 1.1, 1.2, 1.3, 1.4, 2.2, 2.3, 2.4, 2.5, 3.1; Mathematical Reasoning 1.1, 2.1, 2.4, 2.5, 2.7, 3.3; Algebra and Functions 2.1

L.O.Students will compile quantitative and qualitative data gathered during the waste audit and interviews into a chart and spreadsheet.
L.O: Students will make claims based on the statistical data from the waste audit.
L.O: Students will convert units of measurement when appropriate in recording and reporting waste audit data.
L.O: Students will calculate percentages, use ratios, proportions and appropriate operations to record and report findings from the waste audit.
L.O: Students will determine the probability of future events using waste audit data.

Science:

Resources 6b and c; Investigation and Experimentation 7a, b, c, d, e; Energy 4a; Ecology 5b

L.O: Students will list and classify products that come from trees.
L.O: Students will hypothesize about the resources used and how much waste is generated on campus.

L.O: Students will define the following concepts: renewable, non-renewable, solid waste, and waste management.
L.O: Students will compare cycles in nature to man-made cycles.
L.O: Students will design an investigation of the school's waste.
L.O: Students will conduct a waste audit at the school using the scientific method.
L.O: Students will construct appropriate graphs showing waste audit data.
L.O: Students will analyze the waste audit data and draw conclusions.
L.O: Students will share their findings with classmates, the SSC, School Board, parents, and staff.

Visual and Performing Arts
Creative Expression 2.5

L.O.Students will create a "junque art collage" or 3-D piece of art out of various materials that have been, or will be thrown out at home or at school.

Lesson Planning for the Campus Needs Assessment

Pre-assessment strategy:
Decomposition Time - this activity was done in the Science Lab as a group to assess the students understanding and knowledge of decomposition of familiar materials. Students were challenged to predict the decomposition times of familiar items including paper, aluminum, Styrofoam, plastic, orange peels, nylons, cigarette butts, and plant material. Development of hypothesis questions regarding the waste stream at Etna Elementary. Development of the student survey which was used in the waste audit process.

Lesson 1

Standards-based Learning objective(s):

- Students will read and take notes on What are Earth's Living Resources Pp. 14-19 in Discovery Works, in order to understand different natural and material resources.
- Students will list and classify products that come from trees.
- Students will read and take notes on "How Can Renewable Resources Be Conserved?" and "How Can Nonrenewable Resources be Conserved?" Pp. 20-26, 42-46 in Discovery Works in order to understand how to classify resources as renewable and nonrenewable.
- Students will hypothesize about the amount of resources used on campus and how much waste is generated on the campus.
- Students will discuss the effects of man on the environment of Scott Valley.
- Students will discuss how the Scott Valley lifestyle has been affected by current legislation. Students will create a junque art collage or 3-D piece of art out of various materials that have been/will be discarded at school or home.
- Students will look at each of the above pieces and describe how the theme was demonstrated using different media and styles.

Adopted Instructional Materials and Other Resources:
Houghton-Mifflin Science - Discovery Works: [Chapter 1] Investigation 2 - What are the Earths Living Resources? (Pp. E14-E19); Investigation 3 - How Can Renewable Resources Be Conserved? (Pp. E20-E26); [Chapter 2] Investigation 3 - How Can Nonrenewable Resources Be Conserved? (E42-E46)

Summary Description:
This initial lesson has three goals: introduce the project to the students; help the students develop an understanding of the following concepts: renewable, nonrenewable, solid waste, and waste management, and develop a list of ways that the amount of solid waste can be decreased.

Reading for pages 14-19 will be done in class as a group. The set-up question: What are living renewable resources? While we read and discuss, I'll use a graphic organizer at the board as a model for note taking in their science journals. The homework assignment for the activity will be creating a list of products that come from trees. The next day students will share their lists in groups, and then as a class.

We'll cover pages E20-E26 in class. The set-up question: In your journals, make a list of ways that we can conserve trees. After discussing their lists, we'll read and discuss the information in the text and compare the information given to their ideas using a Venn diagram.

The last investigation we'll complete in Science Lab. The set-up question: How do you and your family conserve materials? This should elicit a wide range of responses, which we'll chart at the board for future use. After we read the information, we can compare that to what the students have said.

This last discussion should lead right into what is being or not being done at school as far as conservation of materials. We'll ask the students the following questions: Where do you think the most waste is generated on our campus?; and What kinds of wastes do you feel are generated or produced on our campus? The scientific method, which includes hypothesis, will be explored, discussed, and modeled prior to the students' formation of their own hypothesis. After a discussion, the individual students will develop their own hypothesis regarding the waste stream at Etna Elementary School, which the audit will prove or disprove.

Assessment will include a matching quiz for terms (written or oral), checking student notes for content, reviewing each hypothesis for content and form, and a poster (either individual or with a partner) that conveys a message from on of the three activities (students will briefly share their poster with the class).

As a closing art activity, students will also create a junque art collage or 3D piece out of various materials that have been or will be thrown out at home or school.

Responsible individual(s):
Jim Zanotti (sixth grade teacher) and Gary Warner (science teacher)

Timeline:
November 3 - November 14; 4 classroom sessions of 35 minutes and one science lab of 75 minutes.

Lesson 2

Standards-based Learning objective(s):

- Students will read pages 28-30 for homework in Discovery Works and answer a question designed to compare cycles in nature to man's effort to recycle materials.
- Students will develop questionnaires and surveys in order to conduct face-to-face interviews about the waste management process at the school.
- Students will practice and employ appropriate interview techniques in order to effectively communicate orally and gather information.

Adopted Instructional Materials and Other Resources:
Houghton - Mifflin Science - Discovery Works: [Chapter 4] Recycling Matter (pp. D28-D30)

Summary Description:
Students will read pages 28-30 for homework and answer the following question: How do the cycles in nature compare to man's efforts to recycle? Discussion the next day focuses on their answers and we tie this to our planned waste audit.

We'll begin the preparation by explaining the purpose of the audit. Discuss the organization and design of our school waste audit. Divide the students into four audit groups, which will focus on the cafeteria/snack area waste stream from Monday through Thursday of a designated week. In addition to the cafeteria audit groups, students will be selected to complete the after school trash audits. This second audit will take place the week after the cafeteria/snack area audit.

Students will label two sets of four containers for the cafeteria/snack area audit. The categories will be reusable/reducible materials, recyclable materials, compostable materials, and trash. Review the collection protocol with students, develop data collection forms, and set up the work schedule.

Students will develop questionnaires for the cafeteria manager, facilities manager, and the office manager. Students will also develop a student survey to be used in face-to-face interviews during the lunch period.

We will also spend time practicing the interview, so that the interview and fair and unbiased. This may include videotaping students and reviewing the tapes.

Responsible individual(s):
Jim Zanotti and Gary Warner

Timeline:
4 class periods of 35 minutes and 75 minutes science lab.

Lesson 3

Standards-based Learning objective(s):

Students will employ appropriate interview techniques in order to effectively communicate orally and gather information.

Adopted Instructional Materials and Other Resources:

Summary Description:

Part I Cafeteria/ Snack Area Audit: Labeled trash containers will be set out in the cafeteria/lunch area, so that all students may sort their waste material as they leave the lunch/snack area. At least four student auditors will give direction to the students as they sort their waste as needed, but will not handle the waste. After all the students have left the building, student auditors will weigh each of the bags and record the results.

Part II Classroom - School Audit: The after school audit crew, under the direction of the classroom and science teachers, will go to each room in the school and collect the days trash. It will be taken to a central area to be weighed and the information recorded.

Part III Surveys: All students will interview random students, both primary and intermediate, in the cafeteria/snack area.

Film Crew: During the course of the audit, a film crew will document the collection of the waste and interviews for the final report.

Responsible individual(s):

Jim Zanotti, Gary Warner, Karin Munson (Cafeteria Manager), Ralph Torres (Facilities Manager), Elaine Eldridge (Office Manager), and Mike McLaughlin (Superintendent/Principal)

Timeline:

Cafeteria Audit December 9 - 12 (11:15-12:45 of each day);
Garbage collection after school on December 3, 5, and 11 (3:00 - 4:00)

Lesson 4

Standards-based Learning objective(s):

- Students will participate in discussion groups to summarize findings from the waste audit, form generalizations, and propose solutions.
- Students will compile quantitative and qualitative data gathered during the waste audit and interviews into a chart and spreadsheet.
- Students will study and discuss their data samples to see which information was a true picture of what they did.

Adopted Instructional Materials and Other Resources:

Questionnaires, interview results, and hard data collected from the cafeteria and school audits.

Summary Description:

Students will work in their groups reviewing their findings and organizing the information that was gathered on a chart similar to the one following.

Since all students participated in the cafeteria audit, this will be one class discussion using chart paper to initially record the data and stimulate discussion. After the large chart is developed, the information will be transferred to a spreadsheet document.

The next day, the after school crew will meet as a small group to discuss their findings and transfer the information to the spreadsheet.

On the third day, that group will discuss student interview results. They will tally responses to the questions and add that information to a spreadsheet. All of the students will watch the videos of the interviews.

Surveys collected from the Cafeteria Manager, Facilities Manager, and Office Manager will be read and discussed by the responsible individuals. This information will be included in the final report as part of the “what is happening now” section.

Once all of the data is organized and shared, we (Gary and I) will break the class into two discussion groups to discuss the following questions. We are going to facilitate two groups because we feel that this will give all of the students a better opportunity to share their ideas and feelings.

- Based on the data gathered, what is the volume of waste generated at EES?
- What percentage of that waste is reusable, recyclable, or compostable?
- What is the volume that could be taken out of the waste stream?
- How many dumpsters a year are filled?
- Based on our information, how many dumpster loads could be reduced?
- How much of a cost savings would that be to the school?
- What could all of us do individually to encourage reducing the waste stream?
- Based on what we've learned, what type of program should be set up at EES to reduce the waste stream?

Responsible individual(s):
Jim Zanotti, Gary Warner, and Mike McLaughlin

Timeline:
Weeks of January 12 - 23, 2004; 3 30 minute class sessions and one 75 minute science lab

Lesson 5

Standards-based Learning objective(s):

- Students will participate in discussion groups to summarize findings from the waste audit, form generalizations, and propose solutions.
- Students will compile quantitative and qualitative data gathered during the waste audit and interviews into a chart and spreadsheet.
- Students will calculate percentages of amounts of waste that can be diverted from the waste stream at the school.
- Students will calculate the range, mean, and mode of the data gathered in order to understand which data provides the most useful information.
- Students will study and discuss their data samples to see which information was a true picture of what they did.
- Students will study and discuss their data samples to evaluate the validity of their findings.
- Students will create a spreadsheet to organize the information gathered in the audit.
- Students will create an iMovie from the video taken during the audit process to be shared with the School Board and School Site Council.
- Students will write a narrative report of the audit using word processing skills and principles of designs.

Adopted Instructional Materials and Other Resources:

Questionnaires, interview results, and hard data collected from the cafeteria and school audits and results of analysis.

Summary Description:

- Students will prepare written and/or oral reports, a bulletin board with charts/graphs of collected data, and an iMovie showing the process. The reports and bulletin board will include the following key components:
- Introduction - includes background information and how it relates to the audit process; flow chart delineating the current waste stream at Etna Elementary
- Hypothesis - restates their hypothesis prior to the audit about campus resource use
- Methods - describes the steps of the investigations/audit
- Data summary - this includes results from questionnaires, student surveys, and their role in waste audit
- Data analysis - describes observed patterns of resource use and waste stream; documents how and where on campus specific resources are used; includes charts and graphs; develops qualitative statements about information collected
- Standards connection - relates collected evidence to one or more science standards
- Conclusion - discusses whether the collected evidence from the process is consistent with their initial hypothesis
- Evaluation/closure - was this a fair and balanced audit? what could be done to improve it? What's next?
- Summary - describe any potential issues with campus resource management based on collected data.

All students will participate in the group report on waste generation and resource use practices at Etna Elementary School. The written portion of the report will be completed using the word processing and spreadsheet program available to the students (AppleWorks).

Responsible individual(s):
Jim Zanotti, Gary Warner, and Joanne Eastlick (Computer Director)

Timeline:
January 25 - February 20, 2004; ten 35-minute classroom sessions

Lesson 6

Standards-based Learning objective(s):
Students will deliver presentations that convey the ideas of their project.

Adopted Instructional Materials and Other Resources:
Student reports, graphs/charts, and iMovie.

Summary Description:
Student groups will share selected findings with classmates, School Site Council, School Board, interested parents, and staff. The presentations will include discoveries made and supporting evidence.

Responsible individual(s):
Jim Zanotti, Gary Warner, and Joanne Eastlick (Computer Director)

Timeline:
April E.E.S. Board meeting and May School Site Council Meeting

Assessment Strategy(s) for Campus Needs Assessment:
Student Reports - formal and informal
Desegregation of student surveys
One page written summary, aligned to the writing standards, of what students learned through their involvement in the waste audit process.

Collaborative Instructional Team
Educators and school staff:
Mr. Warner, Mr. Zanotti, Mr. Silva, Mrs. Silva, Mrs. Eastlick, Ms. Newton, Mr. Isabell, Ralph Torres

Coach: Mr. Warner

Community partners: Scott Valley Disposal, Farmers

Additional support mechanisms: Parent Site Council, School Board

Teaming considerations: Interest, Grade-Level Support

Timeline for Developing the Campus Needs Assessment:
Planning: July – September 2003
Development: September – December 2003
Implementation: January – March 2004
Evaluation: March 2004

Work plan for Year One of Your School's UES Program

Team leader(s): Gary Warner (Science Teacher, K-8)

Leadership team (include disciplines and grade levels represented on team):
Gary Warner, Science teacher
Jim Zanotti, 6th grade teacher
Gerry Silva, 5th grade teacher
Nancy Silva, 1st/2nd grade teacher
Mike McLaughlin, Superintendent/Principal

School and district administrative support that the teams should engage:_____

_____

Community partners and stakeholders that the teams should engage:_____

_____

_____

_____

_____

Timeline

Task	Responsible Person(s)	Due Date
Complete design of Campus Needs Assessment		
Implement Campus Needs Assessment		
Team reviews results of Campus Needs Assessment and begins implementation planning		
Submit 1st draft of Year 2 Implementation Plan to SEER for review	UES Grantees	March 1, 2004
Review and comment on Implementation Plan	SEER	March 21, 2004
Final Year 2 Implementation Plan completed	UES Grantees	March 31, 2004
Submit Year 2 Implementation Plan for CIWMB approval	UES Grantees	March 31, 2004
CIWMB staff review Year 2 Implementation Plans	CIWMB staff	April 2004
CIWMB considers Phase Two funding	CIWMB staff	April 2004
Phase Two agreements sent to Grantees and returned to Grantees	CIWMB staff and Grantees	May 2004

Student Survey
Etna Elementary School Waste Audit

Grade 1 2 3 4 5 6 7 8 (Circle one)

1. On an average day, what do you think is the weight of the garbage at Etna Elementary school?
_____ pounds

2. Where does the most waste come from here at Etna Elementary?
   a. classrooms
   b. cafeteria
   c. offices
   d. restrooms

3. Where does the garbage from Etna Elementary go each day?

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4. Do you reuse or recycle in your classroom? Yes_____ No_____
How/What?_____
_____
_____

5. Would you recycle if there were containers in classrooms, outside, or in the lunch room?

Yes_____ No_____

6. What foods do you like in the cafeteria?
1._____
2._____
3._____

7. What new foods would you like served in the cafeteria?
1._____
2._____
3._____

Thank you for answering our questions.

Staff Questionnaire
Etna Elementary School Waste Audit

What do you presently do in your classroom/program to reduce, reuse, or recycle?

What suggestions do you have to improve the school's waste management system in future years?

Office Manager Waste Questionnaire
Etna Elementary School Waste Audit

Does office paper have post-consumer recycled content?_____

Does the office purchase any other recycled content products?_____

Can the copier do two-sided copying?_____

Are school documents routinely copied on one or both sides of paper?_____

Do school newsletters and fliers that go home with students use paper efficiently?_____

If so, in what ways?_____

Are memos distributed to each staff member, or are copies circulated?_____

Do you purchase new phone message pads or use scratch paper?_____

Do you purchase new or recycled printer and fax toner cartridges?_____

Does the staff room use disposable or reusable cups, plates, and silverware?_____

Does the office participate in any school recycling programs?_____

Are there any other activities that the office participates in that reduces, reuses, or recycles materials not mentioned in the above questions?_____

Thank you for answering our questions.

Facilities Manager Waste Questionnaire
Etna Elementary School Waste Audit

What normally happens to the trash collected from the following:

- the school office?_____
- the cafeteria/snack area?_____
- the classrooms?_____

How many dumpsters does our school have?_____
What is the capacity (by volume) of the dumpsters?_____
How often are the dumpsters emptied?_____
On average, how full are the dumpsters on pick up day?_____

Does the school presently recycle any materials? _____yes _____no
If yes, what materials are currently recycled?_____

How are the materials separated and collected?

- Office_____
- Cafeteria/snack area_____
- Classrooms_____

What size are the recycling bins?_____
How often are these containers emptied?_____
On average, how full are these containers on pick-up day?_____

Does the school compost organic waste? _____Yes _____No
If yes, how are the materials separated and collected?

- Office_____
- Cafeteria/snack area_____
- Classrooms_____

What size by volume are the compost containers?_____
Is the compost used on campus? _____Yes _____No
If no, how often are the compost containers emptied?_____
On average, how full are the dumpsters on pick-up day?_____

What improvements would you make to the school's waste management system?_____

Thank you for answering our questions.

December 9, 2003

Dear Families,

This Thursday a small group of students will be again collecting and weighing the classroom garbage after school. We want to see if our data from last week is accurate. This should take about 4-5 minutes to complete. Your child has expressed an interest in helping. Please sign the permission slip at the bottom of this page if your child can stay and help. If you have any questions, do not hesitate to call me at school or home.

Thank you,

Jim Zanotti

_____has my permission to stay after school on Thursday to collect and weigh garbage.

_____ _____

Parent/Guardian Signature Date

Etna Elementary Waste Stream Audit

Garbage Collection

	December 3	December 5	December 11	Total	Average
Classrooms	28.0	42.0	45.0	115.0	38.3
Bathrooms	1.0	1.0	1.0	3.0	1.0
Faculty Room/Offices	21.5	12.0	10.0	43.5	14.5
Recycled paper in Workroom	2.5	1.5	3.5	7.5	2.5
Total	53.0	56.5	59.5	169.0	56.3

Cafeteria Waste Collection

	December 9	December 10	December 11	December 12	Total	Average
Food	39.0	61.0	61.5	40.0	201.5	50.4
Liquid	20.0	20.0	23.0	20.5	83.5	20.9
Trash	17.5	13.0	19.0	15.0	64.5	16.1
Mixed Recyclables	1.0	0.5	1.0	1.5	4.0	1.0
Hard to Recycle	7.5	9.0	11.5	12.0	40.0	10.0
Total	85.5	103.5	116.0	89.0	393.5	98.4