Problem Based Enhanced Language Learning
iteachELLS, Mary Lou Fulton Teachers College at Arizona State University

Teacher: Sierra, Lucia, Shannon A, Sonia

Grade/Subject: 4th grade science

Title of Experience/Topic: Creating an Eco-Friendly Campus

Problem (framing words + person + action + audience):

Students have noticed the current events and have had increased their interest in global warming, and that factors that lead to it. They would like to know what they could do in their school to help create an eco-friendly environment so as to not contribute to global warming.

How can we as a class create an eco-friendly campus?

Time Frame: (number of sessions and length of sessions)
7 days-1 hour sessions

Content Standard(s):
Science Standards
Concept 3: Organisms and Environments- Understand the relationships among various organisms and their environment.
PO 2. Differentiate renewable resources from nonrenewable resources.
PO 4. Describe ways in which resources can be conserved (e.g., by reducing, reusing, recycling, finding substitutes).

Educational Technology
Concept 1: Processing: PO 4. Use appropriate digital tools to synthesize research information and to develop new ideas.
Concept 2: Processing:PO 1. Use multiple search strategies to locate information.
Concept 1: Planning:PO 1. Determine key words for use in information searches.

English Language Proficiency
Listening and Speaking Standard 1: The student will listen actively to the ideas of others in order to acquire new knowledge.
LI-5: responding to academic discussions by asking questions and sharing one’s view on facts, ideas and/or events using academic vocabulary.

Writing Standard 5: The student will demonstrate research skills by using a variety of reference materials to complete a variety of writing tasks.

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LI-1: recording and organizing information, observations or questions on a topic of student interest from one or two sources (experiment, textbook, guest speaker, video, Internet, interview, podcasts, etc.) for report/research purposes.

**Integrated Language Arts Standard(s):**

**Writing**
4.W.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.

4.W.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

**Speaking and Listening**
4.SL.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly. a. Come to discussions prepared having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding based on the discussion.

4.SL.4 Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

**Reading**
4.RI.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
4.RI.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

**Content Language Objective** (Language Function + Content Stem + Supports²):

Students will be able to use the language of justification, using sentence stems, graphic organizers, small group collaboration, observations, and research, to describe a plan to conserve energy and resources.

**Sub-Objectives:**

SWBAT choose multiple search strategies to locate information on eco-friendly practices.
SWBAT determine what school practices are eco-friendly or not by walking around the campus and writing down their observations.

SWBAT identify the relationship between their actions and the impact they have on their school environment by reflecting on their observations through oral conversations as a class.
SWBAT brainstorm ideas about how they can create an eco-friendly campus through observations and class discussions.
SWBAT discover and record ways they can reduce, reuse, and recycle in their school to help their environment through online research.
SWBAT analyze and develop new ideas from research information by organizing their research on a graphic organizer.
SWBAT write their ideas in complete sentences using the key vocabulary terms.
SWBAT participate in group conversations as they research and organize their information.
SWBAT use vocabulary terms in conversation with peers.
SWBAT listen and discuss ideas between peers in order to share and acquire new knowledge.
SWBAT follow simple, concrete commands with visual prompts.
SWBAT describe in detail how they can create an eco-friendly campus.
SWBAT write their plan legibly.
SWBAT present their plan to the principal of the school.

Materials:
- Pencils
- Paper
- Laptops
- Internet Access
- Powerpoint
- Crayons
- Markers
- Graphic Organizer
- Tape
- Gluesticks
- Science Textbook

Vocabulary taught prior to the experience (Background):
Recycle
Reduce
Reuse
Climate

Vocabulary developed during lesson:
Ecological
Pollution
Conservation
Natural Resources
Sustainable
Preserving

Academic Conversation:
What language function will students have the opportunity to practice? How will this language be explicitly taught? How will this language be applied and practiced?

Students will be able to justify what actions cause negative or positive impacts on the environment through reasoning and evidence. Students will demonstrate through graphic organizers, sentence stems with partner conversations, during brainstorming. Students are introduced with example problems of issues in the environment.

Students will be shown pictures of human actions and will determine if the actions have a positive or negative impact on the environment.
Why: We use justification to express why we do, need, want, agree, disagree and support something. Everyone in this room has used justification. When you want something from the store, you tell your parents why you need that item because you want to persuade them to allow you to get that item. When you are older you need to use the language of justification to tell your future boss why you deserve a promotion.

**Language of Justification**
- I believe this because...
- My primary reason for thinking so is...
- Perhaps the most convincing reason for this is...

Model: The teacher will select an image from the powerpoint and use the language stems to justify why the human action is negative towards the environment.

How: The students will use the language of justification during their discussions with peers.

Practice: Students will be given copies of the images from the powerpoint. Using a t-chart, the students will sort the images as to whether or not they believe they are environmentally harmful or eco-friendly. Using the language of justification, the students will justify why they believe an image is eco-friendly or not. After they discuss in their groups, they will share their justifications with the class.

**Establish the Problem:**
How will prior knowledge be accessed? How will the problem be introduced to students? How will students inquire about the problem (optional planning tool attached) How are students using language (reading, writing, listening, and/or speaking) and how are they being supported?

**Day 1**
The lesson will begin with a slide presentation displaying various environmentally harmful and eco-friendly images. The images will be based on human actions towards the environment. The students will discuss in groups what they are seeing that is negative towards the environment. The teacher will first model what their discussion should look like using the **language of justification** and explain why we use it. “I believe the image of the man throwing trash in the river is bad because the trash can harm local wildlife.” There will be sentence strips of the **language of justification** visually available to support the students in their discussion. They will use that language during their discussion. One person from each group will present their findings to the class. The students will complete a t-chart as a class based on what they found to be either environmentally harmful or eco-friendly.

Once the students have completed the t-chart, they will take a walk around the campus in their groups. During their walk, the students will observe and note what they find to be environmentally harmful in their campus. If they have cell phones at their disposal, they will be allowed to take pictures with their phones.

After they have completed their observations, the students will sort their findings into categories, such as trash, water, power, etc. The students will discuss their observations as a class. They will determine which areas the school needs to improve on in order to have a more eco-friendly campus. As a class, the students will identify the issues they would like to solve, and create a question for their group based on one of their categories. Questions can be, for example, “How can we decrease our waste?”, “How can we keep our playground clean?”, or “How can we save energy?” etc.
Students will then be introduced to the problem that will guide the lesson:
“We have noticed the current events going on in our planet and have become interested in global warming, and that factors that lead to it. We would like to know what we could do in our school to help create an eco-friendly environment so as to not contribute to global warming. How can we as a class create an eco-friendly campus?”

Creating the Experience:
How will students work together to develop and present solutions? How are students using language (reading, writing, listening, and/or speaking) and how are they being supported?

The majority of the project will be completed through collaborative activities. Through group discussions and the use of the language of justification, students will develop a presentation about creating an eco-friendly campus in their school. The students will be informed of all the goal of the project prior to beginning. They will also be made aware that the principal of the school will be attending their presentations.

Day 2
Upon completion of a question, students will use it to guide their research. Students will be given opportunities to use computers to research their question using reliable sources. Individually, the students will research facts and evidence that relates to their question. They will each complete a Research Round-Up graphic organizer to collect their research. After completing their research, they should be summarizing their findings at the end of the organizer.

Day 3
With the individual research graphic organizers completed, the students will come back into groups. In their groups, each student will present their research evidence and how it supports the group’s question. After all of the research evidence is presented, the group will then discuss what resources best support
their question. The group will then consolidate their resources into a new, “research round-up” graphic organizer.

**Day 4**

As a group, students will take the resources they agreed upon to connect back to their observations. Students will use the language of justification to discuss what resources they believe best support their observations of their campus. They will complete the, “Making Connections to Text” graphic organizer, to connect their resources to specific observations they noted.

![Making Connections to Text Graphic Organizer](image)

**Day 5–6**

The students will begin the creation of their group powerpoint. They will use their group Research Round-Up and their Connections graphic organizer to guide their powerpoint. The first slides of their presentation should incorporate their observations, research, and connections. The slides following those should justify the changes they believe need to be done at their school to create an eco-friendly campus. They will be allowed to create note cards for their presentations.

**Day 7**

In their groups, students will present their powerpoints to the class. Every member of the group is expected to participate. They will be allowed to use their note cards during the presentation. Students not presenting will be actively listening. The principal will be invited to observe the presentations.

Evaluate:

*When and how will you use formative and summative assessments to measure student progress and learning (content and language)?*

**Formative Assessments:**

- Students will use a t-chart, the students will sort the images as to whether or not they believe they are environmentally harmful or eco-friendly.
  - Share their justifications with the class.
- Students will sort their findings into categories, such as trash, water, power, etc.
- Students will list and discuss their observations of the school’s eco-environment as a class.
• Students will identify the issues they would like to solve, and create a question for their group based on one of their categories.
• Students will work collaboratively to brainstorm a plan to improve the school’s eco-environment using sentence stems while filling out graphic organizers.

**Summative Assessment:**
Using the language of justification, with sentence stems, graphic organizers, small group collaboration, observations, and research, students will create a powerpoint presentation describing a plan on how the school can conserve energy and resources. Students will be sharing their presentation to the school principal. Students will use language through reading, writing, speaking and listening when presenting their findings.

<table>
<thead>
<tr>
<th>Oral Presentation Rubric</th>
<th>4—Excellent</th>
<th>3—Good</th>
<th>2—Fair</th>
<th>1—Needs Improvement</th>
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</thead>
<tbody>
<tr>
<td><strong>Delivery</strong></td>
<td>• Holds attention of entire audience with the use of direct eye contact. seldom looking at notes • Speaks with fluctuation in volume and inflection to maintain audience interest and emphasize key points</td>
<td>• Consistent use of direct eye contact with audience, but still returns to notes • Speaks with satisfactory variation of volume and inflection</td>
<td>• Displays minimal eye contact with audience, while reading mostly from the notes • Speaks in uneven volume with little or no inflection</td>
<td>• Holds no eye contact with audience, as entire report is read from notes • Speaks in low volume and/or monotonous tone, which causes audience to disengage</td>
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<tr>
<td><strong>Content/ Organization</strong></td>
<td>• Demonstrates full knowledge by answering all class questions with explanations and elaboration • Provides clear purpose and subject; pertinent examples, facts, and/or statistics; supports conclusions/ideas with evidence</td>
<td>• Is at ease with expected answers to all questions, without elaboration • Has somewhat clear purpose and subject; some examples, facts, and/or statistics that support the subject; includes some data or evidence that supports conclusions</td>
<td>• Is uncomfortable with information and is able to answer only rudimentary questions • Attempts to define purpose and subject; provides weak examples, facts, and/or statistics, which do not adequately support the subject; includes very thin data or evidence</td>
<td>• Does not have grasp of information and cannot answer questions about subject • Does not clearly define subject and purpose; provides weak or no support of subject; gives insufficient support for ideas or conclusions</td>
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<tr>
<td><strong>Enthusiasm/ Audience Awareness</strong></td>
<td>• Demonstrates strong enthusiasm about topic during entire presentation • Significantly increases audience understanding and knowledge of topic; convinces an audience to recognize the validity and importance of the subject</td>
<td>• Shows some enthusiastic feelings about topic • Raises audience understanding and awareness of most points</td>
<td>• Shows little or mixed feelings about the topic being presented • Raises audience understanding and knowledge of some points</td>
<td>• Shows no interest in topic presented • Fails to increase audience understanding of knowledge of topic</td>
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Oral Presentation Rubric Link