STOP THE SLOP

How can schools reduce food waste -- and help the climate?

A project-based learning (PBL) module
for high school classrooms

Funded through the Competitive Grant Program
from the Virginia Department of Environmental Quality

May 2020
Each year, our organization connects over 15,000 students to environmental science through hands-on lessons taking place in our community. We have witnessed the way that interactive learning can lead to an "aha moment" - that beautiful realization that our individual role is making the world a less polluted place, that moment when the creative energy hums.

Did you know that food and food waste is the largest occupant in American landfills? The Stop the Slop program brings environmental science studies to a relatable and familiar setting for students – the school cafeteria. Here students can make the connection between food waste and climate change by doing a “trash audit” and presenting their findings. Not only did the process engage students in hands-on learning activity, but it also brought an awareness of their daily trash habits.

Have fun researching, discovering, and designing new solutions to reducing waste!

Mary Ann
Executive Director
Clean Valley Council
maryann@cleanvalley.org

Special Thank You to Elise Sheffield, Boxerwood Education Association, for teaming up with us on this project.
About This Project

Content

This module teaches students about environmental issues through a research and development (R&D) process. In the research phase, students learn about the environmental and economic impact of food waste. They complete a baseline food waste audit at a local school with the ultimate goal of developing solutions to reduce the amount of methane-generating waste sent to landfills. In the process, students learn how local human actions impact climate change and our shared natural resources.

In the development phase, students work in teams to create an academic visual aid (poster, info graphic, powerpoint, etc.) that presents results from their food waste audit. In our example, we chose to use a poster as the visual aid. The poster invites stakeholders to consider the link between food waste and climate change and to offer some actionable solutions for reducing school waste in the target school. Students present their studies to a community audience as a next step in reducing food waste.

Instructional Approach

This module is designed to be flexible, although it will have greater impact if students have already studied topics related to climate change. You can also teach it as a self-contained project-based learning (PBL) unit, however. Use the Project Overview and Teaching Tips section to guide your decisions.

The project uses a student-centered instructional approach adapted from PBL Works, a leading non-profit national resource for project-based learning. In addition to curricular content, the project also supports attainment of Virginia’s 21st Century Success Skills (The 5 C’s). In other words, this unit need not be an “add-on” to what you are already teaching. Use it as a tool in your toolkit: a high-quality method of instruction.

Virginia Standards of Learning

This project aligns with a variety of science-based SOLs, as well as supporting SOLs in language arts and mathematics.

- **Earth Science**
  ES.1 & 2 (scientific investigation) + ES 12 (Atmosphere and its relation to other processes)

- **Biology**
  BIO.8 (human impact on ecosystems)

- **Environmental Science (Guidelines)**
  Scientific Skills & Processes, Resources (IV), Human Impact, Civic Responsibility (V)

- **Environmental Science AP**
  The Living World, Earth Systems and Resources, Population, Land and Water Use, Pollution
### Pedagogical Alignments

<table>
<thead>
<tr>
<th>PBL Works “Gold Standard” Essential Project Elements</th>
<th>As expressed in the Stop the Slop project . . .</th>
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<tbody>
<tr>
<td><strong>Challenging Problem or Question</strong></td>
<td>Students tackle a real-life challenge: How can schools reduce food waste – and help the climate?</td>
</tr>
<tr>
<td><strong>Sustained Inquiry</strong></td>
<td>Students pursue a series of supporting questions and activities to: 1) understand connections between food waste and climate change, and 2) identify actions to reduce that waste at a target school</td>
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<tr>
<td><strong>Authenticity</strong></td>
<td>Students address a pressing problem connected to each of their lives as members of a school community.</td>
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<tr>
<td><strong>Student Voice &amp; Choice</strong></td>
<td>Students work in teams to define and present their specific presentation focus. They make their own poster design decisions and pose their own solutions. They share these publicly.</td>
</tr>
<tr>
<td><strong>Reflection</strong></td>
<td>Students reflect on content, process, and product throughout this project. Lesson plans include formative and summative reflection.</td>
</tr>
<tr>
<td><strong>Critique &amp; Revision</strong></td>
<td>Students (teams) receive and share feedback about each other’s designs. They use critique to refine their prototypes.</td>
</tr>
<tr>
<td><strong>Public Product</strong></td>
<td>Students present their work to community stakeholders.</td>
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<thead>
<tr>
<th>The 5 C’s</th>
<th>As expressed in this project . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creativity</strong></td>
<td>Students determine and design their own research focus, based on a classroom pool of shared data.</td>
</tr>
<tr>
<td><strong>Collaboration</strong></td>
<td>Students work together in research and design teams. They confer with outside experts about the food waste topic</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>Students conduct interview with school peers. They share ideas within teams and between teams. They communicate with outside “experts” during the project both informally and formally.</td>
</tr>
<tr>
<td><strong>Critical Thinking</strong></td>
<td>Students develop their research question from a pool of student-collected data, analyze their selected data, and draw conclusions.</td>
</tr>
<tr>
<td><strong>Citizenship</strong></td>
<td>Students act as earth stewards by conducting a food waste audit for another school, sharing results and suggestions with stakeholders.</td>
</tr>
<tr>
<td>Project Milestone</td>
<td>Key Student Question(s)</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------</td>
</tr>
</tbody>
</table>
| **1. Launch Project**  
*Goal*: Meet the challenge  
1 – 2 sessions, 60 – 90 min. total  
**Driving Question**: How can schools reduce food waste – and help the climate?  
• What do we know/need to know to meet this challenge? | Entry Event, see suggestions p. 7  
*Sticky-storm*: Class creates and sorts a collection of stickies to develop guiding research questions, see p. 8 | Organized class list of key questions |
| **2. Conduct Background Research**  
*Goal*: Understand the global situation  
Several sessions, 1 – 5 hours total  
**How does food waste impact the environment?**  
• How much food waste does the U.S. and the world generate annually?  
• How does food waste contribute to climate change?  
• What other environmental and economic impacts occur from the production, packaging, transportation, and disposal of wasted food? | Students develop background knowledge about food waste via online research (individual or group), class lectures, and videos, tailored to the needs of the class.  
Background knowledge should also include understanding the basics of climate change as well as the impact of landfill-generated methane emissions on global warming. | Teacher-designed worksheet(s) or quiz  
Individual or team “mini-products” that capture a research focus, as aid to classmates: a ppt slide or slides, a 1-page handout, a diagram, etc. |
| **3. Complete Field Research (Food Waste Audit)**  
*Goal*: Understand the local situation  
3 – 6 hours class time plus 1- 3 hours for site-based food audit(s)  
**What are people doing to reduce school food waste?** | The class interviews experts and/or forms online student research teams. |  
1. Class interviews experts from their school division’s food program  
2. Class plans, practices, and implements a data-rich field investigation (lunchtime school waste audit) at a local school.  
3. Class tours local landfill if possible. This can also serve as the Entry Event above. | Student-generated data tables and charts using shareable Google products (sheets & slides) |

**7-12, 60-min. sessions (1-2 weeks) including field investigations (food waste audit)**
<table>
<thead>
<tr>
<th>Project Milestone</th>
<th>Key Student Question(s)</th>
<th>Activities</th>
<th>Products &amp; Assessment</th>
</tr>
</thead>
</table>
| 4. Develop a Team Research Question | **What is the focus of our study?**  
• What specific topic do we want to analyze?  
• What data from the audit will we use?  
• What types of graphs will we generate to best depict the data?  
• What photos best illustrate our content?  
• Who will be responsible for each element of the process? | 1. Students form teams of 3 – 4 classmates.  
2. Student teams determine focus, select and analyze relevant data, photos, and background information  
3. Student teams determine goals and focus of their teaching poster, determine timeline with teacher, and designate responsibilities. | Project management graphic organizer and/or calendar |
| **1-2 hours**      |                                                                                       |                                                                                                                                                                                                           |                                                                                        |
| 5. Create a Team Presentation Poster | **How can we improve our design?**  
• How can we present our idea in ways that effectively teach others?  
• What recommendations will we include based on our analysis?  
• How can we give and receive constructive feedback in its creation? | 1. Class creates and reviews their draft using a poster rubric.  
2. Peers and/or experts provide feedback and teams revise plans.  
3. Teams present their poster to their classmates prior to presenting to external audiences. | poster rubric  
individually crafted portions of the text |
| **3-4 hours**      |                                                                                       |                                                                                                                                                                                                           |                                                                                        |
| 6. Present Posters Publicly | **What shall we share about our project with the greater community?**  | Teams present their poster to an external audience and receive feedback  
Class prepares a brief, summative report for the school division | Individual essay reflection with prompts about the problem, the project, and the solutions. |
| **Goal: Sharing and Recognition** |                                                                                       |                                                                                                                                                                                                           |                                                                                        |
Teaching Tips

Milestone 1: Launch Project

Overview:
All students have years of experience with school lunches—have they considered what happens to the waste? Use this common experience to highlight the impact of local choices on climate change and conversely, the opportunity to address global issues in a local, actionable context. Share with students the Challenge’s intent and purpose in a written letter or outline, see Appendix A: Sample Challenge Letter (adapt to your circumstances and needs).

Materials:
- stacks of post-it notes

Notes:
1. Kick-off this Project Challenge with an Entry Event that is memorable and meaningful to your students. Use your creativity, here are a few options:

   - Show a video clip related to food waste and/or landfills, link discussion to recent classwork about climate change.
   - Introduce Project Drawdown and all the actions that can reduce carbon emissions including reducing Food Waste. [https://drawdown.org](https://drawdown.org) [https://drawdown.org/solutions/reduced-food-waste](https://drawdown.org/solutions/reduced-food-waste)
   - Bring in a tray of yesterday’s school lunch (or at least a menu): who would have eaten what? Why? Where did this food come from? Where is it going? What exactly will happen to this particular food once it enters the school trash can?
   - Work with your school division nutrition service to create a letter or brief video communicating to students the problem the division is having with school waste and requesting help better understanding why students are throwing away food.
   - Schedule a landfill tour as the kick-off event.

2. Orient students to the Project Challenge.
   a. Post the driving question in the classroom.
   b. Explain the culminating product (public presentation).
   c. Provide a sense of the project length.
   d. Inform students that they will be working as researchers and scientists to complete this project—and their work can make a real impact for a real school.

3. Create with students a road map of “what we need to know” research questions.
   a. Inform students they will have a role (with you) in identifying questions they need answered in order to successfully complete the project. These questions will serve as a road map for the research phase of the project.
b. Ask students in pairs or small groups to generate at least 5 good questions that would help the class understand more about food waste generally (including links to climate change) or school lunch waste specifically. Students should write each of their questions on a separate sticky.

c. Collect and read aloud all the stickies and/or have groups read. Sort the question stickies by similar category on the board.

d. Note major areas of interest then add yours, as linked to your curricular goals.

e. Condense all the questions into a few major supporting questions for this phase of the project. Retain these questions on the board, as guide for future research and lessons.

**Milestone 2: Conduct Classroom Research**

**Overview:**
Students learn more about the food waste problem both globally and locally. This phase is ideal for teaching content subject matter. Maximize its utility by identifying vocabulary and concepts you want students to master, design research tasks and products accordingly. Consider a quiz or test after this component of the project.

**Notes:**
1. Review with students the major supporting questions for this project phase. Then show how what they do in class relates to answering those questions. Go light or deep, depending on your students and course needs. A sampler of options:

   - **Content stations:** have teams rotate, answering worksheet. Or use jigsaw method: one team becomes experts in one topic, then disperse to share their expertise with others.
   - **Video clips, textbooks, on-line research in tandem with an individual or team graphic organizer or worksheet**
   - **Guest expert(s):** panel, Q&A, or lecture; live or online/Skype

2. Let your summative assessment for this phase do double duty by having students create small, finished products for a classroom “research bank.” The bank can be a knowledge resource that classmates can later draw from as they develop information for their posters.

Examples (created by individuals or teams):
   - Tri-fold display with paragraphs each answering one of your class’s supporting questions
   - Powerpoint slides providing the same.
Overview:
Students conduct an on-site school lunch waste audit, adapted from a field-tested EPA protocol. Students gather qualitative and quantitative data from the audit, then process and analyze the data in support of their research questions.

Materials:
Classroom, pre-audit:
- Copy of school’s current daily lunch menu
- 20 – 30 Blank paper labels for buckets and containers & colorful markers
- 1 Practice lunch tray (if available) with “food” items

Field (school site): Please consult the EPA guide for more detail
- Audit materials per station (serving up to 100 students at lunch): 2-3 tables and 5-8 chairs. Safety gear (gloves, hand sanitizer), at least 7, 5-gallon “scrape” buckets (one per menu item) and box of trash bag liners, portable scale, 1-2 clipboards, data sheets, 3-5 sponges, masking or duct tape, at least ten #10 or equivalent plastic “comment” containers (one per menu item), at least 10 scraping spatulas, 100+ small scraps of interview paper, box of ziplock bags & sharpie, 10+ pencils, camera, student-created food item labels for each of the interview containers and scrape buckets,
Notes:
Prior to the Food Waste Audit

1. Familiarize yourself with the purposes and protocols of the school food waste audit.

   **Stop the Slop** is adapted from an EPA/USDA 2017 publication, *Guide to Conducting Student Food Waste Audits: A Resource for Schools*, a 21-page document available online at no charge.

   In this well-vetted model, students interview lunch-goers who have completed their lunches to find out why certain foods on their tray were not eaten. The auditors also scrape all food left uneaten on the trays, weighing aggregated waste by category for quantitative data.

   Back in the classroom, the student auditors sort and analyze both sets of data to better understand the nature and extent of the food waste problem. This baseline data in turn informs their ideas for school-specific waste reduction solutions.

   **Stop the Slop** diverges from the EPA method in two small ways: 1) students audit a school *other than their own school*, and 2) interviewers do not transcribe student comments in a data log, but instead immediately file their individual notes into a series of labeled containers on their interview table (see photo on page 9). Back in the class, students will sort and tally results per item.

2. Select a school investigation site.

   The EPA guide assumes the food audit happens at one’s own school which certainly is simpler. **Stop the Slop**, however, challenges students to take their audit to another school in their division. Although more logistically complicated, this approach works well for high school students. First, it emphasizes (and models) the service component of the project. Second, it bypasses adolescent social complications that can arise from peer-to-peer interviews around food. If possible, connect your students to an elementary or middle school eager to host the audit. Make your final selection based on your teaching situation, the level of administrative interest/support by a host school, transportation considerations, etc.

3. Determine dates and length of investigation.

   Work with your host school and cafeteria managers to determine the best date(s) to complete your food waste audit. If you teach multiple sections of students, you may need to schedule several audit dates. Determine the number of audit days needed by the number of students/classrooms you teach. As a rule of thumb, allocate 20-30 high school students (working in two, independent but concurrent audit stations) for each lunch period serving 200 students.
4. Communicate with all stakeholders.

This project requires multiple layers of buy-in and early, clear communication makes it happen. Prior to launch of this project, determine site of the food audit and secure permission and/or understanding from that school’s administrative, cafeteria, custodial staff as well as teachers with lunchroom duty during your audit days. Make a site visit to understand how the lunch period works at your audit site and to explain the project to your host. Review the lunch period schedule. Determine where you can set up the audit tables (and who is supplying the tables) and how custodial staff will interact with food waste that day. Determine whether your students have time to eat lunch prior to the audit and if so, whether the cafeteria will feed them.

Also decide how host school students will be informed about the change in their daily lunch patterns (will there be a school announcement, an email to share with lunchroom duty teachers, student-generated posters?). Create a schedule to share with stakeholders. Lastly, consider communicating to parents of your high school students, briefly outlining the project and its purpose and assuring them that you will be following safety protocols (gloves, utensils, etc.). You might also want to invite PTA representatives or at least one other adult to assist you during the food waste audit with your students.

5. Secure and prepare materials.

Acquire the specific menu for your host school for the day(s) of your school audit. Use this menu to create Google data sheets, see Appendix C, Food Waste Data Sheet. Also use this menu when making the labels for the food buckets and containers (a good student project). Make two labels of each menu item: one for its interview container (#10 can) and one for its 5-gallon “slop” bucket.

6. Train students in audit protocols prior to the actual audit.

When students arrive on the site, they should be fully prepared. They should know what they will be doing, as well as why, how, where, when, and with whom. They should be versed in all routines including what happens if they are off-task or acting unsafely. You should feel comfortable and knowledgeable about the site and have all the help and materials you need for a successful audit.

To this end, schedule a “dress rehearsal” in the classroom prior to the audit day. Divide a classroom of 20 students into three teams, each with its own responsibilities. These will be the same teams active on the audit day. Pull out a few students to act as middle school students with lunch trays, going through the process, including data-recording.

Team A: Interviewers
Sitting shoulder to shoulder alongside a 6-foot table, these students interview students with lunch trays, politely determining what they did not eat and why. Some students interview, others record. Record one comment per paper scrap, then toss the scrap
into the appropriate food category containers. Note: practice helpful interview skills and remind students they need specific replies in their data (e.g. the carrots were soggy vs. I don’t know).

**Team B: Scrapers**

Standing shoulder to shoulder alongside a second, 6-foot table, these students receive food trays from students and scrape leftovers into their designated 5-gallon buckets lined with trash bags. They weigh and record bag totals at the end of each lunch period, then toss the bags in the school’s waste receptacles for a trip to the landfill (alas).

**Team C: Specialists**

Assign these students for specific roles. You will need someone to tally the number of trays collected; someone to “guard” the place in the cafeteria students usually go to dump their trays (ensuring all those with trays instead head to the interview tables); someone to encourage students who have finished their lunches to go up to the interview tables (thus avoiding a last-minute rush); and someone to take photographs.

**On Day(s) of Food Audit.**

1. Arrive early.

   Schedule time to confer again (and definitely not the first time) with custodians and cafeteria staff, to set-up, review roles, and allow your students to eat (if that is part of the plan).

2. Re-set audit stations after each lunch period, assuming your host school has several.

   a. Place all the written replies in their respective ziplock bags, labeled by food category and lunch period.
   b. Remove all bag liners in the 5-gallon slop buckets, weigh and record their respective weight on the data sheet. Reline with new bags.
   c. Remove all trays, sponge area, prepare for round two!

3. Clean and take-down stations at the end of the audit day.

   Leave no trace—and thank the custodial staff and cafeteria workers for their support.

**Post-Audit, back in class**

1. Debrief the experience.

   Reflect as a class on the process, the teamwork and impressions overall. What worked? What could be tweaked? What was the experience like interviewing students? What surprised them?
2. Process data so that all of it is available online to the entire classroom.

   a. **Qualitative:** students complete a classroom-accessible Google Datasheet for each menu item, grouping similar food comments together and tallying responses within each menu category, *See Appendix D: Food Waste Interview Tally Sheet.*

   b. **Quantitative:** students complete classroom-accessible Google Datasheet to enter cumulative totals for each menu item.

3. Practice creating Google charts.

   Teach students how to convert a sample data set to graphical depiction using Google tools. Practice this skill now, prior to work on the poster. Have students create a Google slide to share and interpret their bar charts and pie charts with others.

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**Milestone 4: Develop A Team Research Question**

**Overview:**
Students move into Part II of the project: creating an academic “teaching” poster for public presentation. To complete this aspect of the project, small teams select a research question that can be addressed with the data. They then use Google Slides to create a 18 x 20 inch poster explaining the inquiry and its context, the selected data, their conclusions, and recommended next steps. If feasible, the posters should be printed for public display.
Materials:
- Google Food Audit data sets
- Stop the Slop Presentation Poster rubric, see Appendix B
- Stop the Slop graphic organizer

Notes:
1. Inform students they are now moving to a new phase of their project: teaching others about a specific aspect of school waste using supporting data. Share and discuss the rubric and a project timeline this next phase.

2. Charge small teams to devise a specific investigative question for their poster that they can support with the collected food audit data. A focus is important because there are so many data points. Have students share their question and plan with you to ensure the project is off to a good start. Teams may wish to complete a project management graphic organizer. Sample questions:
- What are the most common (top 5) reasons MS students don’t eat fruits?
- Which foods serve contribute to the greatest food waste per lb?
- What was the total food waste for each entree served over the 3-day audit?
- Why don’t students eat the entrees? (major reasons)
- What percent of total food waste was fruits or vegetables?
- Do students throw away more fruits or vegetables (by weight)?
- What’s wrong with the cheeseburgers?

3. Create individual assessment opportunities within the poster project. Example: all team members are responsible for submitting one paragraph of text, see Appendix B: Poster Rubric.
Milestone 5: Create a Team Poster

Overview:
Students work in teams to create their poster from their student-generated texts, plus relevant data, charts, and photos. They give and receive peer and/or community feedback about content and design to revise and improve their work.

Materials:
- Google data-sets
- Class “bank”/Google folders of photos from the audit
- Stop the Slop presentation poster rubric (Appendix B)
Overview:
Students present results of their project (and their action suggestions) to the community through a panel, gallery walk, or youth summit.

Notes:
The public presentation is the culmination of your project: it’s the moment when a classroom exercise turns real, and therefore a critical step in the process. Possible venue and audiences:
- A regional high school youth summit for peer to peer sharing, see Appendix E: How to Host an Earth Summit.
- A “galley walk” poster display at your school, to which you invite school stakeholders (food service directors, cafeteria managers, school administrators, PTA representatives) for questions and conversation
- An in-class presentation to a community panel with Q&A

As possible, give each student a job on presentation day. Examples: Greeters, Display/Caption Makers, Welcome/MC, Presenters, Q&A responders, Hospitality, etc., The presentation is the culminating event, but needs not be assessed itself if you have assessed individual and team components along the way.

As feasible, encourage concluding take-aways: based on what your class has presented/discovered what might be some practical next steps for reducing waste at the target school? As time and circumstances allow, take the next step to implement some of those ideas
STOP THE SLOP: Character Education in Action

Caring...for our planet and each other
Responsibility...for our actions
Creativity...for solving problems and find the best solutions
Additional Resources

1. Clean Valley Council
Clean Valley Council is a resource for all teachers. Classes are free where we have contracts. Contact us to see if your community is under contract or if you’d like us to reach out to municipal leaders to create a cooperative agreement. Some free supplemental tools and other PBL lessons are on our website at www.cleanvalley.org

2. Community Partners
   a. School Partners
      Division level: superintendent, food program director, operations director, school board members
      School level: administrative team, cafeteria manager, custodial staff
   b. Government Agencies
      Local offices may also have pro bono staff, resources, and insight to share.
      • Municipal solid waste/recycling managers
      • Landfill operators
      • Local 4-H Extension offices
   c. Local non-profit organizations
      Is there a waste reduction organization in your community or a conservation group? Would you like to investigate the benefits of food composting? If so, these groups may be a helpful for teaching, presentation opportunities as well as school scholarships.
      • Master Gardeners may also be a resource if you want to investigate the benefits of food composting
      • Solid Waste Associations of North America (SWANA)
      • Recycling Associations

3. Other Helpful Resources (free)
   a. Project-Based Learning materials from PBL Works: A treasure trove of free materials, templates, lessons, rubrics, and blogs. Website: http://pblworks.org
   b. Community-Action and Problem-Solving Resources from Earth Force:
      Free educator guides and lessons supporting student voice and choice, empowered decision-making processes, environmental civic action, and more. Website: http://earthforceresources.org
Appendix A: SAMPLE CHALLENGE LETTER

(date)

Dear Environmental Science students,

The Clean Valley Council of the Roanoke Valley is hosting its annual high school youth Earth Summit this year at Dabney S. Lancaster Community College in Clifton Forge, on March 6. According to organizers, this event will immerse participants in a professional conference setting including networking activities, keynote speakers, breakout sessions, and more. The Summit will provide lunch, t-shirts, and prizes. It will take place on Friday, March 6 all day at DSLCC. RCHS has approved class travel to the summit. More than 80 ENV SCI students will be attending: the largest group from any local high school.

This year’s summit will highlight sustainable practices, recycling, and waste reduction in commercial and residential settings. In support of that theme, the Clean Valley Council has invited RCHS classes to report about waste issues in our area. This investigation ties in perfectly with your next big PBL, which explores ties between school lunch waste, landfill problems, and climate change.

Working PBL Title: Stop The Slop
Driving Question: How can we help schools reduce food waste – and help the climate?

Background:
Every day garbage trucks haul bags and bags of school lunch waste to the Rockbridge Co. landfill. This food waste, along with everyone else’s food waste fills up the landfill, costing taxpayers money. The food waste also releases methane gas into the air when it decomposes. The methane acts as a powerful greenhouse gas, which contributes to a warming and a changing climate.

Right now, no one is looking at what schools can do to reduce waste, save money, and protect our planet. That’s where you come in. Your challenge over the next month will be to get some data about the lunch waste problem and come up with some recommendations of what our schools could do to reduce that waste. This project has the support of school principals and the food service department.

To make this big project do-able, we will focus on the food waste problem at Maury River MS. Later this month each ENV SCI class will visit MRMS during its lunch periods to learn more about what the middle schoolers are throwing away (and why). There is an interview/observation method for doing this that we will practice ahead of time. Your MRMS investigation will give you the data you need to understand what the problem is and how to tackle it. As teams you will create posters that show the data and propose solutions. You will share these posters and your ideas with the RCPS food service department. These are the same posters you’ll later share at the DSLCC Earth Summit in March. Your work is important and we appreciate your efforts.

Respectfully,
# Appendix B: Stop the Slop Presentation Poster Rubric

## Big Idea:
- This is a real project with **real audiences**.
- These audiences should be able to understand your poster **even if you are not there to explain**. That means you are creating a **poster that teaches** your audience.
- You will teach the audience by the **content** of what you say and what you show with graphs/photos.
- The overall **design** of the poster should also help get your message across.

<table>
<thead>
<tr>
<th>Written Content</th>
<th>Not yet at Standard</th>
<th>At Standard</th>
<th>Exceeds Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describes the US food waste situation generally and why it is a problem economically &amp; environmentally.</td>
<td>The description lacks specifics and/or does not explain the impact on food waste on the environment.</td>
<td>Includes research and statistics. Explains connection between food waste, landfills, methane, greenhouse gases and climate.</td>
<td>Also considers specific environmental impacts that occur throughout the food production cycle, not just at the end point.</td>
</tr>
<tr>
<td>Identifies MRMS as subject of the investigation and describes the audit purpose &amp; its process</td>
<td>The explanation of the process is incomplete</td>
<td>Explains the purpose of the audit and what ENV SCI students did to get their two kinds of data.</td>
<td>Also includes additional relevant detail and reflection on the process.</td>
</tr>
<tr>
<td>Identifies your team’s specific investigative question, explains what the specific poster data show and draws conclusions</td>
<td>Does not include your team’s specific investigation topic Does not explain how the data/graph supports your conclusion</td>
<td>You select relevant data for your team’s investigative question. You explain how the data supports your conclusion (your claim).</td>
<td>Additional data and interpretation support your well-reasoned claim/ conclusion</td>
</tr>
<tr>
<td>Makes recommendations of how RCPS or MRMS could reduce waste related to the data shared</td>
<td>Recommendations do not relate or refer to your specific study or its data</td>
<td>Recommendations relate to your specific topic and its data and could make sense for RCPS. There is some evidence of research.</td>
<td>Your team draws on outside research as well as your data to make a thoughtful proposal.</td>
</tr>
</tbody>
</table>

**Subtotal**

<table>
<thead>
<tr>
<th>Visual Content</th>
<th>Not yet at Standard</th>
<th>At Standard</th>
<th>Exceeds Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes at least 2 relevant graphs with titles</td>
<td>Graphs lack titles or values, or are unrelated to your poster’s topic</td>
<td>Graphs clearly support the focus of your team’s study</td>
<td>Poster includes additional helpful graphs.</td>
</tr>
<tr>
<td>Includes at least 2 relevant photos with captions</td>
<td>Photos are unrelated or missing</td>
<td>Photos connect to the content of your poster.</td>
<td>Photos contribute additional understanding to your text.</td>
</tr>
</tbody>
</table>

**Subtotal**

<table>
<thead>
<tr>
<th>Professionalism</th>
<th>Not yet at Standard</th>
<th>At Standard</th>
<th>Exceeds Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling and grammar are correct</td>
<td>There are many errors that undercut the professional effort of the poster.</td>
<td>There may be a few errors, but they are not distracting.</td>
<td>The text is proofread and polished.</td>
</tr>
<tr>
<td>Poster has a big title, identifies team members, school, class, date created, using subtitles, etc. as necessary</td>
<td>Many elements are missing.</td>
<td>All major elements are included</td>
<td>All elements are formatted in visually pleasing ways</td>
</tr>
<tr>
<td>Poster has a visually unified look</td>
<td>The poster design confuses or distracts the reader</td>
<td>The design gets the big message across</td>
<td>The poster has an attractive design that helps teach the main ideas</td>
</tr>
</tbody>
</table>

**Subtotal**

**TOTAL**
## Food Waste (lbs.) Data Sheet: Amount of Food Waste for gr. 6 & 7, Maury River Middle School

### Monday, Feb. 17, 2020

<table>
<thead>
<tr>
<th>Food Type</th>
<th>2nd PERIOD</th>
<th>5th PERIOD</th>
<th>TOTAL lbs. Tossed Today</th>
<th>% of Total of Today’s Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Ham &amp; Cheese</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheeseburger</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked Carrots</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potato Wedges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit (what kind)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| # Trays Audited    |            |
| Comments           |            |

### Tuesday, Feb. 18, 2020

<table>
<thead>
<tr>
<th>Food Type</th>
<th>3rd PERIOD</th>
<th>4th PERIOD</th>
<th>TOTAL lbs. Tossed Today</th>
<th>% of Total of Today’s Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef Steak</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn Dog</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mashed Potatoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Beans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit (what kind)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| # Trays Audited    |            |
| Comments           |            |

### Wednesday, Feb. 19, 2020

<table>
<thead>
<tr>
<th>Food Type</th>
<th>6th PERIOD</th>
<th>7th PERIOD</th>
<th>TOTAL lbs. Tossed Today</th>
<th>% of Total of Today’s Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taco with Scoops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken &amp; Cheese Quesadilla</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steamed Corn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refried Beans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit (what kind)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Type</td>
<td>Total lbs. Tossed</td>
<td>% of 3-Day Total Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Entree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Appendix D:

**FOOD WASTE INTERVIEW TALLY SHEET - Maury River Middle School**

<table>
<thead>
<tr>
<th>Food: Ham &amp; Cheese (2/17/20)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food: Baked Carrots</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food: Cheeseburgers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food: Fruit (TYPE: )</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food: Milk</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food: Potato Wedges</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason the food was not eaten</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Students who said this was the reason</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: HOW TO HOST AN EARTH SUMMIT

Purpose & Intent

• One-day conference geared towards high school juniors and seniors.
• Create an educational experience outside the classroom.
• Introduce students to what careers look like in environmental and sustainability fields.
• Give students a real conference experience with keynote speakers, breakout workshop sessions, networking, lunch, and more.

Bonus Details:

  o Focused scope such as waste reduction, agriculture, or renewable energy allows for depth and continuity of the event.
  o Planned networking activity gives students an opportunity to engage with adult professionals and practice this important career skill.
  o Partnering with a local community college also allows students to visit the campus, meet professors, and learn about program offerings.

Milestone 1: Venue & Selection

• Confirming a location and date should occur no less than 4 months in advance.
• Consider the basic health and safety factors such as school bus access, ADA accessibility, total group size, and bathrooms.
• Room Requirements: You will need a space(s) that can accommodate the entire group at one time for networking, keynote speeches, and lunch. For breakout sessions, divide into groups (typically 3) and move between different spaces. [Make sure those rooms can accommodate the divided group size]
• Technology, especially Audio/Visual is important when considering speakers and presenters.
• College campuses, civic centers or hotel/conference centers are good potential venues.

Milestone 2: Target Audience, Outreach and Registration

• Reach out to target audience (typically science teachers and science department heads.)
• Provide an invitation and basic description for the event. The earlier the better, as it takes time for field trips to be approved.
• Set the capacity of your conference and accept student registrations on a first come first serve basis. Have teachers provide you student names as well as any special needs or food allergies.
Milestone 3: Recruiting Presenters, Partners, and Picking a Theme

- Any one of these things may be the starting point.
  - You may have a presenter or keynote that you wish to build a theme around.
  - You may have a great partner organization that wants to sponsor the event if your theme connects to their work/mission.
  - Choose the theme first, then find the people.
- Typically, you are looking for three presenters and a keynote speaker.
- Coach presenters and discuss the content of their presentations to fit. Hands on and interactive activities are always preferred.

Milestone 4: Networking Ambassadors

- Once theme has been chosen, start recruiting ambassadors for the networking activity.
- The goal is to have between 16 and 30 ambassadors volunteer for an hour to interact with the students when they first arrive.
- Ambassadors provide an interesting fact about themselves that is put onto bingo cards.
- Student are tasked with discovering the matches without asking direct questions.
- Have students put their name on the cards and award prizes at lunch for best ones.
- It is fun to plan time for ambassadors to introduce themselves to the group and reveal their fact before introducing keynote. [Collect all student cards first]
- Recruiting and managing ambassadors is a good stand-alone activity that can be delegated.

Milestone 5: Budgeting

- Major line items include facility fees, food, giveaways, staff time, and transportation/substitute reimbursement for schools.
- Grants, in-kind donations, partnerships, sponsorships are all helpful.
- Hopefully speakers and key notes will also volunteer their time. [Consider Gifts]
- Lunch and other food/beverage ideas to consider
  - Student snacks and coffee/fruit/breakfast for ambassadors.
  - Delivery, using “green” food service methods, food allergies, and variety
  - Total numbers: students, teachers, your staff, presenters, other key facility staff.
- Planning and executing this event will involve several hours of staff time.

*Important Ongoing:* Communicate with all parties ongoing, but particularly in the last month leading up to the event day. Providing teachers with a schedule, address, directions for bus drivers, maps, etc. is important. The same goes for ambassadors, presenters, and your facility contacts. Ongoing and timely communications will ensure event success.
Milestone 6: Event Day Playbook, Roles, and Schedule

- Create the “playbook,” a detailed schedule with times slots that includes activities, locations, jobs, and people. [Using a spreadsheet works well here]
- Assign Roles: (arrange in advance)
  - Logistics leader – keeps time, directs traffic, and makes adjustments.
  - Content leader – connects with all parties, fosters relationships, attends all sessions, and is able to address the crowd and speak to the experience.
  - Group leaders - leads groups between workshops and ensures sessions conclude on time. Also manages or assists with registration, food set up, clean up.
  - Video person – schedule interviews with participants and organizers.
  - Photographer – captures key moments and candid photos.
  - Facility person- dedicated facility person on site to assist getting presenters settled when they arrive and handle other logistical needs.

- Signage, name tags, posters, giveaways and the like are a nice touch and should be prepared in advance.
- Sample Schedule (not the playbook, which contains time slots with more detail)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-10:00</td>
<td>Networking Bingo</td>
</tr>
<tr>
<td>10:00-10:20</td>
<td>Welcome &amp; Kick off presentation</td>
</tr>
<tr>
<td>10:25-10:55</td>
<td>Workshop Rotation 1</td>
</tr>
<tr>
<td>11:00-11:30</td>
<td>Workshop Rotation 2</td>
</tr>
<tr>
<td>11:35-12:05</td>
<td>Workshop Rotation 3</td>
</tr>
<tr>
<td>12:05-12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>12:30-12:55</td>
<td>Q &amp; A/Thank You/Closing Remarks</td>
</tr>
<tr>
<td>12:55-1:00</td>
<td>Students depart</td>
</tr>
</tbody>
</table>