*Appendix 3.c EECCOA **Waste** Challenge*

Project Builder Workbook

January 2024

About the EECCOA Challenge: This challenge provides students the opportunity to research, design and implement sustainability project proposals to reduce their school's utilities costs as well as the school's environmental footprint. This document was created with the intention to help students' teams develop and potentially implement projects focusing on reducing the waste production of your school campus. We hope you are up for the challenge!

The MERITO Foundation, sponsors and partners will award cash or in kind prizes to the students authors of the best 3 projects for each tier (energy efficiency, water conservation, waste reduction, or outreach regarding the Matilija Dam removal) in the spring of 2024, and will match funds to participating schools for part of the implementation costs of the most cost-effective project proposals.

This project builder workbook is for *WASTE REDUCTION tier*: *To design and propose a tangible method to reduce production of consumptive waste of your school campus,*

The deadline to turn in your project proposal to your teacher is _____
EECCOA Challenge Award Ceremony is scheduled for Monday, May 20, 2024
Below are the challenge guidelines to help you develop your project proposals in **6 STEPS** and worksheets to help you outline your project idea and methods.

STEP 1. Create a TEAM (5 Points): Your team must consist of minimum 3 and maximum 5 students. Include the name of your team, the name of your project, names of your team members, school, grade, your teacher's name. Fill in box below to start a project draft.

Team name:	
Project proposal name:	
Tier (Project Goal)	**To reduce the waste production of my school campus**
Team members names:	
School name:	
Grade:	
Teacher's name	

STEP 2. Conduct a WASTE AUDIT (also known as waste assessment) of your school campus *(20 possible points).* *To conduct the audit, follow the guidelines on lesson 2-10a of the EECCOA Activity Guide titled 'Consumption Waste Audit_Nov2017' (your teacher has a copy), or the summarized version in pages 2 and 7&8 below.* The aim of the waste audit is to measure the weight and types of waste produced by your school in one day. It is an integral part of a proposal to enter the EECCOA Challenge in the tier of school waste reduction. Waste is collected, sorted, and weighed by students, teachers, and other helpers. The data collected will help you measure the effectiveness of your proposal. The audit should be carried out prior to your proposal to reduce waste and in the proposal, you should indicate the audit will need to be conducted again to measure the reduction levels achieved.

Materials Needed for a Waste Audit

- School trash from classrooms, common areas, and lunchrooms
- Recycle bins and trash bags
- Spring scales or other scales
- Ground Sheet -tarps or some sort of floor covering in which to spread out waste per group
- Rubber gloves

Procedure for a School's Consumption Waste Audit:

1. Collect all trash and recycling in teams from throughout the school – remember to enlist the help of the custodial staff. Safety is the most important.
2. There are two worksheets to complete, the waste audit recoding worksheet and the waste audit school total worksheet. **Both sheets are pasted in last 2 pages of this document**.
3. Analyze the results and report the findings to the school community.
4. Formulate an action plan and be sure to monitor and evaluate along the way.
5. Keep this report with your records. This information will be needed when developing your proposal to the EECCOA Challenge, when applying for awards, and when communicating with the community and members of the media.

Note: Proposals that show graphs of the data collected with averages, maximum and minimum waste production receive extra points.

STEP 3. Choose your project's SMART objective(s) 'THE WHAT': *(15 possible points)*

Now that you have an assessment of the waste produced at your school and understand the present condition, ask yourself, **What do you want to modify? 'How much waste can we reduce or prevent from going to the landfills? By when? Then ask yourself, is it doable? The answers to these questions in one or a few sentences are your objectives!**

Examples of SMART objectives for waste reduction:

a. To reduce the plastic waste production of our school campus by X plastic bottles per month by installing X water fountains with filters throughout the school and providing X as incentives for students to use recyclable water bottles;

b. To reduce cafeteria waste by % by compositing % of non-animal waste through a X system by month/year, and establishing a waste free lunch day every X of the (week or school year)

c. To reduce by X% the waste production of our school campus by installing recycling program throughout campus for X, Y & X types of waste by X (weeks or months) after project is implemented.

Write below your objectives to be specific on what you want to change, how much, how and by when. These are called SMART Objectives!

SMART Objectives:	Are sentences that say what you want to modify. They are **Specific** (i.e. how much plastic, solid waste or food waste). They are also **Measurable** (i.e it says how much waste is produced and propose to reduce and of what kind? How many pounds per day, week, month or year); They are **A**ttainable; Is it doable? Can it be done?; They are **R**elevant to the goal of reducing **waste**. And are **T**ime bound. That is, if the proposal is to be implemented, by when?
#1	
#2	

Note: Your project proposal can have one or multiple SMART objectives

STEP 4. Design your project's METHODS. This is 'THE HOW' *(25 possible points)*

The project methods are the details of **how** your team proposes to reach your project goal to reduce the waste production assessed in STEP 2, to make the specific change as described in your objectives in STEP 3. Now think and describe HOW (step-by-step) you propose to make the change(s) happen. Provide as much detail as possible about your recommended approach, methods, materials, and costs. Including a budget is very important!

Waste reduction project example:

Sample Goal*: To reduce the school's waste production*

Sample Objective: To reduce the plastic waste production of our school campus by reducing the waste of X plastic bottles per school day (or Y bottles per school year) by installing Z water filling stations with filters at N strategic locations within the school and providing incentives for students to use recyclable water bottles by end of school year.

Sample methods:

- Calculate how many plastic water bottles are disposed of per day, per week and per school year by conducting waste audits across the school campus on different days and calculating the median of the results. Calculate what percentage of the total school waste are the plastic bottles (in weight and/or volume of waste).
- Obtain from your school administration information of how much the school pays for waste collection, how many pounds or cubic yards in average are hauled out.
- Calculate how many water bottles can be filled with water fountains; How many water fountains would you need in the school to fill up X bottles per day, what is the cost of each filling station including installation.
- Observe where would be more convenient for students to have filling stations. Show where to install the stations in a school diagram or map indicating positioning of the stations.
- Be as specific as possible in your methods. You may want to include current cost of hauling the plastic, cost per students spent in plastic water bottles per school year in average, cost of the stations, estimated costs of reusable water bottles the school can sell, or the PTA, and how much they can profit from the sale to recover the cost of stations.
- Show all the information collected using tables, graphs, photos, etc.

Note: The above is only an example. You can use the methodology as an example and modify as needed.

Write below you methods one by one, any costs involved in middle column, and benefits, profits or cost reductions in the far right column.

Methods:	**Costs ($) of the project**	**Benefits of project (financial and environmental)**

STEP 5. Figure out how to measure your project's effectiveness. This is called project EVALUATION *(10 possible points)*

This is where you describe how to determine the success impact of your project proposal after it is carried out. Imagine it happens and all that you propose is conducted. How would you measure that the changes from the actions you proposed (in the methods section STEP 4) actually occur?

Example:

	Write here how would you be able to see or measure that X less plastic bottles ended up in the trash cans after implementing your proposed ideas
Examples of evaluation measures	-We will know our proposal works by seeing a reduction of X of plastic water bottles in 3 waste assessments conducted one day, one week and one month after filling stations are installed, and economic recyclable bottles are sold -The school will also pay Y% less in the waste hauling bill per month
Write your evaluation measures here	

You can have more than one evaluation measure, and more than one may be more reliable and convincing of the value of your proposal.

STEP 6. Outline a COMMUNICATION plan for your proposal to let others know of your project, actions, and/or to persuade your audience to change certain behaviors *(25 possible points maximum).* Examples (tiered from highest to lower scores):

- Present your proposal at a meeting of your school district's board, a City Council meeting or a PTA meeting of your school (25 points)
- Create a campaign to build awareness of your project, the impacts of plastics on wildlife or be more adventurous and cite information authored by credible sources on impacts of plastics on public health. Your campaign can include using social media, websites, flyers, presence at a festival, etc. (15-10 points)
- Just indicate in your proposal that you will report the average volume of plastic bottles reduced and money savings to your fellow schoolmates, teachers and administration (5-10 points)

	Write here how you would communicate to a community (school district board, school campus, or a whole town) about the success of your projects (when implemented)
Method #1:	
Method #2:	

You do not need to reinvent the wheel! Below are on-line resources with examples or for inspiration.

Create a school-recycling program: http://vrarecycles.org/Portals/0/documents/Catch_the_cycle.pdf

Sample consumption and waste audit (PDF): https://www.nwf.org/-/media/PDFs/Eco-schools/Audits/Consumption--Waste-Audit2012.ashx

Washington School Food Share Program Toolkit: https://www.epa.gov/sustainable-management-food/washington-school-food-share-program-toolkit

Green Ribbon Schools (GRS) award program:
Use the GRS application as an assessment tool to strengthen your team's efforts.
http://www2.ed.gov/about/inits/ed/green-strides/index.html
greenribbonschools@cde.ca.g

Check our other EECCOA students' projects winners of prizes at
https://meritostaff.wixsite.com/eeccoachallenge/2023-winners-and-their-projects or
https://www.youtube.com/user/MERITOAcademy/playlists

PROJECT PROPOSAL FORMAT: The project proposals should be presented as verbal (oral) presentation using Power Point, Google slides or Sway. Presentations must last 5 minutes maximum per team. Submit the ppt or pdf to your teacher on the date provided by her/him/them. We will collect all proposals from teachers. Students can produce their own videos if they want and are encouraged. We will provide 5 extra points for teams who record their own video and embed the slides into the video.

A successful project proposal needs to include all 6 steps above described. This how much each step is worth:

1. Project summary with name of team, project title, authors (students names), school name, and teacher's name: 5 points
2. Assessment/audit results: 20 points
3. Objective(s): 15 points
4. Methods (including any costs and budgets): 25 points
5. Evaluation method(s): 10 points
6. Communication plan: 25 points

For guidance or use of waste audit materials, please contact info@meritofoundation.org

MERITO Foundation's Waste Audit Recording Sheet for proposals that enter the EECCOA Challenge

Area of school	Paper (lbs)	Contami-nated trash (lbs)	Card-board (lbs)	Plastics (lbs)	Metal (lbs)	Glass (lbs)	Food waste (lbs)	Other Such as Styrofoa m (lbs)	Total (area)
Example: Classroom 1	0.44	0.31	0.18	0.09	0	0	0.22	0.09	1.83

Waste Audit School Total Worksheet

Material	School Total (lbs) per day	School Total (lbs) per week (x 5 days)	School Total (lbs) per year (x 38 weeks)	%
White paper				
Contaminated trash				
Cardboard				
Plastics				
Metal				
Glass				
Food Waste				
Other (i.e. Styrofoam)				
TOTAL				100 %

NOTES:

Summarize the results from data collection: