Reduce, Recover & Recycle Food Waste

Sustainable Jersey Toolkit for PreK-12 Schools

Acknowledgments

The *Sustainable Jersey Toolkit for PreK-12 Schools to Reduce, Recover & Recycle Food Waste* is the outcome of a collaborative project by Sustainable Jersey and Rutgers Cooperative Extension. The project studied the efforts of three New Jersey public schools to reduce food waste and increase food waste reuse, while also promoting healthy food and addressing food insecurity. The three participating schools were Halsted Middle School in Newton, George L. Catrambone School in Long Branch, and Delran Middle School in Delran. Each school was awarded a grant to apply towards the purchase and installation of a commercial food waste composter. The stories and resources shared by the schools throughout their food waste journey in the 2021-2022 and 2022-2023 school years have been captured in this toolkit.

This toolkit was designed to build upon the State of New Jersey's School Food Waste Guidelines K-12 Edition and to connect with Sustainable Jersey for Schools certification actions. The toolkit highlights the Sustainable Jersey for Schools actions that correspond to the food waste reduction practices presented.

Sustainable Jersey for Schools is a certification program for pre-kindergarten to 12th grade public schools in New Jersey. It was launched by Sustainable Jersey, an organization that provides tools, training and grants to support and reward municipalities and schools as they pursue sustainability initiatives. Visit the Participating Districts and Schools webpage to see the list of participating and certified schools.

Rutgers Cooperative Extension has a Food Waste Team that does research; curriculum development; staff training; and audits, analysis and reporting of food waste to help schools reduce food waste and address food insecurity.

Funding for the project was provided by the New Jersey Department of Environmental Protection, through its Bureau of Sustainable Waste Management.

Cover images were provided courtesy of Delran Middle School (compost collection bin) and George L. Catrambone School (all others).

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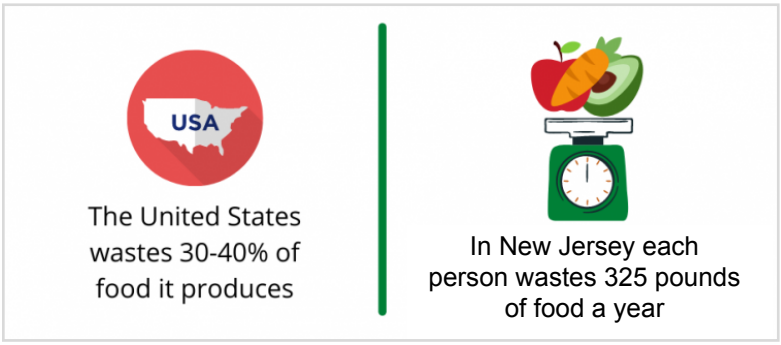
The Case for Reducing Food Waste

Food Waste Statistics

Approximately one-third of food produced globally is wasted every year (1). In the United States, about 30-40% of the food supply is wasted annually, an amount that was valued at $161 billion in 2010 (2). In New Jersey, it was estimated in 2017 that about 22% of solid waste produced consists of food waste, with each person wasting around 325 pounds of food in a year (3). Schools are a major contributor to food waste totals. The World Wildlife Fund calculated food waste in U.S. schools to equal about 530,000 tons (or 1.06 billion pounds) of food each year (4). During a pilot study conducted by Sustainable Jersey and Rutgers Cooperative Extension, food waste during lunch was measured at three New Jersey schools: Halsted Middle School in Newton, Delran Middle School in Delran, and George L. Catrambone School in Long Branch. An average of 115 pounds of food was wasted each day, which was estimated to equal about 20,700 pounds of food waste every school year.

Food waste in USA, image generated in Canva.



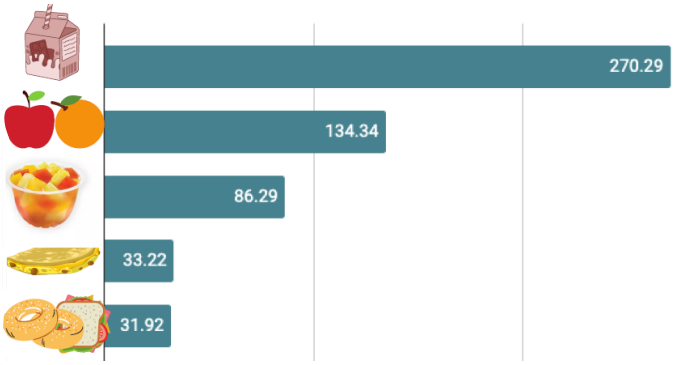
Food waste is a global problem, with negative environmental, economic, and social impacts. Food is wasted at every level of the supply chain, from farms to tables. In efforts to reduce food waste, the United States Department of Agriculture (USDA) and the Environmental Protection Agency (EPA) implemented a food loss and waste reduction goal in September 2015, calling for a 50% reduction in food waste by 2030. New Jersey implemented legislation, Bill S3027, to reduce municipal solid food waste by 50% come 2030.

Environmental Impacts

According to the EPA, food is the greatest contributor to landfills and combustion facilities. When food goes to landfills, it is unable to break down properly and produces a harmful greenhouse gas called methane. Methane is 86 times more potent than carbon dioxide. The amount of methane in our atmosphere has doubled over the past two centuries and around 25% of manmade global warming is being caused by methane emissions (5).

Not only is food waste harming our atmosphere and contributing to climate change, but it is also causing valuable resources to be wasted. In fact, over 25% of freshwater in the United States or over 45 trillion

gallons of water is being wasted each year (6). When food is wasted, the water and energy used to produce the food is also being wasted. Food systems utilize about 30% of the global energy available; 38 percent of this energy is used to produce food that eventually is wasted (7). To get a better understanding of how much energy and resources are being wasted, we can look at dairy products. In the United States, around 24.4 billion pounds of dairy products alone are wasted annually. The energy that is used to produce this amount of dairy products each year could equal the entire world's energy needs for one day (8). Our waste audits found that a lot of milk is thrown out in school cafeterias!



Top Five Items Wasted (lbs) in 2021 at George L. Catrambone School, Long Branch

Food Insecurity

While 80 billion pounds of food is being wasted annually in the United States, about 37.2 million people are living in food insecure households where there is a lack of regular access to sufficient safe and nutritious food (9). It has been found that, nationally, public school cafeterias produce about 36.5 pounds of food waste per student every year (10). The large amount of food that is being wasted could be used to provide nourishment to the families in need. In 2019, the USDA estimated that about 762,530 people in New Jersey were experiencing food insecurity, including 192,580 children (9). Children experiencing food insecurity often struggle with social and behavioral problems which affect their academic performance and ability to concentrate (11). Schools have the unique opportunity to use excess food to feed students and families in need and contribute to the wellness of their students.

Impact on School Budgets

Reducing food waste provides an opportunity for schools to reduce their trash disposal costs. In New Jersey, trash disposal fees average to about $80 per ton (12). The World Wildlife Fund estimates schools produce about 530,000 tons of food waste annually in the U.S. It can cost up to $9.7 million per day or $1.7 billion each school year to manage this amount of waste (13). Reducing the amount of food waste that needs to be disposed of will lower the amount of money being spent on disposal. Instead of disposing excess food, alternatives should be considered such as redistribution of food within the school, food donations, and composting food scraps. Recycling costs are often lower than trash disposal costs (14). Therefore, schools that take the initiative to increase recycling of food-related waste, such as paper and plastic products, can see a decrease in trash disposal costs. School-recycling programs provide students with the opportunity to learn about sustainability and provide the district with the opportunity to save on trash disposal costs.

Regulatory Environment Impacting Food-Related Waste

New Jersey has implemented legislation to help reduce the amount of food waste that is being sent to landfills. In October 2021, New Jersey implemented legislation requiring food waste generators that produce an average volume of 52 tons (114,640 pounds) or more of food waste annually, and are within 25 miles of an authorized food waste recycling facility,

to separate and recycle food waste (15). The three schools in the pilot study conducted by Sustainable Jersey and Rutgers Cooperative Extension generated an estimated total of more than 62,000 pounds of food waste in a school year. Though schools may not yet be required by law to reduce their food waste, they are motivated to take action by the many compelling reasons outlined in this section. Furthermore, schools should consider the non-food waste associated with school meals, such as plastic and paper products. Beginning in May 2022, New Jersey implemented a ban on single-use plastic bags and polystyrene foam food service products, and required all food service businesses to offer plastic straws by request only (16). This ban should decrease the amount of non-food waste from food service providers including schools.

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Audits: Getting Started to Reduce Food Waste

Who's Involved

Action Connection

Green Team - Convene a team to coordinate the school's sustainability program, including food waste reduction. Pre-existing groups, such as a wellness council, may serve as the green team.

Reducing food waste in schools should be a collaborative team effort. It provides an opportunity to engage the entire school and get everyone involved, from the administrative staff to students. Establishing a designated food waste team to lead initiatives can provide organization and direction for the entire school. The food waste team should consist of administrators who are familiar with the district's operations and can act as liaisons with recycling facilities and local food rescue organizations. This food waste team should also include teachers who can provide students with engaging education, food service staff who will play an active role in cafeteria initiatives, and students who are interested in learning more about sustainability.

Including students who express interest in food waste reduction is a great way to encourage student leadership. Getting students more involved in the composting process can help to decrease the additional workload for custodial staff. For example, at Lake Riviera Middle School, student volunteers from the Science Club and National Junior Honor Society transported food waste from the cafeteria to the composter. (1).

Delran Middle School formed a green team that got faculty and students involved in tackling food waste reduction. The green team Leaders were classroom educators; other members of the team included the principal, supervisor of sustainability, superintendent, facilities director, head custodian, food services director, Delran Municipal Green Team members, and students.

Recruiting Students

Students were recruited after the administration and staff portion of the green team was formed. In science classes, a presentation was given to students about food waste and the actions DMS is implementing to decrease it. At the end of the presentation, students were encouraged to become Food Waste Warriors. They signed up by scanning a QR code that led to an Interest Survey. Students were further incentivized with a special badge to be first in line for lunch so they can help fellow students at the new food waste stations towards the end of lunch. There was also a prize, supported by the PTA, for the students who got involved. The presentation and incentives were effective in getting students on board. 100 students got involved with Delran's Green Team, which was over 12% of the school's students.

Delran Middle School's Food Waste Warriors poster for student involvement

Troubleshooting and Streamlining

Many measures were implemented for the overall initiative, including education and separation and composting of cafeteria food waste. There was full participation at the start of the project but by the end of the year participation had dropped off by about half. Custodial and food service staff saw the changes as additional work. Streamlining the collection of the waste, purchasing additional bins, and emptying them at the end of the day, allowed custodial staff to do the food waste tasks just once a day. To minimize kitchen sink clean-up work, food service staff placed colanders in the liquid collection bins to avoid the solid matter from going into the drain. They also installed a garbage disposal in the sink that the liquid was being dumped into, to effectively get rid of any solids that may have strained through.

Green Team Leader and teacher, Erica DeMichele, and Food Waste Warriors at the compost station

Pre and Post Surveys

Before starting a program to measure and address food waste, it is advisable to survey the students and staff in the building to gain insight about their knowledge and attitudes about food waste. Survey responses can point out areas where additional education may be needed or opportunities for interventions to reduce food waste. The same survey may be administered after a food waste reduction program is underway to gauge if the program has changed knowledge and attitudes. Sample pre- and post-intervention surveys are provided (2) as word documents.

Measure Food Waste

Action Connection

Waste Audit **-** Conduct an audit of cafeteria waste that includes tray waste from the school's meal service.

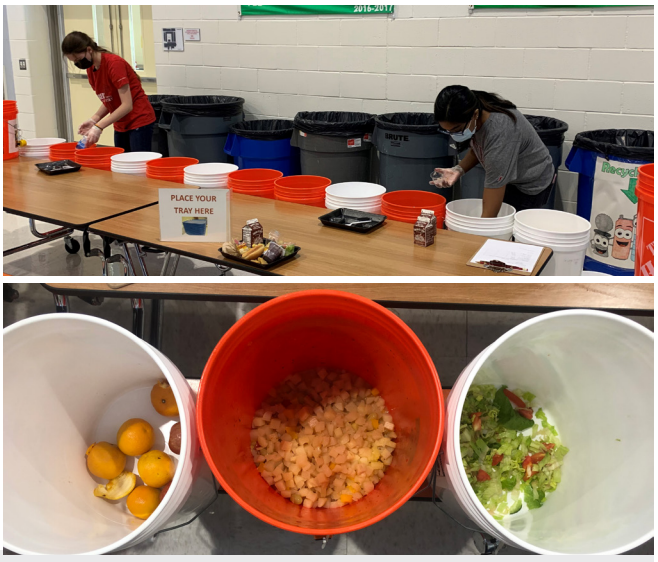
Gaining an understanding of how much food is being wasted regularly is an essential first step in reducing food waste. Audits give the opportunity to see first-hand how much waste is being generated daily. Students and staff can work together in conducting food waste audits in the cafeteria. It is recommended to conduct the first food waste audit toward the beginning of the school year, a second audit near the middle of the year, and a third towards the end. This will lead to a comprehensive report on how much food waste the school typically produces and how effectively the school was able to decrease food waste over the span of the year. There are different methods for measuring food waste and different sources of food waste. Measuring tray waste and kitchen waste provides data that can be applied to changing practices in the school meal service. Measuring waste from packed lunches provides data that can be shared with families to address food practices at home. Measuring food packaging waste can inform campaigns to enhance recycling and reduce use of single-use items in the cafeteria.

Tray Waste

Measuring waste from served school meals calls for a system that can handle the waste of the number of meals served and that can quantify the waste from different meal components. One suggested method to conduct a tray waste audit that was implemented by Rutgers Cooperative Extension and Sustainable Jersey can be found here (3).

The main steps for a tray waste audit are:

1. **Plan** - Decide when and where the audit will take place and collect all the supplies needed - scales; 5-gallon buckets, labels for the buckets for each component of the school meal (entree, fruit, vegetable, milk, etc), tally counters, scales, and tracking sheets.
2. **Assemble a Team** - Gather everyone who will be involved in the audit and train the team on procedures. Explain the purpose and procedure of the audit to food service and custodial staff and discuss how trash will be handled during the audit.
3. **Measure Waste** - Set up the food waste audit station with buckets for each lunch period. Record the weights of the empty buckets (tare weights) and attach a tally counter to each. Ensure that garbage cans are inaccessible to students so that all waste is brought to the audit station. Separate waste from each tray into the proper buckets, tallying each addition. At the end of the lunch period, record the weight and number tallied of each bucket into the data tracking sheet. See the Rutger's data sheet as an example (3).



George L. Catrambone School's food waste audit station in the cafeteria

4. **Analyze & Take Action** - Compile the data collected and analyze the amount of total waste and the amount of the different meal components. Take action by making a waste reduction plan!

Visual Assessment of Tray Waste

Tray waste could also be measured using a visual method, such as the method outlined in EPA's *A Guide to Conducting and Analyzing a Food Waste Assessment* (4) on page 13. Weighing food waste provides the most accurate measurement but it takes more time and requires some equipment and supplies which may need to be purchased. Visual methods to measure food waste can be done quickly with few materials and can provide good approximations of the amount of food being wasted. The quarter-waste method (5), with 90% reliability, was found by Cornell University to be the most accurate visual assessment method. With this method, the amount of food remaining on a student's tray is estimated and recorded as ¼, half, ¾, or none of each food item that was served. If the weight of each meal component on a full tray is taken, the recorded fractions for each student tray can then be used to calculate the weight of food being wasted. The steps are outlined below. For more detailed guidance go here (5).

Visual Assesment: Quarter-Waste Method

1. Set up a data collection sheet that includes each food item being served and a full tray in the first column. Each of the following columns will note individual trays from students.
2. If you have access to a scale, weigh each food item.
3. Those collecting the data should make themselves familiar with the portion sizes being served.
4. Set up a tray collection station. This can be a table where students are instructed to bring their trays when they are done eating. It is best to move any garbage cans near this station to avoid students forgetting about the assessment.
5. For each tray, estimate how much food was wasted.
   - 0 = none wasted (nothing on tray)
   - 1 = ¼ wasted
   - 2 = ½ wasted
   - 3 = ¾ wasted
   - 4 = all wasted (nothing eaten)

Smarter Lunchrooms Movement

Tray Waste Data

Each numbered column signifies one tray. Indicate in the corresponding row how much of each food item remains:
0 for none wasted
1 for 1/4 wasted
2 for 1/2 wasted
3 for 3/4 Wasted
4 for all wasted
If the student did not select the item being measured leave the corresponding cell empty

Date: *December 10, 2013*

Wasted Food Item	Measured Weight (oz)	1	2	3	4	5	6	7	8	9	10	11	12
Entrée #1: Baked Chicken	*3oz*	*1*			*0*			*2*	*2*	*2*	*4*		
Entrée #2: Spaghetti	*3oz*		*2*	*1*		*4*	*3*					*1*	*2*
Vegetable Side: Green Beans	*4oz*	*1*		*1*	*4*	*0*	*4*	*0*	*2*		*2*	*2*	*2*
Fruit Side: Apple	*4oz*	*4*		*3*	*0*	*3*		*1*	*2*	*1*	*2*	*1*	*2*
White Milk	*8oz*	*0*	*2*		*4*	*4*	*3*		*0*	*0*	*0*	*1*	

Quarter-Waste Method Example Spreadsheet, Healthy Food Choices in Schools (5)

The data collected during a school food waste audit is very valuable; it tells not only how much total food waste is being generated each lunch period but also which items are being wasted the most or the least. It is important for students and staff to gain school-specific knowledge to understand how best to approach food waste reduction efforts and set a plan that will be effective. The school cafeteria can adjust its offerings accordingly to prevent wasted food. Prevention is the most preferred approach in the Environmental Protection Agency (EPA) Wasted Food Scale (6).

Student Feedback Surveys

To supplement waste audit data, students could be surveyed on the day of the audit to find out why food was not eaten. The survey can serve as an opportunity for students to share their thoughts about their cafeteria and school meals. Valuable information, such as why students are wasting a specific food, can be obtained. Here is a sample survey from Delran Middle School.

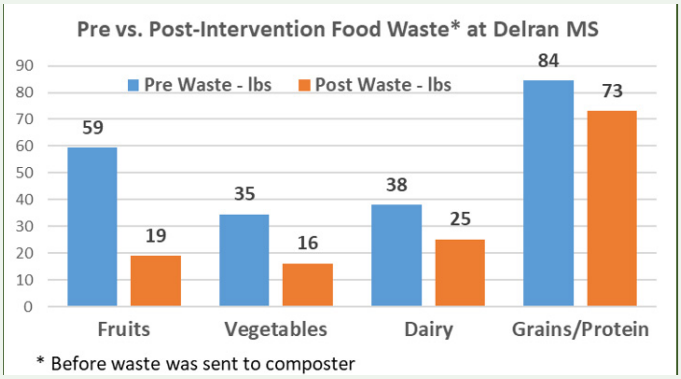
FOOD ITEM #2: What type of food, from your school lunch, did you throw away today? List first item only	FOOD ITEM #2: Why did you throw it out? Loss Reason example: "I didn't like it" is not enough detail.	FOOD ITEM #2: Do you have ideas for how to not throw this food item away in the future?
Entree	I threw it out because there was nothing on it	do not waste food
	I don't throw away my food	I don't throw away my food
Vegetable	i despise green beans	no
Other	I always finish most things maybe not the french fries but I've already listed that.	Nothing else thrown out.
Other	I also finished eating this.	Its also a plastic wrapper.
Milk	I couldn't finish it in time, sad.	GIVE ME MORE TIME TO EAT
Vegetable	I didn't like how it tasted	Don't get it the next time.
Other	I didn't have time to eat it	make lunch longer.
Other	It was mushy	get something different

Student responses to Delran's food waste survey on the day of the audit.

Spotlight: Food Waste Audits at Delran Middle School

The Delran Middle School's green team joined Sustainable Jersey and Rutgers Cooperative Extension to conduct a food waste audit in October 2021. This audit was done over three days during the lunch periods. Over the three-day audit, a total of 216 pounds of food was thrown out - 59 pounds of fruits, 35 pounds of vegetables, 38 pounds of dairy products, and 84 pounds of proteins and grains were wasted. To gain some insight on contributing factors to food waste, students engaged in a survey to share their opinions on the food being served. As a result of these surveys it was found that students were running out of time to finish eating their food and some students found certain meal options to be bland or not served at the expected temperature. Increasing the lunch period by 10 minutes can reduce the amount of plate waste by 30% (7). Getting this feedback helps administrators better plan meals and understand some of the factors that are contributing to food waste in their school.

In October 2022, a year after the first audit and interventions to reduce the school's food waste, another three-day audit was done. Over three days about 19 pounds of fruit, 16 pounds of vegetables, 25 pounds of dairy products, and 73 pounds of protein and grains were wasted*, a total of 133 pounds. Overall, the amount of food wasted* during the post-intervention audit was approximately 83 pounds less than food wasted during the pre audit, a reduction of almost 40%. (**Please note that at the time of the post-audits, Delran Middle School was composting food waste. So, the food waste was being composted and not "wasted."*)



Waste From Packed Lunches

Zero Waste Packed Lunch, Canva Pro image

Making an effort to reduce waste from home-packed lunches and snacks can help reduce the overall food waste at your school. In performing audits of food waste from home-packed meals, the waste from these meals should be collected and tallied/weighed separately from the waste from school meals. The results from an audit of home-packed meal waste can be shared with students and families to encourage waste-reduction practices when packing lunches and snacks. Informative handouts can also be sent home to parents with some suggestions on reducing waste such as packing "zero-waste lunches" by using reusable containers like reusable water bottles and snack bags and packing appropriate portion sizes (8). The EPA offers Waste-Free Lunch activities (9) that can be utilized at your school to help reduce waste coming from home-packed lunches.

Kitchen Waste

Vegetable scraps, Canva Pro image

It is important to recognize that food waste also occurs in the kitchen before it is even served to students. Kitchen waste may be measured by asking food service staff to place all kitchen food waste into five-gallon buckets and then weighing the buckets at the end of the meal service. Cafeteria staff can also be asked to reflect on the reasons behind the waste. More information on measuring production-side waste can be found here (10).

Packaging Waste

Food packaging waste, Canva Pro image

In addition to food waste, food-related packaging waste should also be acknowledged. According to the EPA, containers and packaging contribute over 23% of the materials contributing to landfills in the US (11). One source of commonly discarded containers and packaging is food-related packaging.

A study in Northern Colorado looked at how much food-related packaging waste accumulated during lunch time and found that common packaging waste consisted of cardboard boxes, aluminum cans, parchment paper, plastic bottles, clamshells, milk cartons, styrofoam trays and bowls, paper food boats, aluminum foil, and paper napkins (12). The EPA has developed a Food and Packaging Waste Prevention Tool (13) to help food service operations identify waste patterns. Understanding these waste patterns is a necessary step to reduce overall waste at your school. To perform an audit of packaging waste, add buckets or bins to collect packaging waste, separating recyclable materials per your municipal/county recycling collection program. Contact your local municipal or county recycling coordinator (14) for information.

Make a plan to reduce waste at your school

After conducting a food waste audit to understand how much waste your school is producing and what factors are contributing to food waste, students and staff should be informed on the current state of waste occurring at your school. Using visuals like graphs and charts can help share findings clearly and call attention to the amount of food waste coming from your school. Examples of informative visuals that were created to reflect food waste audits conducted by Rutgers Cooperative Extension and Sustainable Jersey in October 2021 are provided from Delran, Halsted, and George L. Catrambone schools. The results of the audits should be used to identify opportunities to reduce waste in different areas of the school. Changes can be made in the cafeteria, the kitchen, classroom meals, meals from home, and out of school activities. Progress should be monitored by taking note of changes in practices related to food waste through visual observations, surveys, and additional food waste audits. Sharing what is learned with the community can celebrate improvements and motivate further change.

Spotlight: GLC's Food Waste Reduction Strategy

Fourth grade students working on a food waste reduction activity

George L. Catrambone (GLC) School's success in waste reduction can be tied to their dedication to education and promotion of active participation. Students in all grade levels were given food waste reduction lessons where they learned how to decrease their waste, what items they could compost, how to properly recycle, and how the school's share tables work. After gaining a better awareness of food waste, they became active participants in efforts to reduce it. Jobs assigned to students included: helping to collect recyclables, supervising the sorting of food scraps in the cafeteria, collecting items for the share tables, and monitoring garbage, recycling and composting bins. Students on the Food Waste Warrior Team were encouraged to teach younger students how to help.

Education was not limited to students. The GLC Food Waste Team worked to keep the entire school community informed. This included making sure the food service staff was aware of the Offer vs. Serve policy (15) so students were not required to take food they would not eat. Additionally, signage about food waste, composting, and recycling was increased throughout the school. By successfully keeping students and staff informed and involved, GLC was able to make notable reductions in food waste.

Resources

Guide to Conducting Student Food Waste Audits (2017) - A detailed guide on measuring tray waste from school meals, produced by USDA, EPA and University of Arkansas. https://www.epa.gov/sites/default/files/2017-12/documents/guide_to_conducting_student_food_waste_audit_-_nov_20_2017.pdf

ReFED Impact Calculator - A tool to calculate the impact of amounts of wasted food on the climate, natural resources, lost meals, and the economy. https://insights-engine.refed.org/impact-calculator

Other resources are listed as References.

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Food Service Best Practices To Reduce Cafeteria Waste

Action Connection

Food Service Training & Best Practices to Reduce Food Waste - Train food service staff and implement food service best practices to reduce food waste in the cafeteria.

Who's Involved

- Personnel who make decisions about:
  - School budget
  - Food purchase and service
  - School day schedule
  - Staffing
- Personnel who engage with students
- School board members
- Business administrators
- Superintendent
- Principal
- Food service director
- Teachers
- Parents
- Students

Food Service's Role in Food Waste Reduction

Plans to decrease food waste must include educating the food service staff who will be part of making the plan a reality. Kitchen staff should be aware of which food scraps can be composted rather than thrown out and should be trained on food waste prevention. Overproducing food is the leading cause of wasted food in foodservice operations (1). Producing food in smaller batches throughout each lunch period rather than big batches should be considered. Proper planning is essential to prevent over-purchasing food. The United States Department of Agriculture (USDA) Food Buying Guide (2) for child nutrition programs is a great resource to help schools purchase an appropriate amount of food to avoid excess that would go to waste. It is a good idea to have a conversation with your food vendor to let them know you are aiming to reduce food waste. Other things to consider are storing foods at proper temperature to prevent spoilage and rotating your stock to ensure that the older ingredients are being used first.

Smarter Lunchroom Movement Strategies

Cornell University's Behavioral Economics and Nutrition Center developed the Smarter Lunchroom Movement, a national movement based on several strategies that have been proven to increase students' intake of healthy foods. Applying the Smarter Lunchroom Movement's strategies or nudges should increase students' intake of healthy

foods at lunch time and will reduce the amount of food being wasted. Key strategies are outlined below. View the Smarter Lunchroom Movement Strategies Handbook (3) for detailed guidance and additional strategies to try.

Pre-sliced fruit & vegetables

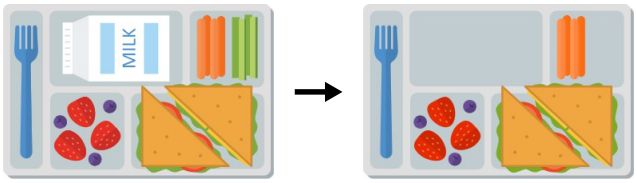
Pre-sliced vegetables and dip offered at Delran Middle School

- Offering sliced fruits can increase consumption by over 70%.
- Offering fruits in a colorful bowl rather than a stainless steel container can double the amount of fruit selected.
- Giving vegetables a fun name can increase consumption by over 30%.

Offering dips & spice bar

- Pair vegetables with a low-fat dip such as ranch, hummus, or salsa.
- Offer self-serve spices and seasonings to give students the option to add additional flavor.

Offer vs Serve (4)



- The USDA's offer versus serve guidelines allows students to decline some of the food being offered in their reimbursable breakfast and lunch. The breakfast program requires students to take three of the four food items offered as long as one of the three items is ½ cup of the fruit or vegetable. For the lunch program, all five required food components must be offered and students are required to take at least three of the five components as long as one of the selected components is ½ cup of the fruit or vegetable offered.

Recess before lunch

- Having recess before lunch can increase consumption of fruits and vegetables by 54% (5).
  - Halsted Middle School in Newton has discussed using a rotating recess schedule that changes each marking period. This would allow for some grades/classes to have recess before lunch in one marking period and other grades/classes to have recess first in the next marking period.

Additional time for lunch

- Increasing the lunch period by 10 minutes can reduce the amount of plate waste by 30% (6). A study conducted by the Harvard School of Public Health indicated that giving students more time to eat led to a 13% reduction in entree waste, 12% reduction in vegetable waste, and 10% reduction in milk waste (7).

Offer taste tests

- Another method to alter the foods offered in the cafeteria in efforts to reduce waste is to hold taste tests a few times a year. Students can sample new food items and provide their feedback on which items they liked or disliked. FoodCorps' *Taste Test Guidebook* (8) includes recipes and methods to engage students in taste-testing activities. .

Student Involvement

- Offer student volunteer opportunities in the cafeteria.
- Seek student feedback on menu items and involve them in creating appealing menus.
  - As an example, here is a survey used by Delran Middle School to get feedback on why students were throwing out food. Students were asked to fill out the survey in their classrooms, right after lunch.

FOOD ITEM #1: What type of food, from your school lunch, did you throw away	FOOD ITEM #1: Why did you throw it out? Reason example: "I didn't like it" is not enough detail.	FOOD ITEM #1: Do you have ideas for how to not throw this food item away in the future?
Fruit	It was the peel of the fruit.	No
Entree	I didn't have enough time to finish	talk less and eat more
Entree	I don't like the tacos	no
Other	no waste	no waste
Entree	I threw out some of my taco because the taco meat tasted weird and I was full.	Make real taco meat

Delran Middle School used a Google form to collect survey responses. This chart shows some of the responses.

Spotlight: GLC's Cafeteria Changes

George L. Catrambone School has made many changes in their cafeteria to promote better waste practices.

- Recess was scheduled before lunch for as many students as possible - four of the six grade levels.
- The cafeteria now has waste collection stations for compostables and milk carton recycling stations. These stations have an area for students to pour out left over liquids so all recyclable containers can be recycled.
- There is an effort to have clearly labeled recycling bins in all classrooms, staff rooms, and the cafeteria. This makes it easy for students to place the correct recyclables in the bins.
- There is a plan to replace disposable utensils, plates, and cups with reusable products. This can save money for the school.
- The majority of students and teachers now use their own reusable water bottles.
- The use of bulk dispensers to replace individually packaged condiments, cutlery, napkins, and more will also decrease waste produced.
- A self-serve spice station was added for students' use.
- Students and parents are involved with menu planning to help ensure the menu reflects what students enjoy eating.

With all of the changes made, it is important to monitor the impacts. The school's monthly garbage, compost, and recycling will be monitored at least twice during each school year to calculate the monthly recycling rate and the volume of garbage generated per student. Keeping track of waste and recycling can help to track progress and show where improvements still need to be made.

Using Local Food

Action Connection

Promote Locally Grown Foods - Procure, promote, and serve local foods in the cafeteria or as a snack.

When possible, schools should consider offering locally grown foods. Using local produce not only supports local farmers and reduces food miles, but it also provides the school with nutritious fresh foods and great learning opportunities for students. Getting food from local farms provides the opportunity to teach students about where their food comes from. This can instill a greater appreciation and interest towards healthy food. The New Jersey Department of Agriculture's Farm to School Program partners with local farmers to source more than 100 different types of produce. This program allows farmers to offer their products to school food service departments. More information on this program can be found here (9). In addition, the USDA has a guide for procuring local foods for child nutrition programs, which can be found here (10). The USDA also offers the Department of Defense (DoD) Fresh Fruit and Vegetable Program, which allows schools to use their USDA Foods entitlement dollars to purchase fresh produce. Information on this program can be found here (11).

Improving Student Participation in School Meal Service

Breakfast After the Bell

Action Connection

Breakfast After the Bell - Implement a robust Breakfast After the Bell program in which students are not missing class time to have breakfast.

Breakfast After the Bell is a way for school districts or individual schools to re-imagine the school breakfast program by offering it at a time during which a greater percentage of students will benefit: in the classroom, after the bell has rung. Schools with at least 70% low-income students are required to serve breakfast after the start of the school day (12) .

Community Eligibility Provision

Schools serving a significant proportion of low-income students should look into their eligibility for reimbursement of costs to provide meals free to all students with no requirement to collect household applications (13).

Resources

The Lunch Box - This website, by the Chef Ann Foundation, features step-by-step guides and other resources to help schools improve their meal programs and convert to scratch-cooking. Topics covered include recipes and menus, procurement, management, and lunchroom education (e.g. tastings and chef demonstrations). https://www.thelunchbox.org/

Urban School Food Alliance - Organization that shares best practices, develops procurement standards, and advocates for the health and wellness of students. The website's resource center includes guides for local produce procurement and a guide to better ingredients. https://urbanschoolfoodalliance.org/resources/

US Department of Agriculture Resources

Back to School - Assorted resources for school meal programs, including menu poster template, Offer versus Serve tip sheet, taste testing event resources, and tips and recipes for providing nutritious meals. https://www.fns.usda.gov/tn/back-school

Child Nutrition Success Stories https://www.fns.usda.gov/success-stories/child-nutrition-programs

Food Buying Guide for Child Nutrition Programs
https://www.fns.usda.gov/tn/food-buying-guide-for-child-nutrition-programs

Support for School Meals - A list with links to the different financial support programs available to schools from the USDA. https://www.fns.usda.gov/cn/support-schools

E.g. Healthy Meals Incentives for Schools - https://www.fns.usda.gov/cn/healthy-meals-incentives

Other resources are listed as References.

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12. Hunger Free NJ. School Breakfast. https://hungerfreenj.org/feeding-nj-kids/school-breakfast/
13. Community Eligibility Provision, https://www.nj.gov/agriculture/divisions/fn/childadult/school.html#9
    - New Jersey information: https://www.nj.gov/education/finance/cep/
    - Eligible Schools: https://www.nj.gov/agriculture/divisions/fn/childadult/cepnotification.html

Recycling in the Cafeteria

Action Connection

Document Recycling Rates - A school recycles at least 60% of all its waste, including cafeteria waste.

Who's Involved

Create a recycling team or committee to plan for and lead efforts to enhance recycling of cafeteria waste. This committee can consist of:

- A teacher
- A food service staff member
- A grounds person
- A few students

The committee should reach out to the school's parent-teacher association to spread the word on the school's recycling initiative and should also get in contact with the municipal or county recycling coordinator (1) for guidance on recycling. The Association of New Jersey Recyclers has a Recycling Manual for New Jersey Schools (2).

Mandated Recycling

Schools should be familiar with the mandated recycling items in New Jersey. This includes aluminum cans, corrugated cardboard, glass containers, HDPE/PETE plastics, and mixed paper. A complete list of mandated recyclables by county can be found here (3) and recycling program websites for each NJ county can be found here (4).

It is important to have clearly labeled recycling bins to help increase the chances of students recycling properly. George L. Catrambone School has placed recycling bins in classrooms, staff rooms, and the cafeteria. There are signs and labels on the bins to make students and staff aware of what they should be recycling. Teachers, along with a student team, monitor the recycling station in the cafeteria to assist other students in proper recycling.

Delran Middle School cafeteria recycling bin

Recycling Non-mandated Items

Action Connection

Recycling Non-Mandated Materials - Collect and recycle materials that are not designated as mandatory recyclable items per state, county, or municipal law.

Recycling items that are not required by law is a great way to further increase recycling and decrease the amount of waste being sent to landfills. According to the Carton Council, over four billion milk and beverage cartons are consumed each school year. Recycling these cartons keeps them out of landfills. Schools should check with their local materials recovery facility to see if they accept cartons. A list of facilities by county can be found here (5). A carton recycling guide by the Carton Council can be found here (6).

TerraCycle (7) has collection programs for commonly used non-mandated items, such as juice pouches and snack wrappers, and makes previously non-recyclable items into new items. TerraCycle recycles, re-uses, and upcycles 100% of the waste they receive. Schools can partner with TerraCycle to recycle single use items and food packaging waste from the cafeteria.

Spotlight: Littlebrook Elementary School's TerraCycle Program

Littlebrook Elementary School partners with TerraCycle to recycle their snack bags and wrappers as well as food and drink pouches that would otherwise be considered non-recyclable. The school earns points with a dollar value for the materials they send to TerraCycle, then uses the earned funds to support camps and extra-curricular activities within their school. There are collection bins in the cafeteria as well as classrooms. Additionally, parents and students collect applicable items at home to bring in each month. The school stores the waste collected in boxes until there is a sufficient amount to send to TerraCycle (8).

Littlebrook Elementary's TerraCycle Collection Bins

Liquid Waste

Providing stations to dump out liquids from recyclable containers is a great way to improve recycling. It facilitates the recycling of milk cartons and other beverage containers. The collected liquid may be poured down the drain or added to composters/ dehydrators or other systems the school may have to handle organic waste. At Delran Middle School, there is a bucket at the cafeteria's waste station for students to pour out any leftover liquids so recyclable drink containers, including their milk cartons, can be recycled.

Delran's liquid waste signage and milk disposal area of the waste station

The Leonia School District implemented similar liquid waste disposal and recycling stations in 2018 (9). The liquids are poured out in the sink and milk cartons are collected separately for paper-recycling.

Trash disposal was costing the district $70 per ton so, reducing the weight of trash by recycling more and dumping out liquid waste saves the district money. In some cases, schools can receive a credit for certain types of recycling; paper recycling allowed Leonia to earn a credit of $60 per ton. An increase in recycling can lead to economic benefits for school districts.

Food Waste

See the Composting section for guidance on recycling food waste.

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Food Recovery - Share Tables & Donation

Action Connection

Food Recovery - Share Tables & Donation - Set up a share table or a food donation program to feed hungry students or community members with recovered excess food instead of throwing it out.

Who's Involved

Schools are encouraged to develop a plan to recover foods that would otherwise be thrown out. Those involved in developing and carrying out the plan may include:

- The school's green team
- School administrators
- Food service staff should be made aware of the plan as they will play an essential role in the kitchen and cafeteria.
- The local health department should be consulted regarding food donation guidelines. To find the contact information for your local health officer use the Local Public Health Directory map (1).
- Students: Getting students involved in the food recovery plan allows for experiential learning about food waste and food insecurity.

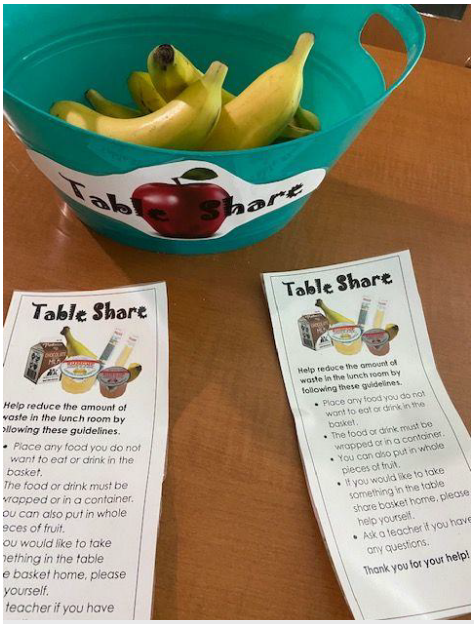
Health Inspectors & Protective Law in Food Recovery

Your local health inspector can be very helpful with food recovery. Health inspectors should be aware of food donation guidelines and can help you understand what foods can be safely donated as well as how to properly store foods for donations. (For health inspectors who are not familiar with food donation guidelines, Rutgers University offers a free online training course (2). Wholesome, uneaten, and unopened foods can typically be recovered for sharing or donation. It is important to know that food donors are protected by the Bill Emerson Good Samaritan Food Act (3). Rutgers Cooperative Extension partnered with Harvard Law School Food Law and Policy Clinic to create legal fact sheets about food donation in New Jersey (4).

Share Tables

Share tables are a USDA-approved method of collecting unopened, uneaten foods that would have otherwise been thrown away. Schools can set up a share table by designating a specific table for students to place their unwanted whole foods or beverages. The share table should be clearly identifiable in the cafeteria by using colorful signs and posters designed by students.

Halsted Middle School's share tables signs



George L. Catrombone students collecting food for their share table

Share tables are more likely to be utilized when placed in high traffic areas, such as near the end of the food service line or by the cashier. Foods that can be left at the share table include any non-perishable or pre-packaged food items, fruits and vegetables that are wrapped or have a thick skin, and unopened dairy products as long as there is an ice box or refrigerator at the share table. The USDA provides detailed guidelines on how to safely set up a share table (5). The USDA also released a memo (6) in 2014 to provide further clarification on food safety policies for foods consumed outside of school's food service areas. School officials are encouraged to discuss their share table plans with the local health department prior to implementation to ensure that they will be following all food safety precautions. Policies regarding food recovery must follow the Hazard Analysis and Critical Control Point (HACCP) plan (7) Another resource that can be referred to ensure food safety is the FDA's Food Code (8) and the Richard B. Russell National School Lunch Act (9).

Share Within The School

Recovered food can be redistributed within your school. Students should be encouraged to visit the share table if they are still hungry after finishing their meal to take additional food or beverage items. Food collected on the share table can also be used to provide students with snacks during after-school programs and extracurricular activities.

Additionally, recovered food can be offered to students' families. Parents should be notified of the option to receive recovered food and school guidance counselors or social workers can help to identify students that may be experiencing food insecurity at home. These students should be prioritized to receive food collected at the share table.

Items collected at share tables at George L. Catrambone School were offered to students boarding buses home.

Spotlight: Halsted Share Table

Halsted Middle School implemented a share table in their cafeteria. There is a designated area where students can place their uneaten or unopened food including milk, whole fruit, and packaged vegetables. Students got involved, making signs to help their fellow students properly contribute to the share table. The food must be completely uneaten or unopened and anyone is able to take extra food during their lunch period. The lunch duty staff monitors the table and custodians put the food that is left after lunch in the refrigerator. At the end of the day, the afterschool staff packages leftover food in paper containers or foil and sends it home with students; families are informed of this food distribution.

Halsted Middle School's Share Table

Donate to a Local Non-profit Food Distribution Organization

Excess recovered food can be donated to a local non-profit organization such as a community food bank or homeless shelter. Rutgers has a list of food pantries and soup kitchens (10) for each county in New Jersey. Community Food Bank of New Jersey provides a zip code search for their partner food assistance organizations throughout the state (13). Your local health department can provide you with guidance on local and state health and food safety codes to ensure a safe food donation process. Step-by-step guidance for schools interested in food recovery or rescue is available from the organization, Food Rescue (11). Another resource for food donations in New Jersey is the guidance document produced by Sustainable Jersey, Rutgers University, and the Center for EcoTechnology (12).

Spotlight: Helen Morgan Elementary Food Donation

Helen Morgan Elementary in Sparta, NJ works with Food Rescue to donate food to families in need. Unopened and uneaten foods that would otherwise be thrown out are collected if they fall under donation regulations. Students are engaged in the efforts, making signs to keep their fellow students informed. From July of 2016 to January of 2021, 29,624 items were rescued contributing to 6,172 meals. (13).

See the Connecting to Gardens section for an example of donating excess garden produce.

Resources

Where to Donate:

Community Food Bank of New Jersey *Find food assistance organizations that partner with CFBNJ by zip code* https://cfbnj.org/findfood/

Foodbank of Monmouth and Ocean Counties https://fulfillnj.org/

Rutgers Against Hunger. *Local Food Pantries*. Lists food pantries and soup kitchens by county https://rah.rutgers.edu/resources/local-pantries/

Feeding America, the largest charity working to end hunger in the United States, provides information about donating and a search function to find local food banks. https://www.feedingamerica.org/

Donation Guidance:

Rutgers Cooperative Extension Food Waste Team. (2022). *New Jersey Food Donation* - guidance for New Jersey. https://sites.rutgers.edu/food-waste/wp-content/uploads/sites/667/2022/02/NJ-Food-Donation-Guidance-pages.pdf

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Composting Food Waste

Action Connection

Food Waste Recycling or Composting - Recycle cafeteria food waste by composting it on-site or sending it off-site to a processor of organic waste.

Composting is a process in which organic waste is broken down to a nutrient-rich soil amendment. There are many different ways to compost food waste; plus there are other methods of breaking down food waste, such as dehydration and anaerobic digestion. In this toolkit, the terms "composting" and "composter" are used broadly to refer to any system or device that processes food waste to a usable end product. Schools may choose to compost their food waste on-site, or arrange to have the waste transported off-site to a composting facility.

Who's Involved

Starting a composting initiative opens the door for active involvement throughout the school community. Those involved may include:

- Students
- Teachers
- Food Service Workers
- Custodians
- Business Administrator
- Green Team Volunteers or Community Partners

Why Compost?

Reduces Waste Going to Landfill

In a food waste study conducted by Sustainable Jersey and Rutgers Cooperative Extension, it was calculated that a school with 580 students would generate, on average, 115 pounds of food waste per day. This equals to more than 20,000 pounds of food waste each year that would be sent to landfills if not composted. The three New Jersey schools in the study were able to compost almost all of their food waste after introducing systems to divert organic waste from the trash. Halsted Middle School, George L. Catrambone School, and Delran Middle School, composted 85%, 93%, and 99% of their food waste, respectively.

GLC students at food waste collection station

Buckets of food waste collected at GLC

Food waste in GLC's composter

End Product Improves Garden Soil

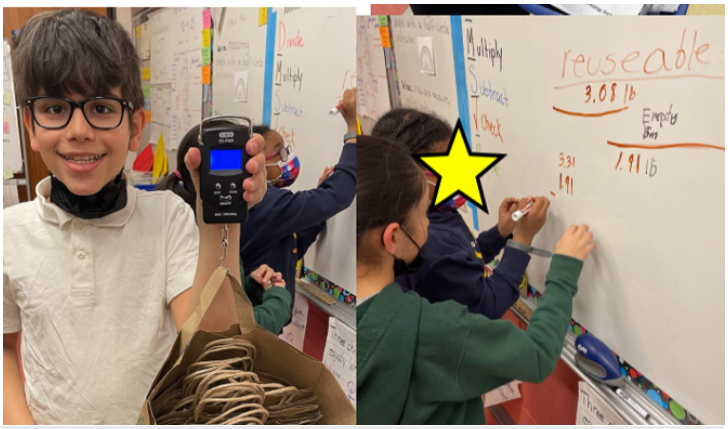
When food waste is composted, it breaks down into nutrient-rich matter that is very beneficial to soil and can be used in school gardens. Compost will improve soil health and structure, improve water retention, and reduce the needs for fertilizers and pesticides (1).

Adding compost to Halsted School grounds

Adding compost to GLC garden beds

Provides Education Opportunities

School composting provides opportunities for educating students on a diversity of subjects, such as the science of decomposition, the value of organic material that is commonly wasted, and strategies for changing behaviors in the school cafeteria to reduce waste. Composting education could give students a new appreciation for food that they will take with them throughout their lives. See the Educating About Food Waste section for additional information and resources.



GLC students learning waste audit math

Developing a Plan

Factors to consider when planning for a composting system that best fits your school:

- Available on-site composting areas and proximity to cafeteria and garden
- Available off-site services to pick-up food waste
- Volume of food waste generated
- Labor needs to run and maintain the composting system
- Cost to acquire, run and maintain the system

On-site Composting

Composter Selection

There are many different types of composting systems available on the market. Consider the following list of questions when deciding on a composting system that will work for your school:

- How much waste is generated?
- What is the composition of the waste?
  - Food
  - Liquid
  - Garden waste (leaves, twigs)
- What is the cost to acquire and install the composting system?
  - Could a grant cover the costs?
- What is the cost to operate and maintain the system (utilities, service)?
  - Does the composter require electric and/or water connections?
  - What are the long-term maintenance requirements?
- How much space is available?
  - Will storage space/containers be necessary in addition to the composter's space?
- Would an indoor or outdoor composter be preferable?
- How much labor is required in operating and maintaining the composter?
  - How easy/complex is it to operate?
  - Will it increase the workload of custodial and/or kitchen staff?
  - Will training from professionals be required?
  - Can students get involved?
  - Could parents and community volunteers cover some of the tasks?
- What system will be put in place to load and run the composter on a daily basis?
- How will waste be separated for collection?
- Is there a minimum and/or maximum amount of waste the composter can hold?
  - How long will it take to accumulate the minimum amount of waste?
  - Will storage be necessary before reaching the minimum?
  - Can extra waste be stored if it exceeds the maximum?
- If necessary, how easy is it to shut down and restart the composter?
- What will be done with the compost once it is generated?

With a few composter options in mind, it may be helpful to make a pro and con chart for each one. The questions from the preceding list can inform these charts. Delran Middle School made charts for each of the composters they were considering. Here is the chart they made for the EcoRich composter that they now use:

Positives	**Negatives**
ANY food material can go in, including bones	Have to keep the area around it clean
No additives needed, such as wood chips	Compost can be used after 21 days if it has been sealed in a water tight container
85% volume reduction: It can be reloaded until it reaches capacity	Requires maturation so it can be used without being active; the microbes could do damage to plants.
Load composter every day and empty it once a week	We need to have someone to give it away to
Takes 24 hours to process	
As long as the surface is level, the unit can be placed inside or out	

Commercial Composter

A commercial composter is a great option if your school can secure the funds to purchase one. (Consider applying for Sustainable Jersey and other grants to help cover the cost of composting equipment.) Large amounts of food scraps can be turned into compost within 24 hours, and, after resting to kill microbes, it can be used for a school garden or donated to farms and community gardens. It is important to remember that staff will have to be trained to operate the commercial composter.

Spotlight: Delran Middle School's Composter

Composter: EcoRich Elite II Composter, ER-100

This model can process up to 100 pounds of food waste daily. (2)

Installed in March, 2022

Training for students and staff was held in April.

First day of usage: May 1, 2022

- All food goes into clearly marked collection bins in the cafeteria (waste station signs)
  - Solid food is separated from liquid.
  - Collection bins are in the cafeteria. The school hopes to add bins in the faculty lounge and the main office.
- Students who serve as Food Waste Warriors monitor collection bins to make sure plastic and other non-compostable packaging does not end up mixed in with the food scraps
- At the end of lunch service, staff empty the bins of food waste into the composter.
- Compost is generated within 24 hours followed by a 21-day rest period to kill microbes.
  - The composter is emptied **once a week** into 1-2 storage bins to rest.
    - In a 3 day pre-intervention audit measuring food waste, Delran Middle School generated an average of 72.18 pounds daily. The storage space used for the rest period is small, with only 1 or 2 bins filled each week.
  - It is used on-site in gardens and leftover soil will be given to other schools in the district and the town's green team.

DMS compost station and Food Waste Warriors monitoring the waste station

Training Staff on Operation

Staff should be trained to use the composter. Vendors of commercial composters offer training on how to properly use the units. Training sessions should be held a few times throughout the year to ensure that all staff members understand operations.

Gaining Staff Support to Operate Composter

- ➤ Strategies to gain staff support
  - Faculty meeting presentations
    - Halsted Middle School presented the idea to the science teachers first, then to all staff with a video made by a student group, the Food Waste Warriors.
  - Announcements in faculty newsletters
  - Provide multiple trainings
  - Share updates about the project via staff emails and social media
  - Allow staff to take some of the compost home for their gardens
  - Use student excitement and general excitement for a new project to promote staff involvement
- ➤ Staff time /duty periods to manage composter
  - Consider the following when developing a plan for composter operation that relies on staff involvement:
    - Filling/emptying the machine
    - Which staff members are responsible for each task
    - Duty periods
    - Staff contracts
    - Staff stipends
  - Delran Middle School has a Sustainability Project Manager and checking the machine is part of her duty each morning. Food service staff and custodians move the food and liquid waste to appropriate locations after each lunch period. A Sustainability Project Manager stipend covers part of the time for the work to get completed.
  - George L. Catrambone has a special team made up of 11 teachers who do the majority of bucket cleaning and organization. Students that are part of the food waste warriors collect the waste during lunch and bring buckets to the composter. They are involved with clean-up as well.
  - At Halsted Middle School, the students are responsible for the majority of composter work with custodial staff overseeing it. The custodial staff empties the composter before the first lunch period but students will empty it if the custodians cannot. Students also fill and start the composter.

GLC School staff with the EcoVim dehydrator/composter in the cafeteria

Educating Students on Composting and Collection of Food Waste

Food waste reduction and composting should be integrated into your school's lesson plans. Having a composter on-site provides a unique opportunity for students to get first-hand experience with composting. The World Wildlife Fund offers several comprehensive lessons and activities that can be utilized at your school. These lessons and activities can be found here (3). See the Educating About Food Waste section for additional resources.

Compost Storage and Use

- ➤ Devise a plan to store food waste, composter materials (e.g. wood chips) and excess compost as needed.
  - Planning should consider the potential need to store food waste before it can be added to the composter. Halsted Middle School ran into an issue with storage and their composter's minimum waste requirements. Because they did not have enough space to store food waste in their refrigerators, the waste had to be thrown out on days it did not reach the minimum weight.

Completed Compost from the Leonia Public School District

- Have a plan for using compost. This plan may include school grounds and gardens, sharing with other schools in the district, partnerships with local organizations and businesses, and donations or sales to families and the community.
  - Halsted Middle Schools used their compost in perennial garden beds on school grounds and in their community garden space. Additional compost was made available to staff members in the district. The school also has a partnership with Sussex County Hunger Coalition where members can schedule a compost pick up.
  - George L. Catrambone School uses compost for the district's gardens. They donate some to a professor at Monmouth University for experiments and projects. The compost has also been shared with the city's environmental commission.
  - Delran Middle School shares compost with other schools that have gardens in the district and the municipal green team. Some of it is used for newly planted trees in the community. In addition, DMS is developing a horticulture course that will teach entrepreneurial skills like marketing and selling compost.

Other Composting Systems - Aerobic

There are many ways to compost food and other organic waste in simple, low-tech, back-yard systems. These systems are largely aerobic, meaning that the decomposition of waste takes place with oxygen.

- Aerobic composting is open air and fairly low-cost. Bins or piles can be used to turn food scraps into compost. This type of composting requires regular maintenance so there should be students and staff available to dedicate their time. The time period for compost to form aerobically is long which makes it a good option for schools that are generating low amounts of daily food waste.
- Vermin control is an important part of maintaining aerobic composting. Meat, cheese, and scraps with a lot of oil or seasoning should not be added. Lids should be kept on tightly and piles should be turned immediately after new scraps are added. Lining bins with galvanized mesh can also help keep rodents out.
- For more information on setting up and maintaining aerobic composting systems refer to the Composting 101 guide by Natural Resources Defense Council (1), and pages A-9 and A-10 of The State of New Jersey Food Waste Guidelines (4).

Garden composter

- Garden composters tend to be much cheaper than commercial composters. The prices range from around 75 dollars to a few hundred dollars. These types of composters are typically smaller and take more time so they cannot keep up with large daily amounts of food waste. Continuous composters can be constantly added to; the compost generally filters to the bottom at a speed which allows it to be emptied a few times each year. Batch composters are quicker than continuous composters but must be turned and checked for sufficient moisture each day. The tumbling action allows compost to form in 4-8 weeks and material for the next batch can be stockpiled during that time. (5)

Worm composting

- Worm composting uses worms to convert organic materials into nutrient-rich soil. A small worm composting bin in a classroom provides students with a first-hand view of recycling through an ecological process. A larger worm composting bin can be used outdoors for composting cafeteria food scraps and other organic materials (6).

GLC's Worm Composter

Other Composting Systems - Anaerobic Digestion

- Anaerobic digestion deprives organic matter of oxygen and uses acidity to make it decompose. This process produces biogas, which is a renewable energy source, and digestate, which is a fertilizer. Digesters cost significantly more than aerobic composters and call for skilled professional maintenance. Digesters can usually take all food waste as well as liquids and some paper products.
- For more information on setting up and maintaining anaerobic digestion systems go to pages A-6 through A-8 of The State of New Jersey School Food Waste Guidelines (4).

Off-site Composting

If on-site composting is not a possibility, food waste could still be diverted from the trash and collected for off-site composting and food scrap donations. Schools near animal farms may be able to send food scraps for use as animal feed. There are also services that will pick up food scraps and other compostable items and bring them to a facility that recycles organic waste. Information about where to find drop-off or pick-up services for organic waste in New Jersey is included in the list of resources that follows.

Spotlight: Black Horse Pike's Off-Site Composting

Black Horse Pike Regional School District partnered with the company Organic Diversion for off-site composting of their food waste. Faculty and staff met with Organic Diversion to learn about what types of food waste would be accepted. The district got mobile compost carts to make it easier for students and staff to dispose of any compostable items. The collected waste was picked up monthly by Organic Diversion. (7).

Resources for Composting

Resource	On or Off Site	Source	Description
A Guide to Starting a Composting Program in Your School	On-site and Off-site	Green Mountain Farm to School	Guide to starting a school composting program including regulations and health concerns (p.8).
Compostaje: Como Compostar En Su Patio Trasero	On-site	Zero Waste DC	Aprenda qué es el compostaje y cómo compostar restos de comida y otras materiales.
Composting 101	On-site (off-site briefly discussed)	Eco-cycle	Basics of composting including backyard, worm, winter, and curbside composting.
Composting 101	On-site and brief discussion of community sites	NRDC	Guidelines for composting including benefits, types of home composting, what you can compost, and other tips.
Composting At Home	On-site	EPA	Brief overview of what composting is and how to make your own compost.
Compost in New Jersey	On-site and Off-site	NJ Composting Council	Find training and educational sources as well as other composting events.
LAUNCH Toolkit: Composting at School	On-site	Grades of Green	Toolkit for starting a composting project that follows NGSS for grades 6-12.
On Site Composting at Schools	On-site	School Garden Project	Guide to implementing on site composting at schools including: Building Support, Conducting a Waste Audit, Choosing an Appropriate System and Site, and Implementing Your Program.
School Composting - Let's Get Growing!	On-site	Cornell Waste Management Institute	Ideas to incorporate composting into the curriculum, steps to start a school composting program, and descriptions of successful programs.
School Composting Options Presentation and Composting Tips	On-site (off-site briefly discussed)	Northeast Recycling Council	This presentation reviews how to start, how composting works, making compost bins, monitoring, waste collection, worm composting, and off-site options.

State of New Jersey School Food Waste Guidelines	On-site and Off-site	New Jersey Department of Environmental Protection	Find off site uses for food scraps, animal feed and commercial food waste recycling facility (pp. 25-26) and on site aerobic and anaerobic composting on (pp. 26-28). Pages A-5 through A-10 have additional composting information.
Types of Composting and Understanding the Process	On-site	EPA	Find composting basics and different types of on-site composting: vermicomposting, aerated windrow composting, aerated static pile composting, and in-vessel composting.
Where to Compost in New Jersey	Off-site	Litterless	Find off site composting services available in New Jersey. Drop-off sites and pick-up services that collect compostable materials are divided by city.

On-site Composting Equipment

Earth Machine	80-gallon backyard compost bin for food and yard waste.
EcoRich	Various commercial composter models with a range of daily processing capacities and daily outputs.
Ecovim	Commercial dehydration and maceration machines that can process 66-650 pounds per cycle.
Food Waste Experts	The rocket composter is an in-vessel composter that turns food waste into compost in 14 days.
Green Mountain Technologies Commercial Composting Solutions for Schools	In-vessel composting systems, compost probes, compost system turners, and aerated system equipment.

Off-Site Composting Services

List of Authorized Food Waste Recycling Facilities	Information about the authorized food waste recycling facilities in New Jersey and municipalities within a 25 mile radius of each facility.
Litterless	Drop-off sites and pick-up services that collect compostable materials divided by city. (Un-Waste, Neighborhood Compost, MOM's Organic Market, Kula Urban Farm, Java's Compost, Green Bucket Compost, Garden State Composting, Community Compost Company, Bowfish Kids)
One Compost Can	Food waste pick-up service within 25 miles of Lamberville, NJ and drop-off at the West Windsor Farmer's Market.

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Educating About Food Waste

Action Connection

Education for Sustainability - Multiple actions for Pre-K to 12th Grade (e.g. 3rd Grade**)**
Teach a lesson and assess student learning of core principles of sustainability connected to the lesson.

Effective Experiential Learning

Effective experiential learning includes hands-on activities that foster emotional responses to material, human interaction, and appropriate rigor (1). When this style of teaching is connected to the school's food waste activities, students gain food literacy (2). They develop a better understanding of food systems and the impacts of food choices. Experiential education about food and waste can bring about behavioral changes that students take with them into adulthood. Food waste education may occur in a classroom setting, but can be equally or even more effective in extra-curricular contexts such as clubs, campaigns, assemblies, green fairs, workshops, and gardens.

Student Involvement in Food Waste Audits

Getting students involved in food waste audits provides a visceral lesson on how food waste happens in their own cafeteria. People who participate in a food waste audit are usually motivated to learn more and take action to prevent waste (3).

Lessons

There are many resources for classroom-based and garden-based lessons and activities that relate to food waste. Food waste curricula and lesson resources are listed in the Resources section below. Resources for garden-based lessons can be found in the Connecting to Gardens section.

Activity Spotlight: Food Waste From Farm to Fork

Food waste lessons should aim to inform and promote action. Lessons about waste at each step of the farm to fork process can help inform future consumer decision-making skills. The Food Waste: Farm to Fork apple activity (4) takes students through each step of the farm to fork process with a visual aid showing how many apples are discarded at each step.

Spotlight: GLC Hands-On Lessons

George L. Catrambone students' at-home compost collection bin

George L. Catrambone School (GLC) used the World Wildlife Fund Food Waste Warrior (5) lessons that are grade banded to meet the needs of students. The experiential learning did not stop with the efforts in the cafeteria; GLC teachers reinforced learning with in-class and at-home activities for students. A second grade class learned how to create their own kitchen compost at home. They submitted photos in class.

Fourth grade students also got some hands-on experience in class. The Grown From Garbage lesson taught students how to use their vegetable scraps to grow more vegetables. They predicted and kept track of growth to gain a better understanding of the growing processes and the value of food scraps as a resource. Teacher Kelly Stone commented on the impact of these lessons:

I believe the lessons have made an impact in a few ways. First the students are not taking food they do not want in the lunch line. They are eating more off of their trays. Students are more cognizant of the waste they are producing. Recycling has increased both with students and staff. The food share table is frequented by many students and they often remind their peers to share before tossing out. In addition students are very much aware of the effects of food waste and ask many questions about composting.

Grown From Garbage activities at George L. Catrambone School

Spotlight: Delran Food Waste Lesson and Contest

DMS introduced the topic of food waste to students with the help of administrators and teachers on the Green Team. They began with a lesson Destined for Trash: The Life of a Strawberry from WWF's Be A Food Waste Warrior which has students learn about the journey of a fruit or vegetable from growth to waste. The activity combines scientific learning and creative writing. To further engage students, the school made the activity a contest. Students who submitted their work in a Google form were eligible to win a $25 gift card, courtesy of the PTA.

Winners of Destined for Trash contest at Delran Middle School

Student Clubs

Starting food waste clubs is a great way to allow interested students to further develop a passion for food waste reduction and learn more about food systems. Student clubs can also increase awareness of food waste reduction interventions taking place in the school and increase student engagement.

Spotlight: Delran Food Waste Warriors

Delran Middle School students at the Food Waste Warriors presentation

At Delran Middle School, Food Waste Warriors are a group of students that signed up to help their fellow students separate their waste at the end of each lunch period. One hundred students got involved after a presentation about their school's efforts to decrease food waste.

Food Waste Warriors received direct training during their BEAR period, a study hall class that takes place each day. They reviewed appropriate categorizing of food waste and how to direct others during their lunch periods. They also received training for how they would report their days as Food Waste Warriors and provide feedback. The feedback was used to make changes to the program. Food Waste Warriors received gift cards provided by the PTA at the conclusion of the year. Involvement in the Food Waste Warriors helped students to reduce their overall waste. Kathleen Conroy, teacher at DMS, noted:

Overall, the food waste warriors reduced the amount of personal waste ending up in the landfill. Some students made it their goal to have zero waste. They changed the containers they used for bringing lunch to school and were careful when choosing cafeteria food.

Spotlight: Halsted Food Waste Warriors

Halsted Middle School also has a Food Waste Warriors club. Students in the club organize the separation and collection of waste and teach fellow students about the process. They created a video to teach the school community about what they learned. To recognize the club's efforts, students were invited to a special lunch where they were able to choose a local restaurant to order from. The school intends to continue this special lunch on a quarterly basis.

Campaigns and Challenges for Students, Staff, and Families

Action Connection

Campaign to Reduce School Food Waste - Conduct a school-wide campaign to encourage students and staff to reduce the amount of waste (food, packaging, single-use utensils) generated during school lunch and/or breakfast. .

Students, staff, and families can become more aware of sustainable behavior changes with challenges and campaigns. Positive reinforcement and rewards make repetition of sustainable behaviors more likely (6). The following are examples of campaigns to reduce food waste:

Meatless Mondays (7) introduce healthy-plant based foods to students and educate them about the varying environmental impacts of different types of food.

Pack a Waste-Free Lunch (8) challenges are a great way to include the students who bring lunch from home in waste-reduction campaigns. Students are encouraged to pack lunch with reusable containers and utensils. Food scraps or single-use containers should be recyclable or compostable with the goal of nothing going to the landfill.

Trayless Tuesdays (9), where paper bags or paper plates replace styrofoam trays, can be implemented for students who buy lunch. This is a good change to make if reusable or compostable trays are not feasible changes for a school.

Spotlight: George L. Catrambone Cafeteria Assembly

GLC used a cafeteria assembly to educate students about food waste and composting. All grade levels were brought into the cafeteria and given a presentation about what could be composted and what was trash. Actual waste was used to show students how to properly sort it at the composting stations. Students also completed lunch tray activity sheets in which they were given a picture of a lunch tray and had to determine which items go in the trash or compost.

Spotlight: Delran Food Education Week Campaign

In addition to lessons in the classroom, food waste education and training was carried out during lunch periods in the 4 months leading up to the implementation of new waste sorting stations and composting. The lessons and activities built up to the final week before composting started, Food Education Week. The Green Team created morning announcements and played a different video in the lunchroom each day that week. The material touched on during Food Education Week included food wasted each year, water used on food that is wasted, waste that ends up in landfills, composting, and food insecurity. Food Waste Warrior training was also conducted to prepare students for the changes being implemented. On the last day of class before composting began, students were encouraged to wear green to show support for the food waste initiative. Prizes, including reusable straws, smencils, and reusable water bottles, were awarded to students with the most spirit, continuing to incentivize student participation.

Delran Middle School students wearing green to show their support for the food waste reduction initiative

Encouraging student interest and action is a continuous process. There must be ongoing efforts to see changes. Teacher, Erica DeMichele notes:

It is going to take consistent feedback and training. It's not a one and done.

Some DMS students have already made noticeable behavioral changes surrounding food waste reduction. With continued education efforts, positive changes may be seen in more students.

Education Resources

Grade Level(s)	Resource	Source	Description
Grades K-12	Be a Food Waste Warrior: Toolkits by Grade Level	World Wildlife Fund	Grade banded lessons and activities allow students to learn about the importance of food waste reduction with experiential learning.
Grades K-12	Children's Pathway Kit	Kiss the Ground	Kiss the Ground's teaching resources are compiled in one document with infographics, videos, online communities, and other resources
Grades K-12	Composting in Schools	Cornell University	This page offers a variety of resources for learning about composting including lesson plans, a compost quiz, and ideas for student research projects.
Grados K-12	Conviértete En Un Food Waste Warrior	World Wildlife Fund	Lo mismo que el recurso Be a Food Waste Warrior: Toolkits by Grade Level (en español). Lecciones y actividades divididas por grado que permiten a los estudiantes aprender sobre la importancia de la reducción del desperdicio de comida con el aprendizaje experiencial.
Grades 7-9	Finding Solutions to Food Waste Unit: Persuasion in a Digital World	National Council of Teachers of English: Read Write Think	Students explore waste in their cafeteria. The Unit has them research and develop persuasive arguments surrounding food waste.
Grades K-5	FoodCorps Lesson Plans	FoodCorps	Lessons tied to national academic standards that engage children in learning about healthy food. The 96 lessons are organized by grade, season and theme.
Grades K-12	Food Matters Action Kit	Commission for Environmental Education	The Action Kit contains over 70 activities to promote youth engagement in reducing food waste. Activities are organized by theme making it easier to find the ones that will be useful for your class (available in English, Spanish and French).
Grades 3-5	Food Waste: From Farm to Fork	Solid Waste Authority of Central Ohio	Students will learn about the resource use and waste that occur in the steps their food takes before getting to their plates. There is an example presentation with descriptions and an activity so students can visualize the amount of food wasted before it is purchased. The example presentation includes statistics/facts specific to Ohio. To find NJ and USA statistics look at page 4 of NJDEP's Solid Waste and Recycling Environmental Trends Report.

Grados K-12	Guía Curricular Sobre Historia Del Suelo	Kiss the Ground	Lo mismo que Soil Story Kit- Lesson Plans in English and Spanish- (en español). Los estudiantes son introducidos a la conexión que el suelo tiene con la comida, la salud y el clima.
Grades K-12	Lesson Plans, Teacher Guides and Online Environmental Resources for Educators: Waste and Recycling	EPA	This page includes grade banded lesson plans and activities surrounding waste and recycling.
Grade K-5 (can be scaled up)	Nature of Teaching: Food Waste Curriculum	Purdue University	This curriculum contains lessons intended for K-5 though some may be scaled up for middle school and high school. It includes lessons that meet the Common Core English/Language Arts, Math, and Next Generation Science Standards. The first two units connect food waste to natural resources and the environment and the third teaches students methods to reduce food waste.
Grade 5	New Jersey Leaves No Bite Behind	Rutgers Cooperative Extension	Lessons, videos, games and educator resources to improve school administrations' and students' knowledge, attitudes, and behaviors towards adopting food waste reduction practices.
N/A	ReFED Impact Calculator	ReFED	A tool to calculate the impact of amounts of wasted food on the climate, natural resources, lost meals, and the economy.
Grades K-12	School Composting Manual- Lessons on Pages 39-92	Connecticut Schools Composting Guide	This School Composting Manual contains lessons and activities that educate students about composting. It is intended to be used in schools that either already have or intend to start a school composting program.
Grades Pre-K-12	SEEDS (State Environmental Education Directory)	NJDEP	Lesson plans include the topics: air quality, climate change, nature, recycling, renewable energy, water, and wildlife lessons divided by grade level. Information surrounding field trips, in-class programs, educator professional development, grants and scholarships can also be found.

Grades K-12	Soil Story Kit- Lesson Plans in English and Spanish- 85 pages of material	Kiss the Ground	Students are introduced to the connection soil has to food, health, and climate.
Grades 9-12	Teaching the Food System from Farm to Fork Lesson #13 "Our Wasted Food"	John Hopkins Center for A Livable Future/ Foodspan.org	This lesson for high school students explains why food waste is an issue and delves into strategies to reduce it. There are 6 extension projects provided to promote student action.
Grades K-12	The Compost Story (clip)	Kiss the Ground	This clip introduces compost as a method of reducing waste in landfills and regenerating the planet.
Grade 5	5th Grade Sustainability Unit Plan: Climate Change - Food Waste & Composting as a Solution	North American Association for Environmental Education	This unit plan includes 6 lesson plans with related videos, worksheets, and a final project. Students will learn about environmental problems, with a focus on food waste and potential solutions.

Campaign Resources

Grade Level(s)	Resource	Source	Description+
Grades K-12	Be a Food Waste Warrior: Toolkits by Grade Level	World Wildlife Fund	Find activities, slideshows introducing food waste that can be used in assemblies, and posters that support a food waste reduction campaign.
Grados K-12	Conviértete En Un Food Waste Warrior	World Wildlife Fund	Lo mismo que el recurso Be a Food Waste Warrior: Toolkits by Grade Level (en español). Encuentre actividades, presentaciones de diapositivas sobre el desperdicio de alimentos que se pueden usar en las asambleas y carteles que apoyen una campaña de reducción del desperdicio de alimentos.
Grades 6-8	Destined for Trash: The Life of a Strawberry	Delran Middle School	Students learn about the journey of a fruit or vegetable from growth to waste through a video. It also includes a worksheet that can be completed to enter students into a contest. This is a good introduction to a food waste reduction campaign.

Grades K-5	Lunch Tray Lesson Worksheets	George. L Catrambone School	Students are given a photo of a lunch tray and must determine which items would be composted and which would be thrown in the trash. These worksheets can aid a composting or food waste reduction campaign.
Grades K-12	Meatless Monday for K-12 Schools	The Monday Campaigns	Sample PA announcements, sample social media posts, flyer, plant-based food promotional materials, menu templates, and more to implement a meatless Monday program.
Grades K-12	Pack A Waste-Free Lunch	EPA	This resource includes a flyer, tips, and worksheets to help carry out a waste-free lunch campaign.

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Connecting to Gardens

Action Connection

School Gardens - Operate a food-producing garden with environmentally-friendly practices and use the garden to educate students about sustainable and nutritious food.

Gardens for Food Education

The USDA describes school gardens as 'living laboratories' that provide valuable teaching opportunities regarding nutrition and agriculture education (1). Students learn first-hand about the food growing process and can harvest and taste fresh produce that they helped to grow. Gardening experiences help to instill healthy eating habits and an appreciation for food. Students with an understanding of where food comes from and the resources used to produce food waste less of it.

GLC students harvesting and chopping garden produce

Schools participating in the Sustainable Jersey for Schools certification and grants programs have demonstrated a high level of interest in the establishment of gardens to bring hands-on learning about food and sustainable systems to students. With many different school environments - large to small, urban to rural, preschool to high school- it is no surprise that there is a great diversity of garden types, from indoor hydroponic systems and container gardens to outdoor raised beds. One example is the garden described in the 2016 certification report of Seth Boyden Elementary School (2). Seth Boyden's garden includes natural habitats, teaching gardens, a music garden, a stage, a storytelling circle, and a community picnic area. Students learn about plant life cycles from germination through harvest to garden waste and re-use. They prepare and share healthy recipes with the garden harvest.

School garden descriptions and lesson examples from New Jersey schools may be found by searching for the action "School Gardens" on the Sustainable Jersey for Schools Approved Actions Search page.

The school environment plays a fundamental role in shaping lifelong healthy behaviors and can have a powerful influence on students' eating habits. To further move the needle on healthy food habits, schools can adopt policies or practices to promote healthy foods more broadly, i.e. beyond the garden and cafeteria. Examples include, healthy offerings in school vending machines, at snack shacks, or class parties; healthy or non-food options for school fundraisers.

Action Connection

Healthy Food Choices Beyond the Cafeteria - Offer healthy options whenever food is served or sold in connection with school activities and/or discourage the promotion, sale, or distribution of unhealthy food and beverages in the school or by school-related organizations.

Composted Food Waste in the Garden

Composting food waste generates a valuable resource for gardens. Compost contains nutrients that are essential for plant growth such as nitrogen, phosphorus, potassium, calcium and zinc. In addition to nutrients, compost also adds organic matter to the soil. Organic matter improves garden soil. It helps soil hold more moisture and promotes better growth of plant roots. Using composted school food waste in gardens brings benefits on different fronts. Waste is diverted from landfills and school gardens flourish with an organic soil amendment rather than synthetic fertilizers (3).

Spotlight: George L. Catrambone's School Garden

GLC's gardens

George L. Catrambone School has a successful school garden that yields 1700 pounds of produce over the summer and fall. Students and staff are involved with pulling weeds, turning over soil, adding compost, then planting and harvesting the herbs and vegetables. There was enough produce harvested for weekly donations to the local food pantry as well as donations sent home with families.

Garden waste is composted to be used in the next growing season. With the acquisition of a commercial composter for cafeteria food waste, the school had extra compost to share with other schools in the district and a local community garden. In addition to the outdoor garden, GLC has an indoor aeroponic garden and an outdoor soda bottle greenhouse. (4)

GLC garden produce harvested and produce donations

GLC's Soda Bottle Greenhouse

Spotlight: Delran Intermediate School SOLACE Classroom

SOLACE Classroom's greenhouse and pond

SOLACE Classroom at Delran Intermediate School

- SOLACE stands for Student Outdoor Learning and Classroom Environment.
- Grants helped pay for many of the materials to create this classroom.
- Students were involved in putting together the SOLACE area.
- Teachers reserve the space through a google form.
- The SOLACE Classroom includes:
  - A pond
  - A greenhouse
  - Picnic tables and umbrellas
  - Garden beds to grow vegetables

Resources for Starting and Maintaining a School Garden

Grade Level(s)	Resource	Source	Description
All Ages	Choosing Plants and Planting Times - includes activities for students	Life Lab	Life Lab has resources and information to choose plants, determine when to plant, and plan a harvest.
All Ages	Connect with your county office for Master Gardeners and other resources	Rutgers Cooperative Extension	Find resources specific to your county. Rutgers Master Gardeners can provide research-based information for sustainable horticultural practices in your county.
All Ages	Dig In! Gardening Guide with Growing Guide on pp.96-99	US Dept of Agriculture	This resource details the steps to start and maintain a school garden. The Growing Guide includes planting instructions and basic care information for different fruits and vegetables. Connected lessons are tailored to 5-6th grade but the gardening guide is applicable to all ages.
All Ages	Food Safety Guidelines for School Gardens	US Dept of Agriculture	These tips will help to avoid food safety risks when developing and maintaining school gardens.
All Ages	Garden-Enhanced Nutrition Education	California Healthy School Environment	Find training resources, videos, powerpoint presentations, school food recipes, garden enhanced nutrition education, and guidance on preparing and serving school garden grown produce in the cafeteria.
All Ages	Getting Started: A Guide for Creating School Gardens as Outdoor Classrooms	Center for Ecoliteracy	This guide takes you through all of the steps involved in starting and maintaining a school garden. It includes information on design, site selection, creating community support, and making the garden a successful outdoor classroom for students.
All Ages	New Jersey Vegetable Planting Calendar	Urban Farmer (Seeds vendor)	Find frost dates for different areas and planting schedules for zone 6 and 7 of plant hardiness, which are the two zones New Jersey is in.
All Ages	Resources on gardening landscaping, nutrition, farming, and water issues	Rutgers Cooperative Extension	This collection of resources is divided into sections: What to Plant, Garden Design, Growing Plants, Garden Problems, Gardening with Youth, Nutrition and Wellness, Harvest Cook and Preserve, Insects Pests and Wildlife, Lawns and Landscapes, Urban Gardening, Water Conservation, and Volunteer Opportunities.

All Ages	School Year Edible Crop Planning (video - 14:46 minutes)	Life Lab	This video details the importance of crop planning that aligns with the school calendar for more success in fruit and vegetable growth that students will be able to witness.
All Ages	USDA Plant Hardiness Zone Map	US Dept of Agriculture	Find plant hardiness for any location in the United States.

Garden-Based Lessons and Curricula

Grade Level(s)	Resource	Source	Description
Grades K-5	Create a School Garden Planting Calendar	Kids Gardening	This resource provides steps to create a school garden planting calendar with student involvement to promote further understanding of weather and climate in relation to gardening.
Grades 5-6	Dig In! Standards-Based Nutrition Education from the Ground-Up	US Dept of Agriculture	This curriculum includes 10 lessons that discuss growing, harvesting, tasting, and learning about fruits and vegetables. Additional resources including posters and an at home parent booklet in English and Spanish (En Casa: Folleto para Padres) are also available.
Pre-K-Grade 12	Edible Education Curricula	Edible Schoolyard	These curricula include lesson plans with activities relating to organics, cooking, and growing food as well as other teacher resources.
Grades K-5	FoodCorps, part of the AmeriCorps service network, works to improve school food	FoodCorps	The FoodCorps uses 3 strategies for change: direct service, broad reach, and policy and advocacy. These strategies apply to hands-on food education.
pre K and up	Lessons and Activities, including content in Spanish	Life Lab	Life Lab's garden-based education has lessons and activities for all ages available in both English and Spanish.
prekínder y superior	Lecciones y Actividades, incluyendo contenido en español	Life Lab	Lo mismo que el recurso anterior (en español). La educación basada en el jardín de Life Lab tiene lecciones y actividades para todas las edades disponible en inglés y español.
Grades K-12	Lesson plans & activities	Kids Gardening	Kids Gardening offers grade banded lesson plans and activities surrounding gardening with resources for educators and caregivers. There are grant opportunities available as well.

Grades K-12	Standards based lessons and activities that integrate the school garden	Green Education Foundation	GEF's Green Thumb Challenge to get youth involved in gardening offers grade banded, standards based lessons and activities.
Pre-K-Grade 5	Teacher Toolbox - lesson plans on basic gardening, gardening across the curriculum, nutrition and weather	NJ Agricultural Society	The toolbox provides grade banded lessons tied to gardens including math and language arts lessons.
Grades K-12	The Edible Schoolyard Network - includes searchable database of lessons	Edible Schoolyard	Edible Schoolyard works to transform public education focusing on nourishment, stewardship, and community. They offer grade banded lessons in addition to other resources and events.
Grades K-5	96 FoodCorps lessons	FoodCorps	Lessons are organized through a learning progression by grade, season and theme. Lessons are easy to search and filter by grade and theme.

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Appendix

Sustainable Jersey for Schools Certification Actions Related to Food and Food Waste

Section 2

Green Team - Convene a team to coordinate the school's sustainability program, including food waste reduction. Pre-existing groups, such as a wellness council, may serve as the green team.

Waste Audit - Conduct an audit of cafeteria waste that includes tray waste from the school's meal service.

Section 3

Food Service Training & Best Practices to Reduce Food Waste - Train food service staff and implement food service best practices to reduce food waste in the cafeteria.

Promote Locally Grown Foods - Procure, promote, and serve local foods in the cafeteria or as a snack.

Breakfast After the Bell - Implement a robust Breakfast After the Bell program in which students are not missing class time to have breakfast.

Section 4

Document Recycling Rates - A school recycles at least 60% of all its waste, including cafeteria waste.

Recycling Non-Mandated Materials - Collect and recycle materials that are not designated as mandatory recyclable items per state, county, or municipal law.

Section 5

Food Recovery - Share Tables & Donation - Set up a share table or a food donation program to feed hungry students or community members with recovered excess food instead of throwing it out.

Section 6

Food Waste Recycling or Composting - Recycle cafeteria food waste by composting it on-site or sending it off-site to a processor of organic waste.

Section 7

Education for Sustainability - Multiple actions for Pre-K to 12th Grade (e.g. 3rd Grade) - Teach a lesson and assess student learning of core principles of sustainability connected to the lesson.

Campaign to Reduce School Food Waste - Conduct a school-wide campaign to encourage students and staff to reduce the amount of waste (food, packaging, single-use utensils) generated during school lunch and/or breakfast.

Section 8

School Gardens - Operate a food-producing garden with environmentally-friendly practices and use the garden to educate students about sustainable and nutritious food.

Healthy Food Choices Beyond the Cafeteria - Offer healthy options whenever food is served or sold in connection with school activities and/or discourage the promotion, sale, or distribution of unhealthy food and beverages in the school or by school-related organizations.