COMPOSTING ACTIVITIES

Composting with Worms

Snapshot
Vermicomposting (or composting with worms) in the classroom is a practical way to keep common organic materials, such as paper towels and food waste, out of the trash. (And students will love it!)

Objective: Students will understand how vermicomposting works and will be able to identify one way that it benefits the earth.

Age Groups: K-12th grade

Setting: Classroom

Project Duration: Ongoing

Materials:

- Plastic bin (36”x24”x18” or smaller)
- Power drill/bit
- Newspaper
- Spray bottle
- Red wiggler worms (*Eisenia fetida)*
- Fruit/vegetable scraps and non-recyclable paper waste
- Poster paper and markers
- Plastic tarp
- Garden trowel
- Empty bin for finished compost

Why This Project Matters:

School-generated organic wastes, such as food scraps and non-recyclable papers, take up space in landfills and contribute to the production of methane gas. Vermicomposting, or composting with worms, takes some of these materials out of the waste stream and creates a nutrient-rich soil amendment to enhance plant growth. The drivers of this process, worms and other decomposers, are vital members of the soil food web. The process of worm bin building, maintenance, and harvesting provides a valuable learning experience about the nutrient cycle, food webs, and the importance of soil as the foundation of all terrestrial ecosystems on earth. Students also get the added benefit of interacting with live worms and learning about their life cycle!

Project Summary:

Small-scale vermicomposting provides flexibility for teachers to compost in their classrooms without having to gain school-wide support and infrastructure. A classroom worm bin will have the capacity to handle a classroom’s volume of paper towels and food waste from snacks. Maintenance of the worm compost bin will be required, as well as a plan for the finished compost.

Implementation:

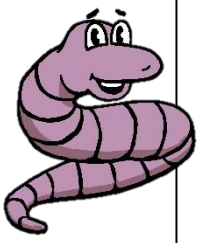
Getting started:

1. Acquire a small plastic bin (with lid), no larger than 36 inches x 24 inches x 18 inches. (Plastic 10-gallon 24”x16”x9” tubs are adequate.) To allow for air flow, drill rows of holes two inches apart along the top half (only) of all four sides. Do the same along the entire lid.
2. Tear newspaper into strips (2-4 inches wide) and loosely fill the bin halfway (this will become worm bedding).
3. Spray the bedding evenly to so that it is moist, but not wet (like a wrung-out sponge).

4. Either locally or via the internet, purchase 1-2 lbs. of red wigglers, specifically *Eisenia fetida*. (Other species of earthworms will not work as well in the worm bin environment.)
5. Once the bin is ready and the worms are present, add them in small, spaced-out handfuls throughout the bin, burying them in bedding.
6. To feed them, bury fruit, vegetable, and paper scraps (such as used paper towels) randomly throughout the bin.

Maintenance:

1. Regularly bury fruit, vegetable, and paper scraps (cut into small pieces) as they are produced by the class, monitoring the bin closely to make sure the volume and rate are not overwhelming the worms. Signs of excessive volume/rate are mold, fruit flies and/or strong odor. A pound of worms can eat approximately 3-4 pounds of food in a week.
2. Make sure to have an ongoing supply of bedding to add when needed (as worms consume it and/or if bin becomes too wet). Shredded newspaper works well, but dried leaves and shredded office paper (plastic-free) can also be used.
3. If necessary, spray the bin with water periodically to keep the bedding moist as described above. There should be no standing water or soggy bedding in the bin.
4. Create and display a poster in the classroom reminding students what is safe for worms to eat (fruit scraps, vegetable scraps, non-recyclable paper) and what is not (plastic, metal, glass).
5. If desired, rotate student care of the worm bin (feeding, monitoring the bin, spraying with water, etc.). Students will require supervision.



Harvesting the finished compost:

1. After several weeks, the bin will be mainly full of finished compost, which is dark and crumbly, like coffee grounds.
2. Place a tarp on the ground (outside or under a light if possible).
3. Gently empty the contents of the worm bin onto the tarp.
4. Divide contents into several small piles.

Extensions:

- For in-depth tips and classroom activities, reference these curricula: *Worms Eat My Garbage* and *Worms Eat Our Garbage,* both by Mary Appelhof.
- Search the internet for more tips on keeping your bin healthy, trapping any fruit flies, etc.
- Using classroom plants of the same age and species, conduct an experiment comparing growth rates of ones treated with vermicompost (variable) and others not treated with vermi-compost (control).
- Take the worm bin "on the road" to visit other classrooms. This may help recruit others to start their own bin. Populate the new classroom bins with the worm offspring from the original bin.

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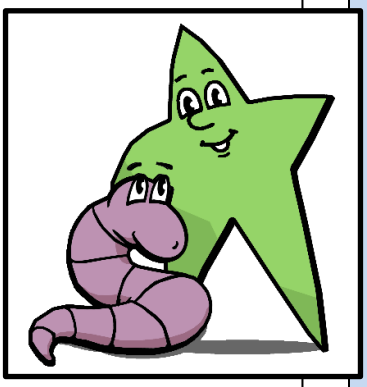
5. Worms do not like light, so they will travel to the bottom of the piles to avoid it. Sift through the piles and pull out any unconsumed food and paper scraps.
6. Continue sifting through the piles until what remains is mostly finished compost separated from the worms.
7. Collect worms and return them to the worm bin with unconsumed food and paper scraps. The remaining material should be finished vermicompost. Collect and place it into its own separate container.



8. Add fresh bedding (torn newspaper) to the worm bin and dampen bedding with the spray bottle. Make sure to bury unconsumed compostables (food and paper scraps) under the bedding. Return the worm bin to its original site.
9. Mix the finished vermicompost with potting soil (three parts potting soil to one part vermicompost) and apply to garden beds or indoor potted plants. (Straight compost can be used to start seedlings, but once the plants have sprouted, transfer them to the soil/compost mixture because straight compost has a high concentration of nutrients which can burn plants.)

Assessment:

Have the students prepare a presentation for their parents or another class about their worm bin experience. The presentation should include how they built it, specifics of maintenance, the harvesting procedure, how worms turn the waste into compost, and why this helps the earth.

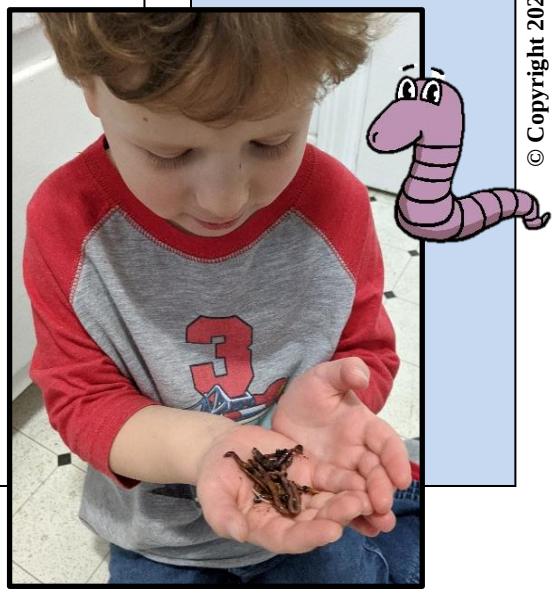
Through the harvesting process, have students evaluate how they are doing, what they have learned, and how they might improve their "worm operation."

Related Activities:

Take a Bite out of Food Waste – Chapter 4
Backyard Composting at School – Chapter 24
Schoolwide Compost Collection – Chapter 25
Worm Bin Composting Workshops – Chapter 26
Conducting a Waste Audit – Chapter 30

Extensions:
(continued)

- Supplement math and science curricula with worm bin activities, such as:
  - Calculate and compare the amounts of food/paper consumed and finished vermicompost produced.
  - Experiment to determine the speed at which food scraps turn into finished vermicompost
  - Calculate and chart worm population growth over time.
- To monitor progress, conduct a waste audit of classroom waste before and after using the worm bin.



Backyard Composting at School

Snapshot
When large-scale industrial composting programs do not exist in a community, an on-site compost pile serves as an alternative option for diverting organic waste from the landfill while engaging students.

Objective: Students will understand what belongs in compost collection bins and be able to identify one or more reasons why composting helps the environment.

Age Groups: K-12th grade

Setting: School cafeteria/kitchen, classrooms, and school grounds

Project Duration: Ongoing

Materials:

- Collection bins for compostables (larger for cafeteria, smaller for classrooms and kitchens)
- Signage/labels for bins
- Outdoor compost bin
- Shovels
- Watering can or hose

Why This Project Matters:

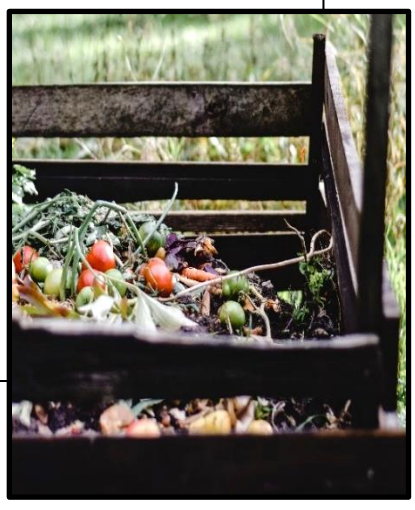
On-site composting of a school's food waste, paper towels, tissues, and other non-recyclable papers can have a significant positive impact on the environment. It not only prevents these organic materials from producing methane while buried in a landfill (methane gas is a byproduct of anaerobic or non-oxygenated decomposition), it also adds nutrients to the soil, improving plant growth. In addition, the presence of compost in the soil increases moisture retention. It also sequesters (or stores) atmospheric carbon within the soil. Composting reduces the production of methane from landfills AND reduces the concentration of carbon dioxide in the atmosphere. Both are important to stabilize the world's climate.

Project Summary:

Schoolyard composting is similar to backyard composting. There are a variety of outdoor methods and bins available. Small-scale would utilize the food and non-recyclable paper waste from 1-2 classes only, whereas large-scale could utilize the same materials from the cafeteria and some, or all, classrooms. Maintenance of the compost bin or pile will be required, as well as a plan for how to use the finished compost.

Implementation:

1. Identify if the project will include the cafeteria/kitchen and classrooms (large-scale) or just a limited amount of material (small-scale).
2. Determine the types of compostable materials to be collected and where they will be collected from. Food waste from the cafeteria/kitchen and classrooms, non-recyclable paper from classrooms and/or the cafeteria, and yard waste (leaves) from the school grounds can all be included.



3. Estimate the volumes of compostables when deciding on the size and type of collection containers and the outdoor compost bin(s)/composting method to use. Coordinate with the principal and maintenance staff to choose the best location on the school grounds for the compost bin(s)/pile.
4. Using a map of the school, identify where compost collection containers should be located. Five-gallon buckets with lids (all the same color, if possible) make wonderful collection containers for classrooms. For larger areas like the kitchen and cafeteria, use 10-gallon or 20-gallon containers, or limit the amount or type of waste collected. Adhere labels to the containers identifying them as compost collection bins. If the containers are all the same color, that will also help distinguish them from trash and/or recycling bins. Establish "waste stations" in classrooms, kitchens, and/or cafeterias (each consisting of a recycling, trash, and compost bin). This cuts down on contamination and makes collection within the building much easier.
5. This type of composting should not include meat, dairy, or bones. Implement methods of keeping these materials out of the collected food waste through labels, signage, and other forms of education and maintenance.
6. Assign duties to students and staff regarding the compost collection system within the school, as well as the maintenance of the compost site. These duties can be performed by different groups. For example, a group of students may take care of in-school collection while a parent group could maintain the outdoor pile or bin(s). Make sure the custodial staff and classroom teachers affected by the program are made aware of the collection system routines.
7. Decide where the finished compost will be used. A compost pile is the perfect complement to a school garden.
8. If multiple grade-levels are part of the program, have a student group create announcements, posters, and signs to kick-off the beginning of the school's compost collection and educate the school community on composting rules. If desired, encourage students to create a skit or short presentation for individual classes or a school assembly to explain how everyone can participate.
9. Hand out classroom compost bins to participating teachers, possibly during a school assembly, if that is part of the kick-off program.
10. To facilitate family involvement, send home a family letter explaining the merits of the project.

Extensions:

- Have students research the different types of compost bins and methods to decide which is right for your project.
- Coordinate a class, grade-level or school-wide event that features the harvesting and spreading of the finished compost.
- Have students research the science behind composting:
  - How do things decompose?
  - What decomposers are part of the compost and soil food web?
  - What other factors are necessary for decomposition?

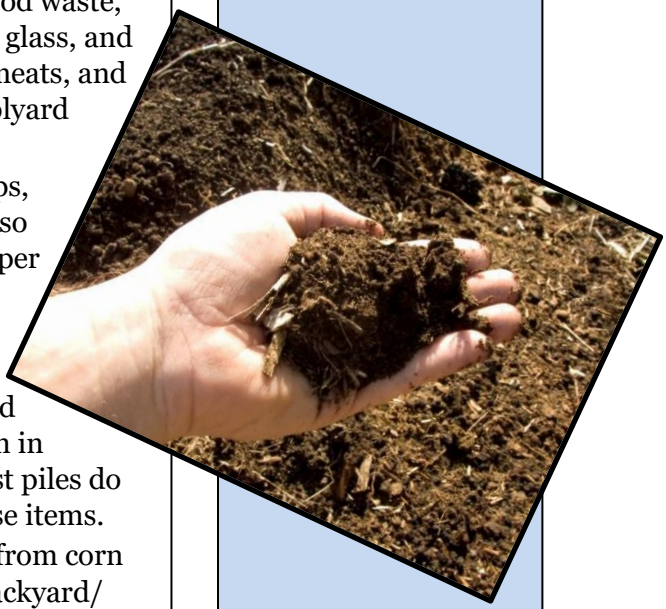
Things to consider:

- If the school has a garden, work with the gardening group to establish the compost site nearby.
- For decomposition to work, the pile needs four elements: carbon (paper, leaves), nitrogen (food waste, manure, grass clippings), water (to the dampness of a wrung-out sponge), and turning (to add oxygen).
- Almost every community has a composting expert. Recruit a parent or community expert to help.
- Consider the project site, local climate, and estimated volume of collected compostables when choosing between a single-bin or a multiple-bin system. Bins can be constructed or purchased from hardware or garden supply stores.
- Classroom or cafeteria bins for collecting compostables should have lids and/or be emptied daily to deter pests.

Keeping compost clean:

When establishing a school compost program, be sure to promote easy-to-understand guidelines that highlight which waste materials are accepted, and which are not. Compost collection programs are growing both in number and in participation throughout the U.S. It has become increasingly important to ensure that the collected materials are truly compostable so that the finished compost does not distribute contaminants, such as plastic, into the greater environment.

- Collected compostables should consist only of food waste, non-recyclable paper, and yard waste. All metal, glass, and plastic must be kept out of the compost. Dairy, meats, and bones are not recommended for backyard/schoolyard composting.
- Plastic-coated paper products such as plates, cups, bowls, and cartons must be kept out of compost so that microplastics are not generated after the paper component of these products breaks down. Microplastics contamination is a major soil and environmental hazard.
- Uncoated paper products, even if they are labeled compostable, are not recommended for inclusion in backyard/schoolyard composting. Small compost piles do not generate the heat needed to break down these items.
- Compostable bioplastics, such as utensils made from corn plastic, are not recommended for inclusion in backyard/schoolyard compost piles because they will not break down.
- See Schoolwide Compost Collection, Chapter 25 for information on composting these materials.



Assessment:

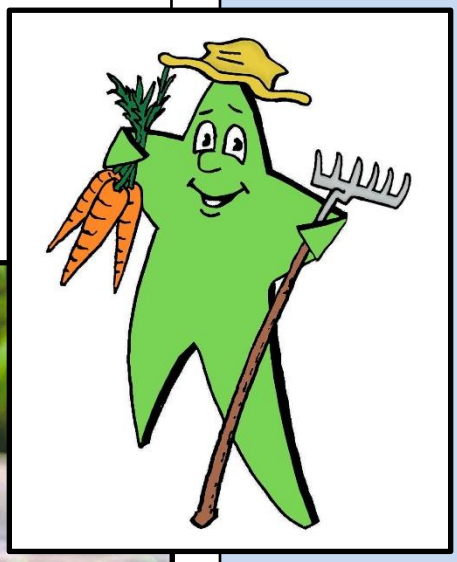
Have the student group perform an audit of one or more waste stations one month before and one month after the program has been implemented. The comparison will help illustrate the success of the program. It will also indicate the level of contamination in the compost bin. (Ideally, less than 10% of the trash bin contents will be compostable items and 0% of the compost bin contents will be trash.) (See Conducting a Waste Audit, Chapter 30.)

When the audit is complete, have the student group report their findings to the school community, with reminders about the benefits of composting to the environment (healthier soil, less waste, reduction in methane production by landfills, etc.).

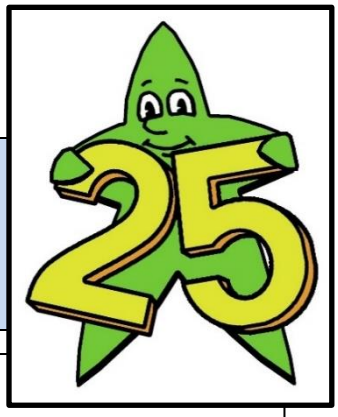
Repeat the trash and compost audit annually or semi-annually.

Related Activities:

Take a Bite Out of Food Waste – Chapter 4
Composting with Worms – Chapter 23
Schoolwide Compost Collection – Chapter 25
Conducting a Waste Audit – Chapter 30



Schoolwide Compost Collection



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Snapshot
The composting option for schools that has the biggest positive impact on the environment is collection for large-scale industrial composting.

Objective:
Approximately 33% of the school's waste will be diverted for composting. Students and staff will be able to identify what items go into the compost collection bins and understand reasons why composting helps the earth.

Age Groups: K-12th grade and adults

Setting: Most or all rooms within the school building

Project Duration:
Ongoing

Materials:
- Collection bins for compostables (5-gallon for classrooms, larger for most other areas)
- Signage/labels for bins
- Examples of compostable items at school
- Poster-making materials

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Why This Project Matters:

Approximately one third of a school's waste is organic, compostable materials. This includes food waste, paper towels, tissues, napkins, and other non-recyclable papers such as bright-colored paper and construction paper. When organic materials are landfilled, they decompose without oxygen, producing methane gas. Methane is a greenhouse gas much more potent than carbon dioxide. If organic materials are composted properly in the presence of oxygen, methane gas is not produced. After implementing a successful recycling program, removing compostable items from the landfill-bound waste stream is the next step in a school's work toward Zero Waste and safeguarding the environment.

Project Summary:

Large-scale, community-wide composting has become increasingly available. Schools in these communities may hire a local company to haul their compostables to an industrial facility. The big advantage of this method is that large amounts of food waste, non-recyclable paper and yard waste can be collected and composted off-site, producing the highest waste diversion of any composting strategy. Compostable waste can be collected from the kitchen, cafeteria, hallways, classrooms, and bathrooms. A successful program will include collection, ongoing education, and feedback to the school community.

Implementation:

Getting started:

1. Contact local composting facilities and haulers to see if they offer compost collection to schools (check with the school's current trash and recycling haulers first). Request guidelines from the facility/hauler to learn which materials are accepted in their compost collection. Traditionally, large-scale composting facilities accept all food (including meat, dairy, and bones) and non-recyclable paper (like tissues and paper towels), as well as **BPI-certified** compostable materials. The Biodegradable Products Institute (BPI) provides the only third-party product-verification certification in North America that meets the international ASTM standards for compostability.
2. Identify the school's current trash volume by finding out which day(s) of the week the trash company is scheduled to service the school's trash dumpster. The evening before or the morning of the service, visit the dumpster to get an estimate of how full it is before pick-up. Do this for 4-6 weeks to calculate a good average. Use this data to estimate the volume of compostables that the school will likely produce (approximately 33% of the trash volume). This will help determine the dumpster capacity needed for compost collection.
3. Meet with the school principal or administration to determine a budget for the composting program. Consider that the school will be able to reduce its trash service once the program is established. The saved cost on trash can be put toward the compost collection cost. If the trash hauler also provides compost collection, inquire about the possibility of adjusting the contract to include compostables, suggesting that the fee reduction in trash hauling should offset the new fee for compost collection.
4. Schedule twice-per-week hauling service for the compostables (for after collection begins) to reduce pest and odor issues. Classroom and cafeteria containers should be emptied daily to avoid pests. Bathroom paper towels can be emptied as needed.
5. It is important to remember and remind others that anything that could go into the compost container is currently already in the school's waste stream. There is no increase in the amount of material that is being removed from any area of the school. The material will simply be sorted differently both inside and outside of the building.
6. In areas where trash containers are visited by wildlife, consider wildlife-proof containers or inexpensive locks.

Materials:
(continued)

- Dumpster or another large container for holding compostables until pick-up by a commercial composter

Extensions:

- Purchase bags of finished compost for students to see and touch the final product. Use the compost in school gardens and landscaping.
- Have older students research the science of composting and teach younger students about:
  - the compost/ soil food web
  - the role of water and oxygen in composting
  - the importance of compost adding organic matter to the inorganic components of soil
  - the importance of soil in our daily lives

7. With the head custodian and principal, decide where the compost collection containers should be located throughout the school, and where extra trash containers may be removed. Five-gallon buckets with lids (all the same color) make great collection containers for classrooms and small bathrooms. For larger collection areas like the kitchen, cafeteria, large bathrooms, and hallways, 10-gallon to 32-gallon containers work well. Establish waste stations in all areas where recycling, trash, and compost collection bins are grouped together. Requiring participants to choose between the containers at the station helps to increase participation and create new habits. It also reduces custodial labor with fewer containers to service. Solo trash cans tend to encourage old landfilling habits.
8. Purchase the containers (or solicit donations) and work with custodial staff to set up the building's collection system. To reduce custodial workload, implement a policy where classrooms are responsible for emptying their smaller classroom collection containers into larger hallway or cafeteria compost containers daily. Emptying the classroom container makes a perfect rotating student job that increases student buy-in to the program.
9. Print or purchase adhesive labels with guidelines for each container.

Things to consider:

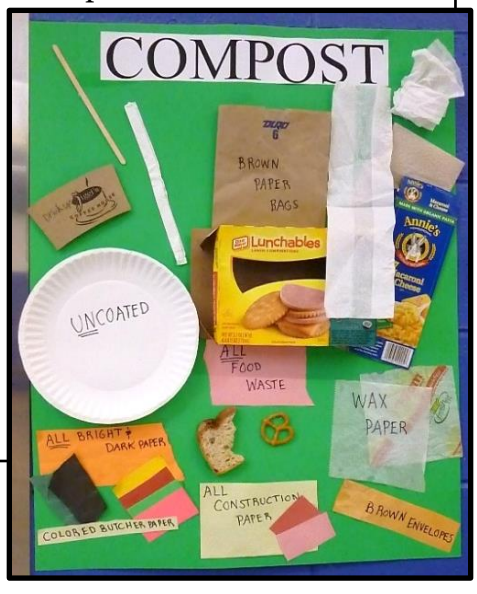
- Consider implementing the new composting program in October or during second semester of the school year. These are good times to introduce new routines without interfering with the bustle of activity during the start of the school year.
- Use consistent colors for collection containers and signage. Colors that differentiate between trash, recycling, and compost help reduce contamination.
- In children's bathrooms, trash cans may be eliminated altogether. Paper towels are typically the only waste produced and can be collected in a compost container.
- The waste station in the cafeteria may include: a dump bucket for liquids, a recycling bin, a small trash bin, and a large (20-gallon or 32-gallon) container for collecting food waste, paper napkins, paper towels, etc.
- Place a compost collection bin in the school kitchen and educate the kitchen staff about why and how food waste and any non-recyclable paper can be collected.

Keeping Compost Clean:

- When establishing a school compost collection program, be sure to promote clear and easy-to-understand guidelines that highlight which waste materials are accepted, and which are not. Compost collection programs are growing both in number and in participation throughout the U.S. It has become increasingly important to ensure that the collected materials are truly compostable so the finished compost does not release contaminants into the greater environment when applied to soil.
- Collected compostables should consist of food waste, non-recyclable paper, and yard waste only. All metal, glass, and plastic *must* be kept out.

Training and implementation:

1. Gather samples of the items that can be composted in the school's new program and use them to train a student group. Students can then create posters to display by the cafeteria and hallway compost bins that feature 3-D examples attached with the help of a hot glue gun. This type of display is a very effective teaching tool.
2. Work with the student group to create skits, video or audio announcements, and short presentations to launch the new compost collection system and to educate the school community about the composting guidelines, containers, and collection procedures. The environmental benefits of composting should also be emphasized. A 30-minute kick-off assembly covering these elements creates all-school pride in the program. Student group members can participate as presenters in the assembly.
3. If they are not already in place, hand out classroom compost bins to teachers at the end of the assembly.
4. Following the assembly, ask teachers to sign up for a 25-to-30-minute classroom training session within a week of the kick-off event. These in-class sessions will provide more details and allow students and teachers to ask questions.
5. Plan 30-minute training sessions with all types of school staff before the collection program begins. Train teachers to facilitate the student rotation to empty and clean their classroom compost containers and to use the guidelines for compostables collection with their students. Creating one waste station and removing extra trash cans from each classroom makes the program more efficient. The lids for the compost buckets should always be in use.
6. Train parent volunteers to help students sort their waste correctly in the cafeteria for up to six weeks following the program kick-off.
7. Prepare a statement or letter for the school's newsletter announcing the new program to parents.
8. Meet with school custodians periodically in the first few weeks to get feedback and adjust collection details. It is critical to have custodial support for the program.



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- Purchase only food service ware (cups, plates, cutlery) that have been certified compostable by Biodegradable Products Institute (BPI). This organization uses international standards to certify products. Reference their website to ensure products are truly compostable.
- Plastic-coated paper products, such as plates, bowls, cups, cartons, juice boxes, ice cream cartons, and frozen food boxes must be kept out. Studies have shown that the plastic coatings remain as non-biodegradable microplastic fragments in the finished compost, contaminating the soil on which the compost is applied. Microplastics are a major source of plastic pollution and cause harmful effects on living organisms.

Maintaining the program:

1. Monitor the trash dumpster for three to six weeks after the compost collection is implemented and compare the volumes to the pre-program levels. (See the *Getting started* section above). Record the trash reduction volumes and share with the school community.
2. Monitor the cafeteria collection bins periodically after the kick-off (this can be done by students or parent volunteers). If repeat issues arise (e.g., plastic wrappers in the compost), make an announcement or send home reminders in the school newsletter.
3. Distribute composting guidelines to all teachers and staff. In subsequent years, distribute guidelines at the beginning of each school year and/or as requested.
4. Provide "refresher" assemblies or classroom presentations each year until the new program becomes habit. Incoming student classes should receive education annually. Periodically retrain staff to compensate for staff turnover.
5. Provide regular reports to the school community about the volume of material they are composting and how this benefits the environment. Check with the hauler or school custodian to see if they can generate this information. Share this data as a centralized graph (see Reporting Progress, Chapter 28), announcements, or in the school's newsletter.
6. Have a student group conduct annual audits of the compost and trash bins to see how well the staff and students are doing, and what could be improved (see Conducting a Waste Audit, Chapter 30). Students can then create an awareness campaign based on their findings.

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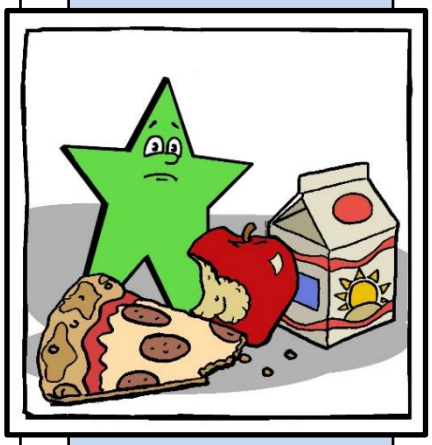
- Beware of purchasing plastic products that are marketed as *degradable* or *biodegradable*. They do not meet international certification or BPI standards for compostability.

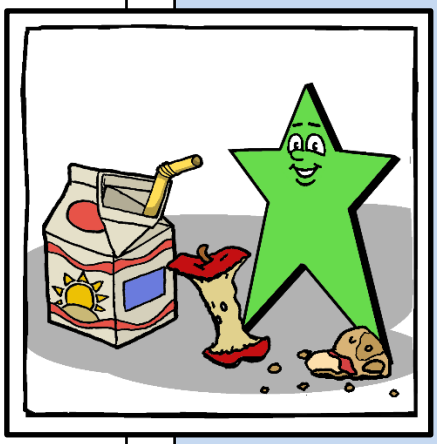
Lining compost containers:

- Compostable bags are available in all sizes to line compost containers. They can be expensive, depending on your project budget. Classroom containers can be lined with newspaper or paper bags. If containers are lined with plastic bags, the bags themselves must be kept out of the compost dumpster and put into the trash.

Assessment:

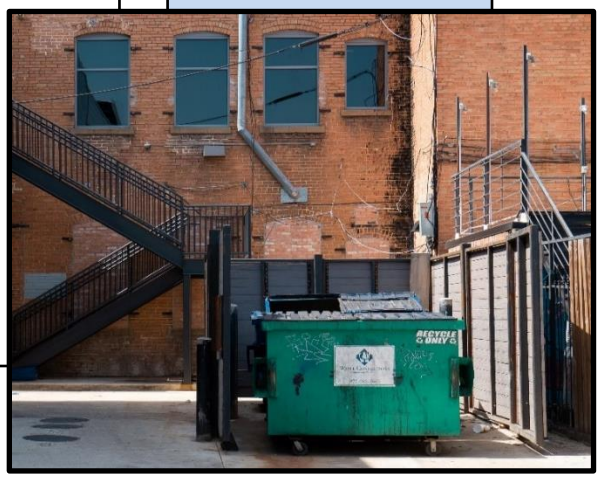
- Monitor the trash and composting dumpsters for reduced trash volumes and increased compost volumes. Look for and record contamination issues.
- In the lunchroom, pop-quiz students at their tables or as they bring items to the compost bin. Ask questions such as:
  - What is one item that can be composted at school?
  - What is one item that should NOT be composted?
  - What compostables did you bring in your lunch today?
  - Can a napkin be composted?
  - Can a paper towel be composted?
  - What do you think about composting?
  - How does composting help the earth?
- When students perform an audit of the trash and compost collection bins (see *Maintaining the program* section above), compostable items should ideally be less than 10% of the trash bin contents, and trash items should make up 10% of the collected compostables. Have the student group create a campaign to report their findings to the school community, including reminders about common sorting mistakes and the benefits of composting to the environment (healthier soil, less waste, reduction in methane generated by landfills, etc.). Video or audio announcements, posters, and short presentations to classes make an effective campaign.



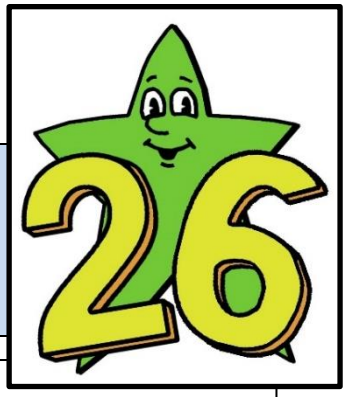


Related Activities:

Take a Bite Out of Food Waste – Chapter 4
Schoolwide Recycling Collection – Chapter 18
Composting with Worms – Chapter 23
Backyard Composting at School – Chapter 24
Reinforcing Collection Programs Over Time – Chapter 27
Reporting Progress – Chapter 28
Conducting a Waste Audit – Chapter 30
Special Considerations for High Schools – Chapter 35



Worm Composting Workshops



Snapshot
Hosting vermicomposting (composting with worms) workshops and providing the needed supplies will encourage teachers and families to try composting in their classroom or at home.

Objective:
Participants will leave the workshop with a prepared worm compost bin and the basic knowledge to maintain it.

Age Groups: K-12th grade and adults

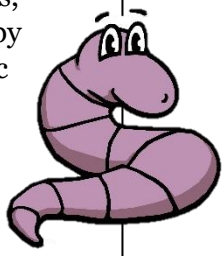
Setting: Cafeteria or other large room

Project Duration:
- Preparation: 2-6 hours
- Workshop: 2-2.5 hours (including set up)

Materials:
- Opaque plastic 10-gallon totes (1 per family or classroom)
- Power drill/bits
- Marker and ruler
- Spray bottles
- Newspaper
- Whiteboard
- Copy paper
- Printer
- Red wigglers (*Eisenia fetida*) (optional)

Why This Project Matters:

Uneaten food and inedible food scraps (fruit peels, eggshells, etc.) add up to a lot of perfectly good worm food! Vermicompost, or the castings left behind from worms, is a natural, nutrient-rich soil amendment that may be used to nourish gardens, yards, and houseplants. Composting also reduces waste by preventing organic materials from entering the anaerobic environment of a landfill where they produce methane gas (a potent greenhouse gas) as they decompose.



Project Summary:

While many people are familiar with backyard composting, vermicomposting is not as well-known. Hosting a worm composting workshop for the school community can be an effective way of sharing an alternative composting method that families can try at home. Vermicomposting can be utilized in almost any living situation, regardless of home size, location, or yard access (apartments, condos, mobile homes, etc.). In addition, teachers attending the workshop may be inspired to vermicompost in their classroom.

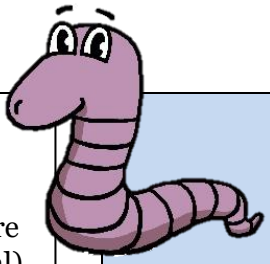
Implementation:

One month before the workshop:
1. Find a presenter to facilitate the worm composting workshop. This may simply be someone who has successfully maintained their own worm bin and can advise others on how to do the same.
2. Choose times and dates for the workshop. Offer an after-school session for teachers and a weeknight/weekend session for families.

3. When workshop participants are given the tools to start a worm bin, they are more likely to follow through with maintaining one. Here are some ideas for getting supplies into the hands of participants:
    - Have supplies available for purchase at the workshop.
    - Obtain a grant/donation and offer supplies for free.
    - Offer supplies at a discounted rate if local hardware or garden stores sponsor the workshop.
    - Have a student group sell supplies as a fundraiser before or during the workshop (see Extensions).
4. Coordinate with the principal for a workshop location within the school (library, cafeteria, art room, or spare classroom). If the school is not available, inquire with community centers, libraries, or local businesses.
5. Advertise the workshops to the school community through hallway posters, in-school announcements, family newsletters, and website/social media posts. Invite a student group to help with these promotions. If desired, open the workshops to the greater community.
6. Coordinate registration for the workshop. Provide contact information for participants to register and ask questions. Requiring registration to occur prior to the event, and sending reminders closer to the event date, leads to higher attendance rates. This also benefits the coordinator when preparing workshop handouts and supplies.
7. Prepare and assemble worm bins for participants:
    - Purchase opaque plastic 10-gallon totes and lids (approximately 24”x16”x9”) to be used as worm bins (one per participant, family, or classroom).
    - Before drilling, prepare an indoor area (or a tarp outdoors) to set up your equipment.
    - On the lids, use a marker and ruler to make two rows of six dots each. Make sure dots are evenly spaced. Using a ¼ inch drill bit, drill holes into the 12 dots.
    - On the short sides of the bins, make two rows of three dots each on the upper half of the bin. On the long sides, make two rows of six dots each, also on the upper half of the bin. Drill holes into these dots.
    - When drilling is complete, sweep up all small shreds of plastic and dispose of them in the trash.
    - Create bedding for one bin by tearing newspaper into 1-inch wide (or thinner) strips. Sprinkle paper strips into a bin covering the entire bottom surface about 3-4 inches deep. This completed bin will serve as an example during the workshop.

Extensions:

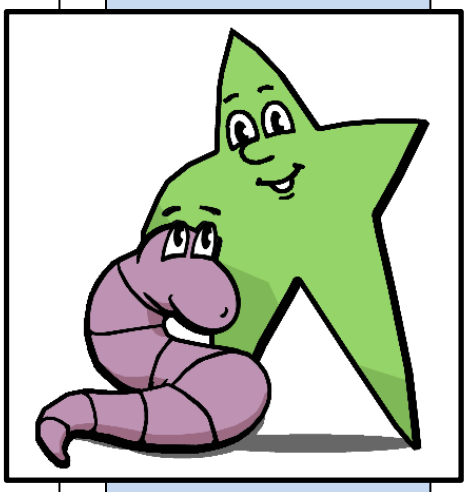
- Create a fundraiser from the sale of red wigglers before or during the worm bin workshop. Have a student group coordinate between the worm farmer and participants. For example: if worms are $10/lb., the student group could take orders for $15/lb. Collecting orders prior to the workshop is beneficial so that the worms can be available to participants when building their bins.
- Provide directions from the internet on how to make a simple fruit-fly trap or make them as part of the workshop.



8. Assemble workshop supplies: information sheets summarizing procedures (see Composting with Worms, Chapter 23), drilled worm bins, stacks of newspaper, spray bottles, red wiggler worms (or information on where to buy them), hand-made fruit fly trap materials (optional), example of a newly completed worm bin, and an established worm bin with worms.

Day of workshop:

1. Assemble workshop supplies (handouts, worm bins, etc.) for easy distribution.
2. Arrange the workshop space with tables and chairs.
3. Create and display signage for the venue with directions to the workshop room or location.
4. Have the presenter facilitate the workshop to include the following:
    - Explain how worm bins were prepared.
    - Have participants prepare bedding from newspaper for their own bin. Demonstrate the right amount of moisture to add to the bedding.
    - Review and demonstrate initial bin set up, maintenance (including feeding and moisture amounts to add), harvesting, and troubleshooting.
    - Go over what can go into the worm bin (food scraps, nonrecyclable paper waste) and what can't go in (metal, plastic, and glass).
    - Provide information on how to order worms (if they are not provided).



Assessment:

Follow up with participants two to three months after the workshop. Ask if they are still using their worm bin and if they have any questions or concerns.

Related Activities:

Composting with Worms – Chapter 23