Vermicomposting For School Districts

Recycling has become part of our culture. Some schools in the state, have already taken the next step in recycling– school composting. Is it time for your school to take the next step? School composting can be an exciting way to get the entire school community working together to help the community and the environment. There are additional, far-reaching benefits of a composting program for the school community. Within the classroom, science concepts related to composting are easily integrated into science, math, social studies and language arts curricula. Taking responsibility for the solid waste stream at school empowers students by giving them a specific action to help their community and the earth. Students develop a sense of school pride by taking steps toward becoming a "green school" (a school that practices wise use of natural resources). Students may spread the compost message and be instrumental in starting composting at home or in their neighborhood. A thoughtfully-planned school composting program, from the nuts and bolts of the actual composting process to establishing a culture of composting, can successfully address these issues.

Reasons for Composting

Schools can help the environment and their community when they compost food scraps. A school composting program will:

- Reduce the school's solid waste stream
- Recycle natural resources
- Extend the life of a leaching field and septic tank if a garbage disposal system has been in use
- (or reduce nitrogen loading to the local sewage treatment facility)
- Educate the school community about benefits of composting
- Create a useful product (finished compost) for landscaping projects

It's okay to start with a small pilot program or to develop the program in phases. Schools differ in the way they develop new programs; follow your system's protocol. Follow these steps for developing a successful program:

1. Share your ideas and seek out others who may be supportive of the idea
2. Recruit a core group of people to develop the idea (Steering Committee)
3. Research what is involved in a schoolwide composting operation
4. Clearly define the scope of the project (it's okay to start small)
5. Follow the school system protocol for developing new programs
6. Get support from all components of the school community.

Here in Cass County, Cass County Landfill and Cass County Conservation has teamed up to help our local school districts start Vermicomposting in the school setting. We can help in every step along the way. You will see in the following pages we have created sample projects, duties, and curriculum. Effective leadership from a few staff members who are committed to making school composting a reality is critical to the success of the program. We suggest a steering committee be formed so that communication lines are clear. The Steering Committee is responsible for developing a clear plan of action, promoting the program, coordinating the actual work,

and evaluating what's working and what's not. A project leader included in the steering committee would be the direct link from parents and students to the Steering committee. We would suggest a teacher to be a project leader.

Project leader roles:

- Decide the best rotation for compost-workers. (monthly, or weekly)
- Tailor the compost-worker forms to the rotation.
- Train teachers to monitor student food-sorting at containers in the cafeteria (lunch duty) and supervise student compost-workers, during their classes time as compost-workers.
- Create a rotating schedule for classes as the student compost-workers.
- Pass out curriculum to teachers, so they can implement the lesson plans when their class are compost-workers.
- Keep a binder of compost-worker forms.
- Make sure the composting process is working and address any imbalance in carbon, nitrogen, water or oxygen.

Common challenges:

Start-up idea: **Compost Awareness Week**
This works well in the beginning or every September, after the students have been given some basic instruction and are getting used to the food-sorting system. Students who sort their lunch waste correctly receive a ticket to fill out with their name and homeroom. A drawing is held at the end of the day, and a few people from each lunch wave receive a coupon for a free ice cream. Names of winners are announced on the public address system or scrolled on the school television.
Finished product: A PTO that does an annual plant sale as a fund raiser may use the compost as a soil amendment for the plants. A student project of bagging, labeling and selling compost might complement their plant sales event.
Problem Students are sloppy when dumping their food wastes, creating a mess on the floor for the custodial staff to clean up.
Solution Be sure food waste barrels have wide openings, are located after the recycling containers, and spatulas are attached to the food barrels for scraping.

Steering Committee Roles:

Communicate with school board, staff (including food service director, custodians, and grounds crew), project leader, and Cass County Landfill.
Create a clear plan.
Promote the program.

Regular promotion aids that steady progress. Planning any promotional activity requires time. For this reason, it is essential for the long-term success of a school program to have a core group (Steering Committee) that can commit the time to plan and carry out these events.
Evaluate the program

- Is the daily processing of food scraps running smoothly?
- Are the bins and equipment in good repair?
- Are the students and staff volunteer working well?
- What is the general attitude of the students and staff about the composting program?
- What adjustments can be made to make the process more efficient?

- How can we recognize and celebrate our accomplishment thus far?

Additional Promotion:

America Recycles Week (the week that includes November 15th) Connect promotional activities to the national America Recycles Day www.americarecyclesday.org or a local campaign, such as a town Rid Litter Day.

Earth Day (April 22) Celebrate Earth Day with a special emphasis on the school compost program www.earthday.org.

International Compost Awareness Week Celebrated the first week of May, this could be used as a time to unveil finished compost. www.compost.org.

Compost Poster Contest Offer prizes for posters that teach about composting or motivate students to do their part; could be part of an art class on creating posters.

Compost Advertisements Offer prizes or course credit for radio jingles or television commercials; a local radio station may play the winning jingles. This fits in well with language arts lessons.

School Composting Club Give students an opportunity to meet with friends and have fun in an after-school activity that has them take some ownership for what happens in their school. Get a copy of *Blueprint for a Green School* (see "Resources", page) which outlines ways for schools to become more environmentally conscious.

Student Employment If the school has a work-study program, students can be hired to process the days food scraps. Keep in mind that the work-study hourly rate is typically very low and will probably not motivate students for long. This might be used in the beginning with plans for using other student incentives to get the job done throughout the year.

Community Business Donations *A*sk businesses to donate items or coupons; students who volunteer to help out receive a ticket for a drawing. Items need to be things that students would think are fun, such as a basketball, movie tickets, an ice cream sundae, or music compact discs.

Compost-worker Daily Tasks

A team of two or three students, supervised by an adult, can carry out the following daily tasks in about fifteen minutes.

Task 1 Collect Food Scraps

Task 2 Weigh Food Scraps

Task 3 Transport Food Scraps to Bins

Task 4 Take Compost Temperature

Task 5 Spread Food Scraps

Task 6 Layer with Bulking Material

Task 7 Clean-up

Task 1 **Collecting Food Scraps**

Food scraps are deposited into special containers located in the cafeteria and kitchen. Students retrieve the special food waste containers from the cafeteria and kitchen and consolidate the contents into one barrel that has been lined with a plastic trash bag. In the cafeteria, a labeled food waste barrel should be located alongside the other recycling containers where students normally sort their lunch trays. One or two labeled food waste barrels should be provided in the kitchen for food preparation scraps, leftover food and coffee grounds. Cafeteria and kitchen food scraps should be transported to the compost bin daily. Other sources of food scraps are the Family and Consumer Science classroom, the teachers' lounge, any classroom or office equipped with kitchen facilities, and areas where students routinely eat after-school snacks. These areas can be equipped with a small, commercially-produced container fitted with a carbon filter lid or a five-gallon bucket with a cover. These outlying school areas could be added once the cafeteria and kitchen routine is in place. At that point, students will be more inclined to use the compost containers located around the building. This reminds students that composting is now a part of the school culture. It also means that you must plan for regular pickup of these food wastes. If they are not picked up regularly, they may become full or smell unpleasant, resulting in negative publicity for the compost endeavor.

Task 2 **Weighing Food Scraps**

Students place the bag of food waste in a container on the scale to weigh (subtract the weight of the container) and record the amount of food (see *Composting Record Sheet*, page). The best type of scale to use is one where the weight can be viewed easily from the side since a container will probably be covering the entire top of the scale. Or consider purchasing a scale that has a locking feature so that the weight is held still and can be read after the food scraps are removed. Recording the weight serves several purposes. It can be used to keep track of the total amount of food processed in a given amount of time, which shows the savings in the disposal of solid wastes produced by the cafeteria. The total weight of the food wastes can be compared to the weight of the compost product. Weight records can be used for constructing math problems. Science classes can track and analyze the compost operation, including the amount of food processed.

Task 3 **Transporting Food Scraps to the Compost Bins**

The barrel is wheeled out to the bins. Students need to pick up work gloves, trowel and the thermometer on their way if these items are not stored near the bins.

Task 4 **Taking Compost Temperature**

The long probe of the compost thermometer is carefully pushed into the center of the compost pile where it is the hottest. The temperature is read and recorded on the chart. Taking the temperature of the pile is a way to monitor the progress of the compost. A working compost pile will go through stages, getting hotter as the decomposers work and reproduce, and then cooling off. Temperatures can reach 150°F if conditions are favorable. If the compost cools down before most of the decomposition has occurred, it is a sign that the balance of food, moisture, air and bulking materials needs to be adjusted. Usually, a drop in temperature indicates it's time to harvest the bin.

Task 5 **Spreading Food Scraps**

The easiest way to manage the food waste is to line the food waste barrel with a plastic trash bag. Secure the bag around the rim with a bungee cord. Students can then lift the bag out of the barrel

into the compost bin. Our packages compost bin has removable front wall that makes the lifting easier for students. Food should be spread somewhat in one spot but not piled high. Each day bury food in a different section.

Task 6 **Layering with Bulking Material**

A few inches of wood chips, wood shavings, potting soil or leaves should be spread with a trowel to cover the food completely, making it less attractive to animals. The lid, of course, needs to be latched.

Task 7 **Cleaning-Up**

Students use cloth rags (and water if available) to wipe off the shovel and thermometer, store equipment, and return the barrel to the cafeteria.

Curriculum:

5th Grade

Microbes in Composting Lesson PDF
Iowa Core- Science/self study

Composting Across the Curriculum,
A Teacher's Guide to Composting
Cass County Conservation has a PDF digital copy, please ask!

See the Resources section for additional Worm Compost Curriculum. We also have a 3rd grade and younger curriculum available upon request.

Vermicomposting For School Districts

Packages:

Classroom size

1 tote

1 lb of red wiggler worms

Large Scale Packages

(all moveable by a pallet jack, and include a lid)

Small

32” x 30” x 34”

7 lbs of food waste per week, will hold up to 14 lbs of worms.

Medium

48” x 45” x 34”

15 lbs of food waste per week, will hold up to 30 lbs of worms.

Large

62” x 48” x 34”

21 lbs of food waste per week, will hold up to 42 lbs of worms.

Resources:

School Composting: a Manual for Connecticut Schools PDF

Worms are a Class Act
Worm curriculum featuring
The Can-O-Worms composter
Cori Kyle
Viscor Distribution Inc.
12165 Cherrywood Dr.
Maple Ridge, BC V2X OB7

Worms Eat Our Garbage
Classroom Activities for a
Better Environment
M. Appelhof, M.F. Fenton, B. Loss Harris
Kalamazoo, MI
Flower Press, 1995
www.wormwoman.com

The Wonderful World of Wigglers
Julia Hand
Food Works
64 Main Street
Montpelier, VT 05602
A Common Roots Book, 1995
(802) 223-1515

Blueprint for a Green School
Center for Environmental Education
Antioch New England Graduate School
40 Avon Street
Keene, NH 03431
(603) 355-3251
http://search.schoolsgogreen.org/Resources/CEE_Bookstore/%2330000