

Case Study
Liberty, New York School District
School-wide Recycling and Waste Reduction Program
September 2011

The Liberty School District is committed to reducing its environmental impact and helping to instill in its students a greater environmental awareness. In addition to recycling and reuse, worm composting has been implemented and cafeteria food scrap composting is beginning.

Background

The Northeast Recycling Council, Inc. (NERC) was awarded a United States Department of Agriculture Rural Utility Services Solid Waste Management Grant in 2009 to provide direct technical assistance and training in waste reduction, recycling, and composting to rural schools in Connecticut, New York, and Delaware. Eight schools participated in NERC's Waste Reduction and Recycling (WR&R) project over the course of two years.



The Liberty School District in New York State has a comprehensive school recycling program. The School District decided to participate in NERC's WR&R project primarily to engage its Middle-High School students more in the District's environmental activities and to explore composting options for the schools. NERC provided educational resources, vermicomposting (worm composting) and composting resources, as well as hands-on assistance in developing pilot composting projects. NERC worked with school representatives to formulate a WR&R Work Plan, outlining goals and activities to be undertaken through its participation in NERC's project. See Attachment A for the Work Plan.

Facts at a Glance

- 100 pounds of worm castings were harvested from two worm bins at the end of the 2010 - 2011 school year. Students packaged the castings in 500 gram bags and sold the bags for \$5.00 each as a class fundraiser.
- Two tons of paper was collected for recycling from Liberty Middle School in the 2010 - 2011 school year.

Liberty School District Overview

Liberty Central School District is located in the Village of Liberty, in Sullivan County, New York, which has a population of 3,975. The district serves 1,625 students from five surrounding townships, plus the village and town of Liberty (population 9,632). Those towns include: Rockland (population 3,913), Fallsburg (population 12,234), Neversink (population 3,553), Thompson (population 14,189), and Bethel (population 4,532). The district is made up of two schools, Liberty Elementary and Liberty Middle-High School.

Liberty School District is committed to diverting its waste stream and complying with the Sullivan County mandatory recycling ordinance. Middle-High School recycling activities include: paper and cardboard; beverage containers; toner cartridges; cell phones; and batteries. There are also several reuse projects, including a prom dress exchange.

The Village of Liberty collects and transports school recyclables to a Sullivan County transfer station. Redeemable beverage containers are collected for fundraising projects.

The school has recently undergone significant renovations in its Middle-High School. The new facility will provide students with enhanced academic opportunities and uses “green technology” throughout. The building is a net-zero energy structure, featuring solar panels and other energy efficiency measures. The School also has a natural wetlands area and school garden.

Nuts and Bolts

Liberty Middle-High School Recycling Program

Students in the Project-Based Learning (PBL) classes are responsible for collecting paper and beverage containers for recycling from the Middle School. Each classroom has recycling bins and sets them outside of the classroom door at a designated time. PBL students collect the materials on a weekly basis, check for contamination, and separate the redeemable beverage containers from nonredeemable ones.

The Middle School expanded its outreach and promotion of its recycling effort with poster displays and ensuring that all classrooms have green and blue curbside bins for collecting materials. The PBL classes designed and printed fliers listing the acceptable materials for each class.



New materials to be added to the Middle School's recycling program in the 2011 - 2012 school year include small electronics and cell phones for fundraising.

Collection of paper at the High School was initially conducted by the School's Green Team. Each classroom has recycling bins and sets them outside of the classroom door at a

designated time. Students then roll carts around to collect materials. The School District purchased green and blue recycling bins (paper and beverage containers) for all classrooms. The Green Team provided signage for the bins.

In the fall of the 2010 - 2011 school year, the Life Skills Class took over the collection duties. Students in the Life Skills Class have developed a collection schedule and take turns doing the collection, checking for contaminants, and separating the redeemable beverage containers from the nonredeemable ones. The class uses the funds from the redeemable containers for field trips.

Classroom Worm Composting

In the spring of 2010, Project Based Learning students and instructors from the Middle School constructed three wooden worm bins for use in classrooms. NERC staff provided worm bin designs, feeding and care information, as well as a hands-on lecture to students on worm biology and worm composting.

The PBL students are responsible for the care and maintenance of the bins. Students save appropriate scraps from lunches to feed the worms. In the spring of 2011, students harvested 100 pounds of worm castings for sale as a class fundraiser.



Students continue to maintain two bins in the classrooms. Worm biology curriculum has been integrated into class studies. Students are shown a video about vermicomposting and have conducted various experiments using the worms to better understand worm biology and the benefits of worms in the soil.

Cafeteria Composting

Cafeteria composting was piloted during the 2010 - 2011 school year on a limited basis. Due to the success of that pilot, it is scheduled for full implementation in at least one lunch period at the High School in the 2011 -2012 school year. NERC provided training and assistance for the composting effort. The High School began composting in all lunch periods in the fall of 2010. The Life Skills Class and the High School Green Team monitored the compost collection bucket during each lunch period; monitors instructed students on what was acceptable for composting.

The Life Skills Class collected the food scraps and transported the materials to the compost bin outside. The students dumped the material and covered it with leaves or shredded paper. The program went smoothly for several months. However, students in the Green Team got busy and stopped monitoring the lunches, so the program was discontinued. NERC staff met again with the Life Skills students to discuss restarting the compost project again in the 2011-2012 school year. Students went out to the compost site and NERC provided an overview of

the compost process and program maintenance. Students from the Life Skills Class will assume all responsibilities for the composting project. Instructors hope to integrate the effort into the classroom's horticultural projects. Composting offers many physical and learning skill opportunities for the Life Skills Class.

NERC staff also discussed potential compost site options with the PBL instructors for initiating Middle School cafeteria composting in the fall of the 2011 - 2012 school year. The Liberty School District purchased four additional compost bins for use in the Middle and High Schools.

In September 2011, NERC staff, along with the Sullivan County Recycling Coordinator, provided compost trainings to the students in the PBL classes in the Middle School and the Life Skills Class in the High School. Cafeteria composting is scheduled to begin in both schools in October.

Reuse

The High School has a long-standing prom dress "reuse" project. Students and instructors in the Life Skills Class operate the program. Donations of prom dresses and tuxedos are made by students and parents. Instructors explored what other schools were doing to promote reuse and address privacy concerns, and looked at ways to "equalize" participation so that students in need are comfortable with participating. To address these concerns, dresses and tuxedos are now sent to a region-wide program at Fallsburg High School where all students in the region can "shop" during an evening. This helps solve issues of anonymity and allows students to have a wider selection of offerings from which to choose.

During the School's participation in NERC's WR&R project, additional materials were added to the High School's reuse project. Items now collected include shoes, gym clothes, coats, and other items for students who may need these items permanently or need them because they forgot them, such as gym clothes (items are washed prior to distribution).



Project Results

The Project-Based Learning classrooms present an ideal environment for implementing vermiculture. Students were active in constructing the bins and maintaining the worms. Learning about vermiculture and worm biology provides a creative venue to help instill in students greater interest in science and the environment. Students were also very excited about turning its compost operation into a money-making enterprise by harvesting the worm castings and packaging them for sale.

Project-Based Learning students at the Middle School also gained from the responsibilities associated with managing the collection of the school's recyclables.

The Life Skills Class at the High School is very active on the High School campus in promoting and managing the school's recycling, reuse, and composting projects.

Students gained from undertaking the scheduling of the recycling program, interacting with other students around the school, managing the recycling and reuse programs, and the physical and mental requirements involvement in collecting, checking, and sorting the school's recyclables. Students were able to achieve a greater level of involvement in the school and satisfaction in participating in a project with clear goals and achievement.

By recycling 2 tons of paper during the school year, Liberty Middle School reduced carbon dioxide emissions (a greenhouse gas) by about 2 metric tons and saved enough energy to power the average American home for about a year.

Challenges and Solutions

Challenge: Gaining more student participation in the recycling programs.

Solution: Bins for paper and beverage container recycling in all classrooms. Posting signage next to classroom and hallway recycling bins. Student made posters and displays around the school.

Challenge: Maintaining composting when students get too busy.

Solution: Phase in the program so that students are not overstretched. Integration of the compost effort into the Life Skills Class will allow for more ongoing student involvement.



Challenge: Maintaining the High School's Green Team upon retirement of the Team's Advisor.

Solution: To date no other instructors have stepped forward to undertake advising the Team.

Challenge: Fruit fly infestation in the classroom worm bins.

Solution: The fruit fly issue was resolved by covering the worm bedding with sheets of cardboard and spraying the tops of the cardboard with a natural insecticide spray containing pyrethrum.



Challenge: Overcome resistance by the educational community to change the way the District manages its wastes.

Solution: Ongoing education (and project demonstration) of administrators, teachers, and maintenance/custodial staff about the benefits of recycling and composting, along with incorporation of educational components that naturally result from student participation in a waste management program. These include the science of composting, recycling and compost marketing, biology and earth science implications with respect to reduced pollution, and decreased manufacturing costs using recycled raw materials like paper, aluminum and plastic. Illustrate the labor and cost savings of the program, particularly for the long-term, including, the involvement of students in processing tons of paper and plastic, and this impact on reducing the volume of waste handled by the custodial staff. Benefits to the community through tax savings and reduced landfilling expenses materialized through school recycling of paper, corrugated cardboard, plastics, and reduction of organics in the school waste stream.

Tips for Success

- Dedicated instructors willing to incorporate recycling and composting into classroom duties and curriculum.
- The flexibility afforded instructors and students in the Project-Based Learning classes and the Life Skills Classes to engage students in recycling and composting and gain from the physical, mental, and social skills afforded these activities.
- Commitment by the School District administration to actively support integration of recycling and composting into the schools.
- Involvement and support of the Sullivan County Recycling Coordinator.

Contact Information

Information about Liberty School District can be found at <http://www.libertyk12.org/HS/Activities/gogreen.cfm>.



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Attachment A

Liberty School District Liberty Middle-High School Work Plan

Current Liberty Middle-High School recycling activities include: paper and cardboard; beverage containers; toner cartridges; cell phones; and batteries. Collection of High School cafeteria prep waste for animal clinic; newspapers for bedding. Several small reuse projects already undertaken, including prom dress exchange. The Village of Liberty hauls recyclables from the Middle School/High School and the Elementary School to the Ferndale Transfer Station operated by Sullivan County. Redeemable beverage containers are collected for fundraising.

Committee members expressed interest in determining ways to enhance student participation, benefit its futures, and ensure more sustainability of the schools ongoing waste reduction and recycling efforts. Members also wanted a way to share information about ongoing projects and ideas. Reuse and swap projects were of interest to benefit a greater number of students. Concern was expressed about developing these projects and expanding existing ones in such a way that addresses privacy concerns and encourages those in most need to participate.

Goal One: Integrating environmental projects to benefit student's futures and instill a desire in middle and high school students to participate more and therefore ensure more sustainability of programs.

Strategy: Utilize project-based learning and other creative measures to help instill in students an interest in environmental issues. One idea is to have the Project Based Learning students build worm bins in order to learn about vermiculture and composting. Provide a practical and exciting means for students and faculty to share current school environmental activities and ideas for new projects, such as a web page or file sharing opportunity so that so that everyone knows what is going on and can share information.

Tasks:

1. Middle School Project Learning Instructors will begin to look at worm composting bin designs for its classrooms.
2. High School Life Skills Class will undertake a basic waste sort to determine the amount and weight of food waste and compostable paper generated during school lunches.
3. Explore potential recycling fundraising opportunities that might engage students, help the environment, and bring in revenues.

Timeline: February-April 2011

Measures of Success:

1. Increased student participation in recycling and reuse projects, as measured by tonnages diverted.
2. Number of students involved in projects.

3. Scope of projects undertaken.

Goal Two: Expand current reuse/swap/material exchange projects and consider new reuse projects to engage greater student participation and develop sustainable projects.

Strategy: Expand existing reuse projects and increase interest in participation through greater outreach, addressing privacy issues, and looking at ways to “equalize” participation so that students in need are comfortable with participating. Explore what other schools are doing to promote reuse and address privacy issues. Examine additional reuse projects that can benefit the students, such as athletic shoe reuse/swap and recycling,

Tasks:

1. Committee members will discuss existing reuse projects and ways that these projects can be expanded to benefit a greater portion of the student body. Address issues of storage, handling, etc.
2. NERC staff will research additional reuse projects, case studies on how reuse projects are developed and implemented to address privacy issues and to meet the needs of those students who can gain the most benefit.
3. Conduct increased outreach to promote reuse projects, share ideas, and increase student participation.

Timeline: March through May 2011

Measures of Success:

1. Number of participants involved in reuse projects.
2. Number of donations received.
3. Number of students benefiting from the projects.
4. Scope of additional projects undertaken or discussed as future projects to consider.

Goal Three: Investigate ways to increase food scrap diversion from the school.

Strategy: Implement a worm composting program and pilot food composting effort.

Tasks:

1. NERC staff will research worm composting bins that can be built by students and provide worm composting information.
2. Utilize the project to educate students about composting.

Timeline:

March through May 2011

Measures of Success:

1. Number of bins constructed.
2. Participation of students in worm composting.
3. Amount of food scraps diverted.
4. Use of worm composting in class instruction.