

EARTHWAYS CENTER
AND WASTE EDUCATION

CASE STUDY 2023–2024

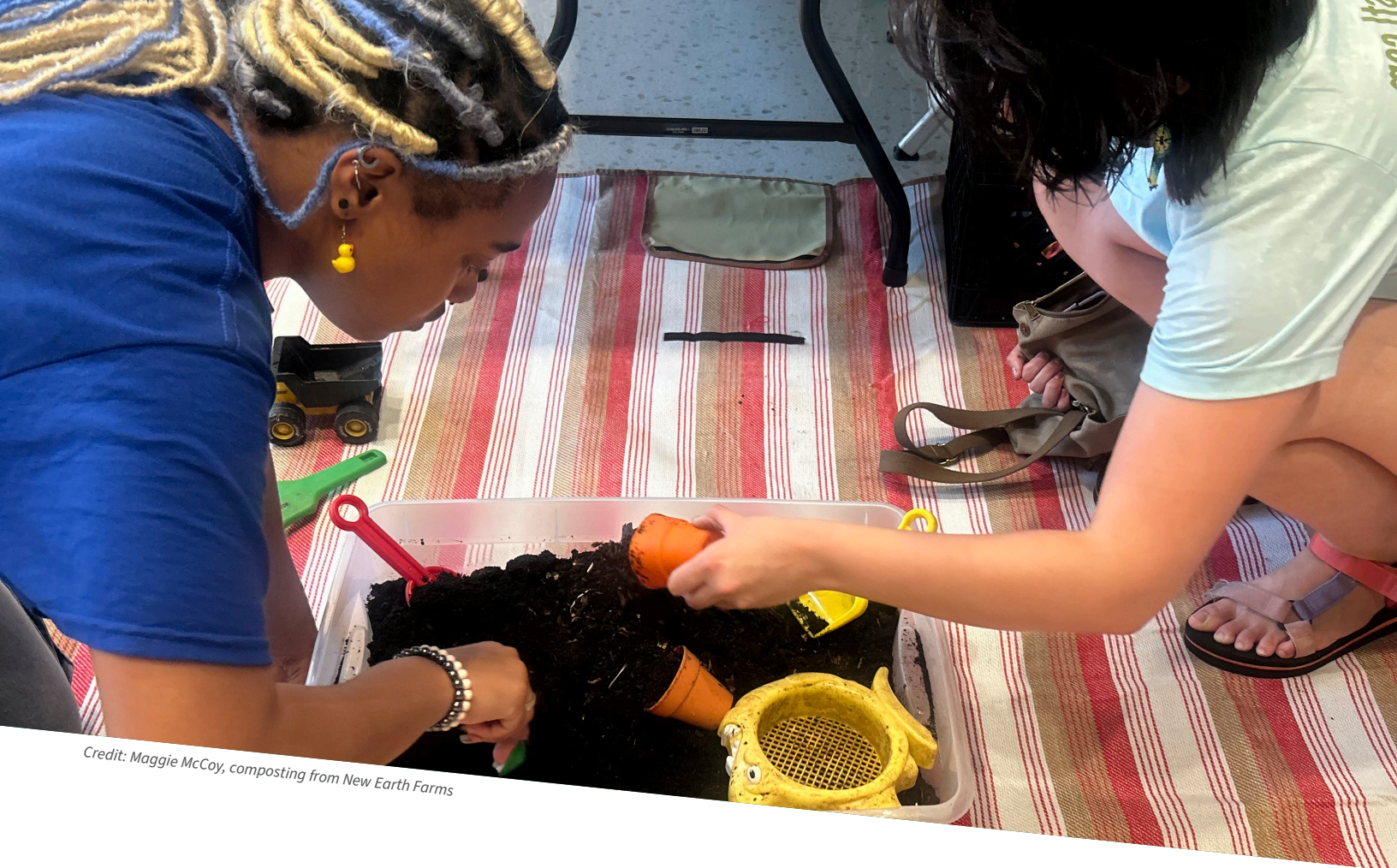


Building Better Practices: Green Teams Creating Culture Change

October 2024



MISSOURI BOTANICAL GARDEN



Credit: Maggie McCoy, composting from New Earth Farms

CASE STUDIES AND LESSONS LEARNED FROM THE 2023-24 WASTE EDUCATION PROGRAMS

The EarthWays Sustainability Network (ESN) is a year-long professional development opportunity that supports educators in the St. Louis region in learning how to reduce school waste, inspire and engage students in real-world problem-solving, and launch green school initiatives to help reach school sustainability goals.

Leadership in Environmental Action Projects (LEAP) is a student action program that reduces, reuses and recycles trash from schools and communities and informs people about local solid waste and resource issues. LEAP uses student/community partnerships and cooperative learning to achieve these goals.

ESN and LEAP are programs of Missouri Botanical Garden's EarthWays Center with funding support from the St. Louis-Jefferson Solid Waste Management District and the Missouri Department of Natural Resources.

EARTHWAYS CENTER



Summary

For the 2023-24 academic year, many K-12 schools set new goals for waste reduction. Schools focused on building knowledge and habits in students through **“Building Better Practices”**. The following stories highlight the efforts to reduce waste in schools and communities across multiple program areas, including the EarthWays Sustainability Network and Leadership in Environmental Action Projects.

The EarthWays Sustainability Network (ESN) began in the 2016-2017 school year with grant funding from the St. Louis County Department of Public Health, with the stated goal “to better prepare teachers to be the leader in empowering students to act and solve real-world problems. By connecting with professional educators in the community, EarthWays Center hopes to establish a network of educated, confident, and empowered educators that serve as champions for sustainability at their school.”

Through the support of the St. Louis-Jefferson Solid Waste Management District and the Missouri Department of Natural Resources, the Network continued to expand in St. Louis City, St. Louis County, Jefferson County, and St. Charles County for the 2017-2018 school year.

That support continued through the **2023-2024 school year** and the Network had one school join, **De Smet Jesuit High School**.

The Leadership in Environmental Action Projects (LEAP) Program has been continuously supported by the St. Louis-Jefferson Solid Waste Management District since 1993. Through LEAP, students are encouraged to develop their own waste reduction projects and enact change within their communities through the use of the 8-Step Action Plan problem solving framework. The LEAP Program offers yearlong support of student action projects, called Special Projects, and on-demand programs for schools looking for expertise in a specific waste area. Two Special Projects were supported in schools and communities this year. These projects included work with **Trautwein Elementary and Crestwood Elementary**.

School communities, teachers, and students were prepared and ready to build better practices this school year. Through the practices of building knowledge, gathering data, and creating educational campaigns, students and teachers have created more sustainable schools.

Credit: Fatima Warren, Landfill Model at Trautwein Elementary



EarthWays Sustainability Network: Building Better 3Rs Systems

In the 2023-24 academic year, the EarthWays Sustainability Network (ESN) focused on communication among stakeholders at schools to restart recycling programs. This year, **De Smet Jesuit High School** was the only ESN participant.

De Smet Jesuit High School

Dr. Mariette Baxendale at De Smet Jesuit High School has led many sustainability initiatives in her time at the school. Prior to starting ESN, De Smet already paid for a recycling service, completed qualitative assessment of environmental issues and energy usage of the school, and distributed refillable water bottles. They also had an existing Global Scholars program that includes students and faculty who are interested in learning more about and taking part in global issues, including those that affect the environment. In 2019, Dr. Baxendale led biology students through a waste audit of the school. The audit revealed that plastic bottles, plastic bags, food and food wrappers, and paper were the main items thrown away.

The goal for the ESN program was to better live out part of their school mission, Care for Our Common Home, and restart the waste reduction work that had been building momentum in 2019. Dr. Baxendale also wanted to eliminate misconceptions about the efficacy of recycling and raise awareness about current consumption and waste practices. Part of this would be accomplished through equipping students with the skills to determine what sustainability information is credible through the CRAAP (credibility, reliability, authority, accuracy, and purpose) test.

There were challenges in making change within DeSmet. Coordination and communication had to be established between administration, custodial staff, faculty, and students. As in other schools, many staff and faculty had other responsibilities that often took priority over starting the recycling program. Setting up systems within the school to handle these challenges was another goal of this project.

Over the course of the project, Dr. Baxendale established large cardboard and some plastic containers were being recycled by maintenance, but nothing was being

De Smet Jesuit High School
10 September 2019 · 🌐

Biology students conduct a waste audit as part of caring for our common home. Freshmen supervised sorting cafeteria waste into separate bins and AP biology seniors gathered school recycling and waste for weighing, comparison, and data analysis. Caring for our common home is one of four Jesuit Universal Apostolic Preferences.
Mariette Baxendale



Credit: Dr. Mariette Baxendale, De Smet Waste Audit

recycled from the classrooms. She worked throughout the spring with the Global Scholar students to share correct information about what can be recycled and what happens once it is recycled. She also worked with administrators, custodial staff, and work-grant recipients to establish the best plan for collecting recycling.

At the start of the 2024 academic year, Dr. Baxendale will work to make sure there is proper signage around the school about recycling practices. There will also be a survey sent out to students about their current mindset on recycling. Global Scholars and Environmental Science students plan to take field trips to a material recovery facility and an electronics recycling facility to learn more about the process. Long term goals include reducing the use of single-use plastics and composting.

Leadership in Environmental Action Projects (LEAP)

The Leadership in Environmental Action Projects (LEAP) Program focused on helping schools reduce the waste being sent to landfills. LEAP continues to be a flexible program that responds to the needs and interests of schools, supporting yearlong projects and new initiatives. This year, this included work with Trautwein Elementary and Crestwood Elementary.

LEAP Special Projects

Trautwein Elementary

Fatima Warren, a school counselor at Trautwein Elementary in the Mehlville School District, wanted to make sure that her students contributed to a more sustainable environment through reducing waste in landfills, reusing materials, and recycling correctly.

Prior to beginning the program, some students at Trautwein were not recycling. Those that were recycling often recycled things that could have been reused or should have been in the landfill. The 4th grade students decided to gather data about what items filled their recycling and landfill bins. At Trautwein, the policy is that only paper should be in the recycling bin. While other items are recyclable through single stream recycling, paper is the most common waste item in classrooms, and it is often easier to avoid contamination if that is the only item collected for recycling. Breakfast in the classroom can often create significant contamination in the recycling stream so opting to throw all those items in the landfill bin can be a useful

strategy for reducing contamination. Students learned about how landfills work and what can be recycled through guest visits from Missouri Botanical Garden.

Students conducted a waste audit of all the recycling and landfill bins in each classroom. They found that the recycling bins were filled with more than just paper and that the landfill bins had paper that could have been recycled.

Based on that data, students developed ways to share information about recycling with their fellow students. Students worked on signage that would go by the recycling and landfill bins in each classroom. They also suggested placing more trash bins outside in order to make sure that waste was not being left on the playground. Some students created a skit about recycling and then performed it at a school wide assembly in front of 400 other students!

This project helped students learn about landfills and the impact of waste for the first time. It made them more conscious about how they recycle. The 4th graders from this project will become the 5th grade leaders of the school, helping to set the example for the rest of the students at Trautwein Elementary.

Crestwood Elementary

Crestwood Elementary had a specific interest in reducing waste in their cafeteria. The Environmental Club at Crestwood had been engaged in many sustainability and waste reduction projects over the years, but wanted specifically to examine how much food and other waste was being generated in the elementary cafeteria. With that information, the next step would be assessing how much could be diverted through recycling and composting efforts.

Prior to the LEAP Program, there was no recycling or composting in the cafeteria. Students did use reusable trays and service ware, although keeping forks out of the trash had been a challenge. Due to space constraints and having the cafeteria also be the gym, it was difficult to set up the dismissal line in a way that made it easy to collect the forks.



Credit: Fatima Warren, Landfill Model at Trautwein Elementary

One of the goals of the project was to determine how much of the waste could be composted on site in the school garden. As part of the project, 5th graders from the Environmental Club volunteered to conduct a waste audit after lunch. Students sorted food waste into compostable (fruits and veggies) and non-compostable (meat, pasta, sauces) categories. While all food is compostable at a commercial compost facility, students were particularly interested in what they could compost at school. They also looked at what paper and cardboard could be recycled.

Students found 20 pounds of food waste in the sample from that lunch period. Six pounds of that food waste could have been composted on site. Students noted that much of the food was unopened or uneaten and could have gone to a shared table. These included bananas, oranges, apples, milk cartons, and chips. The only recyclable items were the empty milk cartons. Students also recovered two forks from the trash. Many of the students could not believe that their classmates had thrown away unopened and uneaten food items. They also saw how certain lunch items, noodles and sauce for example, can contaminate recycling streams and make it harder to compost fruits and vegetables on site.

This waste audit will help to inform the flow of the cafeteria after it undergoes construction and reopens. Improved flow of students through the cafeteria, especially at dismissal from lunch, will enable Crestwood to efficiently collect reusable service ware, compost, and recycling. The plan is to start composting items from the salad bar once a week in the school garden. This will allow students to learn about the composting process as well as reduce waste that is going to the landfill.

This is a great example of students beginning a sustainability project with the knowledge they will not see the finished project. Large scale changes within schools can take many years, but creating a culture of sustainability ensures that administrators, teachers, and students will be ready for the opportunities to make those big changes when they come.



Credit: Jaclyn Jezik and Olivia Dove
Top to Bottom: Crestwood Elementary waste audit and creative reuse from Perennial.

STEM Events: A Focus on Families

EarthWays Center built on the success of previous STEM Saturday events, which had connected families to information about sustainability, waste, recycling and composting. In the summer of 2024, EarthWays formed a partnership with the STL Summer Adventure through St. Louis Public Library and St. Louis County Library to present a Sustainable STEM Night at Missouri Botanical Garden. This event connected families with community organizations to support students learning about Science, Technology, Engineering, and Math, but also supported them learning about how to reduce waste in their homes and communities.

For this evening, families registered through their local library to attend a free night at the Garden with activities provided by partner organizations that centered on sustainability, recycling, waste reduction, creative reuse, and composting. Organizations that provided activities included Brightside St. Louis, St. Louis County

Department of Public Health, New Earth Farms, Great Rivers Greenway, Forest ReLeaf, Perennial, Brute Force Robotics, and All Hands on Deck. Families could watch a puppet show about recycling, dig through compost, and see how to reduce food waste in St. Louis. Buses were provided for families from two library sites to ensure that those without transportation would have access to the event.

The libraries helped to provide registration and promotional support, while partner organizations provided activities. The Garden's Outdoor Youth Corps staffed the evening, helping to ensure that families and youth left with giveaway bags with recycling information. This event was really successful at bringing together different strengths in the community to provide a fun night for families where they could learn about how to better steward our collective resources.



Credit: Fletcher, Missouri Botanical Garden, St. Louis Public Library and St. Louis County Library staff

Challenges and Next Steps

Schools working on waste reduction programs had many successes and challenges this past year. One big success is that participating schools excelled at creating realistic objectives and milestones on the path to achieving their goals. Among all the participants, there was a deep understanding that the ESN or LEAP project would be a steppingstone towards larger goals – that this project was the foundation for the future.

The biggest challenge continues to be finding time for teachers and students to engage in this meaningful work. School schedules are very tight and it is always a challenge to find teachers who can dedicate time to working on waste reduction projects. These projects are interdisciplinary and support learning in science, math, English language arts, and social studies, but can be difficult to fit in a rigid school schedule. Dedicating that time can be challenging in many schools.

Next Steps

EarthWays Center is focused on helping schools achieve their sustainability goals in the coming school year. A focus will be on creating more flexibility within the LEAP Program to accommodate teachers who are interested in engaging in a student-led project but need to be creative in how it is incorporated in the schedule. EarthWays Center staff are making updates to the program guide and waste audit material to create more flexibility.

EarthWays Center will also continue to help teachers and sustainability champions create green teams within the school to support sustainability goals. By helping students and teachers “**Build Better Practices,**” EarthWays Center has helped create the foundation for schools to engage in larger sustainability projects for years to come.

Maggie McCoy

Climate Change Education
Coordinator

mmccoy@mobot.org | 314-577-0281



Credit: Maggie McCoy and Fletcher

Top to Bottom: Participants learning about recycling from Brightside St. Louis, creating donated flower arrangement and taking donated bananas from All Hands on Deck.