

EARTHWAYS CENTER
AND WASTE EDUCATION

CASE STUDY 2022–2023



Material Mindfulness: Making Less Waste through Reuse and Recycling

August 21, 2023



MISSOURI BOTANICAL GARDEN

CASE STUDIES AND LESSONS LEARNED FROM THE 2022–23 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.

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Credit: Jeanne Fernandez, K-Kids Green Team at Bridgeway Elementary

Summary

For many schools, the 2022-2023 academic year was a return to normal after the COVID-19 pandemic. Teachers and students were ready to focus on the waste in their school and implement projects and systems to reduce that waste. Schools focused on reducing and reusing materials but also on “Recycle Right, Recycle Responsibly.” The following stories will 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 **2022-2023 school year** and the Network was able to include two schools: **Bridgeway Elementary** and **Maplewood Richmond Heights Elementary in St. Louis County**. This year, EarthWays Center staff supported schools in identifying areas in the school where waste reduction could be integrated into existing activities and strategies for turning waste reduction projects into systems in the 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 **Gotsch Intermediate and the Trash Bash events**.

School communities, teachers, and students were prepared and ready to “**Recycle Right, Recycle Responsibly**” this school year. By adjusting existing programs to focus on waste reduction, creating green teams and systems within schools, and recycling correctly, schools were able to use their material resources efficiently and revitalize waste reduction programs.



Credit: Jeanne Fernandez

EarthWays Sustainability Network: 3Rs as School Culture

In the 2022-23 academic year, the EarthWays Sustainability Network (ESN) cohort focused on integrating waste reduction practices into existing school programs and creating systems to make these practices part of the school culture. This cohort did create better recycling habits, but also looked at ways to reduce and reuse materials, both higher impact strategies. Both **Maplewood Richmond Heights Elementary** and **Bridgeway Elementary** participated in ESN this year.

Maplewood Richmond Heights (MRH) Elementary

Maplewood Richmond Heights (MRH) Elementary rejoined the EarthWays Sustainability Network for the 2022-23 academic year. Chef Almut Marino focused on the curriculum for the 5th graders in the Seed to Table program at the school. These students sorted the lunch waste from the cafeteria over the course of a week. The goal was to develop a way to reduce food waste in the cafeteria. Some food waste reduction measures, such as feeding some leftovers to chickens and on-site composting, were already in place at MRH. After observing that most of the waste in the cafeteria was from food, students created posters in the lunchroom reminding their peers to only take the food they plan to eat.

Chef Marino had taken charge of creating other waste reduction measures in the school. In the MRH building, grade levels are organized into pods. The 5th grade pod had opted to have a share basket and composting container in their pod for breakfast food. Since breakfast is served in the classroom, many of the items come prepackaged and wrapped in plastic, creating additional waste. The share basket provides an opportunity for students who are not eating some of this food to offer it to students who are hungry. Almost all the food in the share basket was regularly consumed by other students. The non-recyclable plastic waste from breakfast was often contaminating the recycling stream. Because of this, Chef Marino focused on having students only recycling paper in the classroom—specifically their “paper pages.” By only focusing on the main recyclable item in classrooms, paper, MRH is able to maintain a cleaner recycling stream.



Credit: Maggie McCoy, MRH Elementary Waste Audit

Teachers at MRH also focused on school supplies as part of waste reduction. Many students were getting new pencils or throwing away their old ones long before they were too short. One teacher developed a lesson based on the book *Pencils on Strike*. Through this book and activities, students learned about taking responsibility for and valuing their supplies. This resulted in less supply waste in the classroom. Chef Marino also helped to organize supply sorting at the end of the school year. All the materials are sorted and saved for a teacher supply swap in August. This means that less supplies go to the landfill and that teachers are buying fewer new items.

Future goals for MRH include pursuing Missouri Green Schools recognition and creating systems for maintaining the waste reduction projects that Chef Marino has put in place. There is support from administration and other teachers for creating a greener MRH Elementary.

Bridgeway Elementary School

Prior to COVID, Bridgeway Elementary School had started working on composting and recycling. Efforts were made to collect food scraps and leftover drinks from student lunches (K-5), and then Total Organics Recycling would pick it all up each day. The efforts were good, and a lot of waste was diverted from the landfill. Unfortunately, not every student understood the reason for composting, and often the collection bins became contaminated with non-food items. Each time this happened, the school was charged for contaminated bins. Bridgeway had a sharing table at breakfast and lunch for students to place unopened/untouched fresh produce/package food and drinks they did not want. The food and drinks were available for any student.

Recycling in the school had been started. All classrooms had blue recycling bins, and many staff and students knew they could recycle paper and cardboard and placed those items in the blue bins. Often though, the recycling bins had non-recyclable items in them. The recycling bins were being picked up separately by our custodians and taken outside to the recycling dumpsters, so efforts were being made to separate trash and recycling.

Then COVID hit. COVID caused many problems, including creating tremendous amounts of unnecessary trash. When the school reopened after the shutdown, all food related items were individually wrapped (in plastic), composting with Total Organics was canceled, the sharing table was closed, and recycling efforts had stopped.

The past couple of years, Bridgeway Elementary and teacher Jeanne Fernandez knew the school was producing a lot of waste, and this year they wanted to make a change. Their goal for participating in the ESN program was to create a year-long Green Team Club for 4th and 5th grade students. They wanted the Green Team to help create composting opportunities, revive the school's recycling efforts, help teach why composting, reducing, reusing and recycling is beneficial, and provide different opportunities for the school and community to participate in the efforts. They combined the Green Team with K-Kids Club, a service club developed by Kiwanis International, to create the K-Kids Green Team. This team brought together 32, 4th and 5th grade students focusing on improving the health of the earth with sustainability centered projects, and then teaching others what they learned.

K-Kids students engaged in data collection in the first part of the school year. They completed a recycling audit of all the recycling bins in the building, observing tissues, food, plastic bags, Styrofoam, and plastic utensils in nearly all the bins. They also sent out a waste and recycling survey for students and staff. The results of the audit and survey guided the students as they created videos and posters about recycling in their school. Students also completed a cafeteria waste audit, focusing on the amount of food waste and single use plastics thrown away. The K-Kids learned that a lot of food was thrown away in the cafeteria.



Credit: Jeanne Fernandez, Recycling Survey at Bridgeway Elementary

K-Kids Green Team students learned the negative effects food waste has when it is placed in landfills. With it being close to Halloween during the waste audit, Jeanne Fernandez and students discussed the nationwide problem of used pumpkins being thrown away and how they create greenhouse gases that add to climate change. They decided to make the community aware of the harmful methane gases that are released into the air when pumpkins are dumped in landfills. They organized a Pumpkin Smashing Event at Bridgeway! They smashed carved pumpkins and turned them into compost material for the school's fruit/vegetable garden beds and donated whole unused pumpkins to area farm animals. In the spring, K-Kids also introduced 6 vermicompost bins to classrooms to compost food. The plan is for Total Organics Composting to be brought back in the future.

K-Kids Green Team students learned how by reusing materials, not only do they reduce the use of valuable resources, but also practice problem solving skills, using their imagination and creativity skills. Two projects they focused on to help promote reusing materials were reducing Textile Waste and Crayon Waste.

In January, K-Kids Green Team organized a used winter clothing drive to benefit Loaves and Fishes, a shelter within their community. They created a flyer and indicated the importance of reusing clothing instead of throwing it away. Many Bridgeway students and staff generously donated used clothing, helping reduce hazardous chemicals and greenhouse gases, and also helping people in need within the community. The donations filled up the trunk of an SUV!

K-Kids Green Team students researched school waste beyond the cafeteria waste audit completed earlier in the school year. They wanted to find out what major sources of waste elementary schools typically create; besides the food and recyclable materials they noticed in the waste audit. They discovered that Crayon Waste is a major contributor to climate change and wanted to address the issue.

K-Kids Green Team students learned how to make new crayons out of old ones! They reached out to staff and requested donations of any used crayons they no longer needed, and that they were thinking of throwing away. They explained the reason behind the collection of used crayons and were given nearly 30 pounds of used crayons that had been headed towards the landfill! Students upcycled the crayons and created new ones of different shapes and sizes by peeling the paper off (and recycling it), then putting crayon pieces in silicone molds and melting them. When they hardened, students popped them out of the molds as new crayons. K-Kids Green Team students taught about crayon waste in the spring and sold the newly upcycled crayons to raise funds for Family Forward in St. Louis.

There were challenges for the K-Kids Green Team. The main one was that changing routines and habits among staff and students was very difficult. Students

had to schedule time to work with each classroom about the basics of recycling and everyone had to unlearn old habits of throwing everything away. The student team and Jeanne Fernandez did notice good progress—it was just slower than expected.

At the end of the year waste audit, they realized that food waste had not decreased from the beginning of the year. That is mainly because they were unable to secure a contract with Total Organics this year and throwing away a lot of food waste, but they are set to begin the next school year with it in place. Over the summer they are creating short videos to help students understand why Bridgeway composts and how to do it with the Total Organics bins to avoid contamination.

They will also be adding different composting bins at the school to help with garden waste. The different outdoor compost bins will be used for Bridgeway's garden waste and a small portion of food waste for students to observe the decomposition process. They will also continue with vermicomposting bins in classrooms. More classrooms have requested worm bins after this year, so that is a great sign!

K-Kids Green Team and Jeanne Fernandez have noticed more awareness among staff, students and families regarding reducing, reusing and recycling, and as a school, Bridgeway has committed to incorporating more sustainability practices in daily routines and school events. This has been a beneficial experience that has helped raise awareness for change. In the end, students and staff learned that each of us plays an important role on this planet. We are all connected no matter how old we are, where we live, what language we speak or what we look like. We can all make a positive difference each day.



Leadership in Environmental Action Projects (LEAP)

The Leadership in Environmental Action Projects (LEAP) Program focused on helping schools recycle correctly and facilitate clean ups on campus. The 2022-23 academic year was the first since 2018-2019 that Missouri Botanical Garden could spend a full year working with schools and students in-person. 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 a Green Schools Quest project and the River des Peres and Confluence Trash Bash.

LEAP Special Projects

Gotsch Intermediate

Before 2020, Gotsch Intermediate had a strong recycling program. However, as students spent time at home and the focus was more on staying healthy and getting kids back in school, the program waned. While each classroom was equipped with both a trash and a recycling can, there was often contamination in the recycling cans. To improve overall recycling and get students back in the habit of separating trash from recyclables, Ms. Hejlek and Ms. Spengemann's classes decided to educate the school about recycling.

Students created signs of what can and cannot be recycled and presented them to each homeroom class. The signs were placed in the room near the trash and recycling cans to help remind students what to put in each place. Students then spent time checking on the classrooms to determine if items were being separated correctly. Students also did some re-education to remind their classmates about what could and could not be recycled.

To take things a step further, students also began collecting plastic bags. They educated the school about how many plastic bags or packaging cannot be recycled in recycling bins, but can actually be recycled. There were boxes placed throughout the school and students were educated on what types of plastic could be recycled in them. The amount of plastic collected has been weighed and will be submitted to a contest to win a bench made from the recycled plastic. This was a way to keep materials that would otherwise wind up in landfills out of the trash cans.

Overall, students are more aware of what they should recycle versus throw in the trash. However, this is just the

beginning. In the future, more leadership will be given to the students to monitor the recycling in classrooms and common areas, especially the cafeteria. Now that students are getting back in the habit of recycling, their hope is to create a team of students who want to educate their peers further and help make sure that as much as possible gets recycled.

Trash Bash

EarthWays Center has been a partner in the local Trash Bash efforts for a number of years. These week-long events focus on picking up trash in the River des Peres and Confluence watersheds in the fall and spring. These events offer individuals and families a chance to get involved in reducing waste and trash in the environment.



Credit: Sarah Rials, Central Elementary

EarthWays made it a goal to involve more teachers and schools in this effort. In partnership with Open Space STL, the first Trash Bash supported clean-up program was launched in October 2022. The EarthWays Center promoted the program in the River des Peres watershed area, the region targeted in the fall. Schools were provided with bags and gloves to support school clean ups. In this first round, 7 schools and 212 students picked up over 2 tons of trash. Gateway Science Academy of St. Louis – Smiley and Middle School, The College School, Affton High School, Hixson Middle School, Mehlville High School, and Wohlwend Elementary participated in the fall. Schools and teachers were enthusiastic about the program but were seeking more information to help them plan and structure a clean-up.

In spring 2023, Open Space STL and EarthWays created a guide for teachers to help them plan and carry out a school clean up. At Confluence Trash Bash in the spring, 6 schools and 394 students cleaned up over 1 ton of trash. Glasgow Elementary, Central Primary School, Robinwood Elementary, Cross Keys Middle School, Meadows Elementary, and Hawthorn Leadership School for Girls participated in the spring. With these systems developed, the Trash Bash team can continue to recruit schools and students in their efforts to create a cleaner St. Louis.

STEAM Events: A Focus on Families

With the lifting of most COVID restrictions, EarthWays Center had a renewed focus on participating in family nights at schools. Often called STEM (Science, Technology, Engineering and Math) or STEAM (Science, Technology, Engineering, Arts and Math) Nights, these events connect students and families with community organizations that support students learning in those areas.

This year, EarthWays staff highlighted waste reduction, recycling, and composting at 9 family events, reaching 598 students, family and community members. Participants had a chance to see the lifecycle of a plastic bottle as it travels through the recycling process, dig through a vermicompost bin, sort recyclable and landfill items, and learn ways to reduce food waste in their homes.

Missouri Botanical Garden hosted STEM Saturday in April 2023 with a focus on sustainability. Families and children could learn about sustainability practices at four different hands-on activity stations. Stations included information about food waste reduction at home, creative reuse making upcycled envelopes, single-stream recycling practices, and home composting. Over 125 people learned sustainability skills they could use at home.

Challenges and Next Steps

The 2022-23 academic year was full of successful waste reduction projects at schools in the St. Louis area. More schools were ready this year to dive into resetting their waste and recycling practices post-COVID. Schools were eager to host family nights with a focus on science and the EarthWays Center team was ready to support those communities.

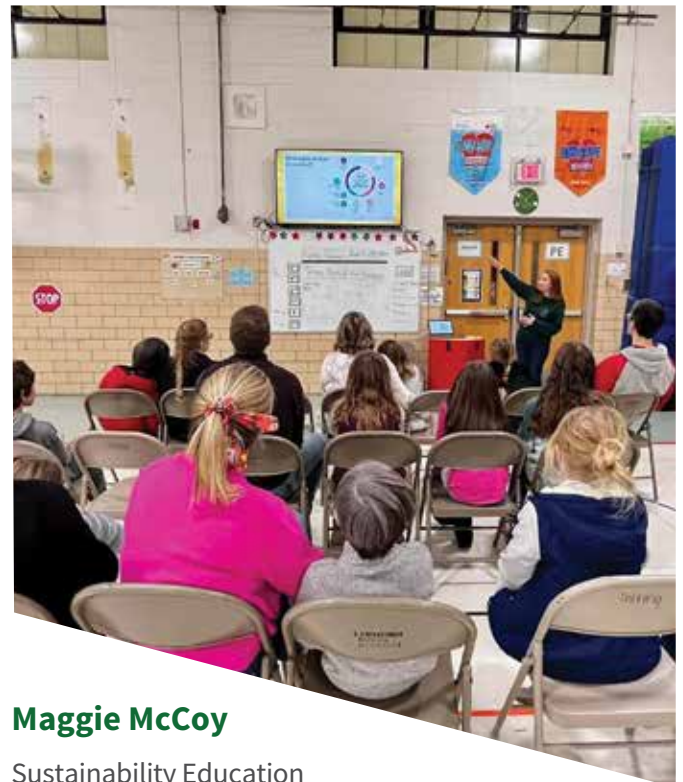
The biggest challenge this year in most of the featured schools was creating a culture and system change in the school that would last in the future. All the schools had successful projects, but making long-term changes was more difficult. Both MRH Elementary and Bridgeway are hoping to create better sustainability systems within the school by joining the Missouri Green Schools program, which supports and recognizes continual improvement in school sustainability from year to year. While creating system change is always a goal of EarthWays Sustainability Network, teachers can always use more support.

Next Steps

EarthWays Center is focused on helping schools achieve their sustainability goals in the coming school year. A focus this next year will be on helping schools to reduce waste through a variety of waste reduction projects beyond the scope of recycling. Bridgeway Elementary and MRH Elementary had a lot of success this year with projects that focused on reducing waste and it would be great to bring those ideas to other schools.

EarthWays Center will also continue to help teachers who are sustainability champions create green teams within the school to support sustainability goals. While most ESN and LEAP projects focus on waste, the systems and goals identified during a waste project can support schools in identifying other sustainability goals. By starting with “Recycle Right, Recycle Responsibly,” students, teachers, and the school community can implement strategies to create a more sustainable future.

Credit: Jaclyn Jezik, Crestwood Elementary Waste Not Kitchen Class



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