EarthWays Center | sustainable solutions

Sustainability Network

a program of the Missouri Botanical Garden

EarthWays Sustainability Network Case Study 2019-2020

Strategies to Reduce School Waste: How Teachers Champion Waste Reduction in the School Community

Case Studies and Lessons Learned from the 2019-20 ESN Program Year

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. ESN is a program of the EarthWays Center of the Missouri Botanical Garden with funding support from the St. Louis-Jefferson Solid Waste Management District and the Missouri Department of Natural Resources.

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St. Louis-Jefferson Solid Waste Management District

Missouri Natural Resources

PROGRAM SUMMARY

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 take action 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, 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 **2019-2020 school year** and the Network was able to include four more schools: **Brown Elementary** in Hazelwood**, Captain Elementary** in Clayton**, Long Elementary** in Lindbergh**,** and **Meramec Elementary** in St. Louis. This year, the focus of EarthWays Center's recycling education programs was "Recycle Right, Waste Less - Learning Works!" This focus was integrated into ESN by engaging a variety of schools and their communities. By including four schools from different areas of St. Louis in the Network, EarthWays supported teachers in developing unique solutions that met the specific needs of each school.

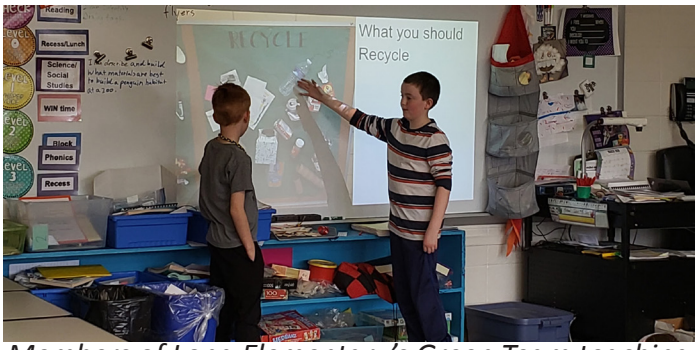
Through experiences in the first three years, EarthWays Center staff learned that sustainability must be part of both the culture and curriculum in order to thrive in a school. Strong relationships between staff, faculty, administration, students, families, and wider community are a key component of linking culture and curriculum in a school community. Schools are not isolated buildings where students learn, but rather intimately connected with families, neighborhoods, places of worship, and other community spaces. Teachers who catalyze change in a school can truly be forces for change in the wider community. By connecting culture and curriculum, teachers can transform sustainable choices from things "we should do" to "it's what we do."

The teachers in the EarthWays Sustainability Network this year truly exemplified being leaders in their school and created environments where their students could grow. While the impact of COVID-19 was certainly disruptive in all facets of education, the ESN teachers continued to reflect, learn, and engage with the ESN program. The closure of schools prevented students groups from conducting their waste audits at the end of the year and completing other project objectives. Teachers examined other student work and projects to demonstrate the progress in their school. The larger take away from this year is not how abruptly in-school projects ended, but how teachers guided students in asking authentic questions, collecting data, and implementing solutions. By providing students with the tools to create change, this cohort of teachers made great strides in advancing sustainability within their school communities.

At Brown, elementary school students collected data on waste and the cost of reusable materials in the cafeteria and presented to school administrators. First graders at Captain Elementary remade their classroom to reduce waste and even voluntarily created clubs to pick up trash outside the school. Students at Meramec created a recycling program at their school, taught younger students how to recycle correctly, sparked an interest in taking on leadership roles, and had improved learning outcomes in the process. A multi-grade club of students at Long used data and collaborated with two other elementary schools in the district to create a presentation for the school board asking for further waste reduction efforts throughout the district. This was an inspiring group of teachers to collaborate with and EarthWays Center can't wait to see what this group does next.

Students at Brown Elementary presenting essays on waste reduction to adminstration

Captain Elementary students advocating to clean the world



Members of Long Elementary's Green Team teaching fellow stduents what to recycle

Students from Meramec Elementary on a field trip to the landfill

OVERVIEW OF ESN SCHOOLS

Year 1: 2016-17 Schools

- Gotsch Intermediate School
- Halls Ferry Elementary School
- St Francis of Assisi School
- Griffith Elementary School

Year 2: 2017-18 Schools

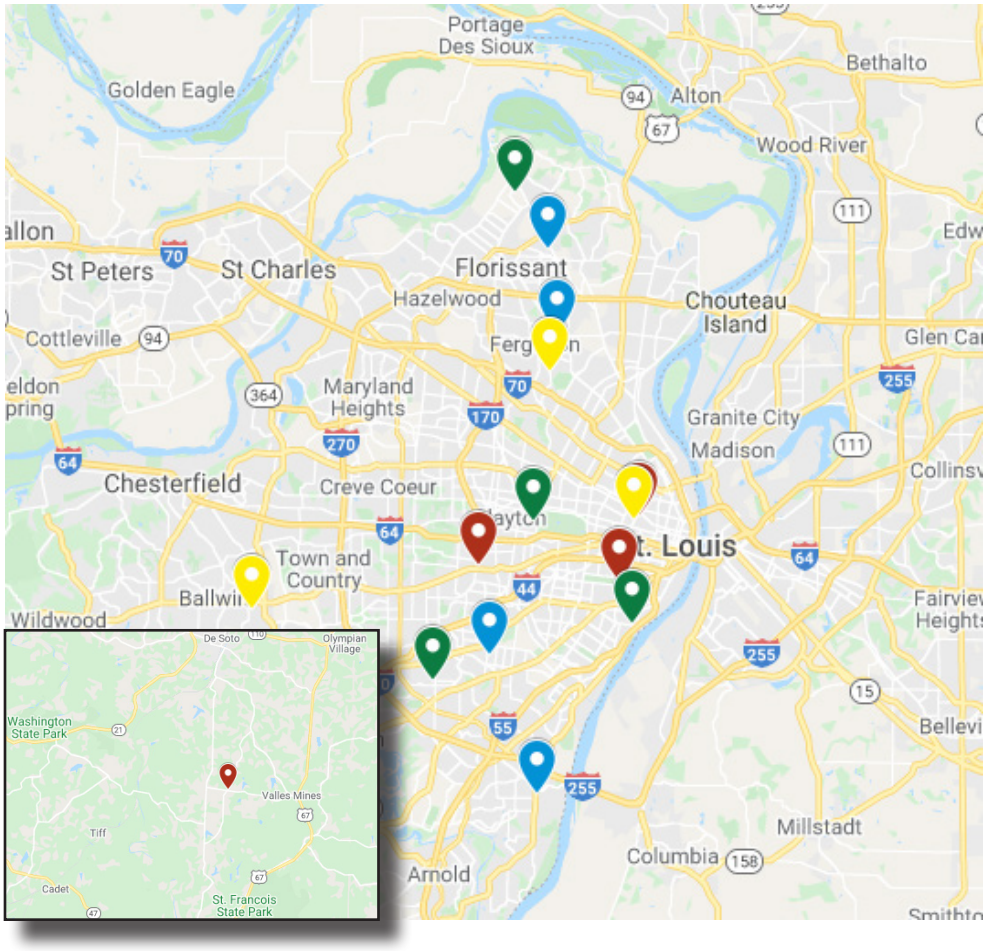
- Sunrise Elementary School District
- Carver Elementary School
- EAGLE Prep: Tower Grove East
- Saint Mary Magdalen Catholic School

Year 3: 2018-19 Schools

- Bermuda Elementary School
- St. Joseph Elementary School
- Grand Center Arts Academy

Year 4: 2019-20 Schools

- Brown Elementary School
- Ralph M. Captain Elementary School
- Long Elementary School
- Meramec Elementary School



Brown Elementary
3325 Chicory Creek Ln,
Florissant, MO 63031

ESN Teacher:
Brandi McKenna

Type: Public, Hazelwood

Number of Students: 346

Grades: K-5

% Free and Reduced Lunch*: 58%

Ralph M. Captain Elementary
6345 Northwood Ave,
St. Louis, MO 63105

ESN Teacher:
Cathy Chamberlin

Type: Public, Clayton

Number of Students: 366

Grades: K-5

% Free and Reduced Lunch: 14%

Long Elementary
9021 Sappington Rd,
St. Louis, MO 63126

ESN Teachers:
Liz Rich and Michael Jobst

Type: Public, Lindbergh

Number of Students: 498

Grades: K-5

% Free and Reduced Lunch: 10%

Meramec Elementary
2745 Meramec St,
St. Louis, MO 63118

ESN Teacher:
Laura Watson

Type: Public, St. Louis City

# of kids: 230

Grades: PK-5

% Free and Reduced Lunch: 100%

*https://apps.dese.mo.gov/MCDS/home.aspx

BROWN ELEMENTARY

Building on Success, Taking the Next Step

Brandi McKenna and the community at Brown Elementary started their green efforts in the 2018-2019 school year by establishing a recycling program. They formed a team of teachers to act as the 'Green Team' leaders, and then recruited students to help teach their peers and collect recycling weekly. Their goals when joining the EarthWays Sustainability Network were to continue with the recycling program, and to complete an evaluation of cafeteria waste in hopes of expanding recycling efforts. In the 2019-20 school year the Green Team consisted of four teachers and 35 students divided into two teams. The first was the recycling team, whose responsibilities were to maintain the building recycling program and to collect plastic bottle caps to trade in for benches for the playground. The second was the cafeteria waste team, whose responsibilities were to evaluate cafeteria waste, then research, develop, and present solutions to reduce the waste.

The recycling team learned that when going through the recycling process, small pieces of plastic, like caps unattached to bottles, can get lost and end up going into landfills. To reduce that, they partnered with ABC Promise, an organization that takes collected caps and turns them into playground furniture. They set a goal to collect 250 lbs. of caps before the end of the school year. To reach their goal, they made posters to put up around the school, flyers to send home to families, and put a goal tracker in the lobby to keep parents and students updated on how close they were getting to the goal. Even with the disruption of COVID-19 to the school year, they were able to collect enough caps to make one bench, with so much extra left over that they intend to continue to collect again next year for more items for the school!

The cafeteria waste team had a plan to emulate Brown's building-wide recycling program by looking at their waste, identifying what could be recycled, and educating their peers. The plan last year looking at classroom recycling was so simple and successful, that they were ready to tackle another area in the building. So the team scheduled and completed a waste audit with their EarthWays mentor, and quickly found that it was not going to be as easy. One of the first challenges they faced was the fact that all of the plastics currently being used by the kitchen were not accepted for recycling. So after doing the waste audit, the only things they were able to recycle were the milk containers from breakfast and lunch. This was a bit of a disappointment for the students. But, the team immediately started brainstorming ideas for reducing the waste from their school meals. One easy fix was to switch the type of plastics for the side items to a plastic that is accepted for recycling. The next option, which was the bulk of their goal, was to eliminate plastic utensils and replace them with reusable metal utensils. This is where the students really took ownership of the project and worked hard to advocate for the changes they wanted to see in their school. The students researched landfills and the effect of plastic pollution in their communities and waterways. They also did research on the cost of plastic utensils versus metal utensils, and interviewed the cafeteria manager about the current procedures and predicted issues with changing to metal utensils.

They then took the information that they learned, and wrote essays advocating for a change to the building procedures, and presented their essays to administration. They were thrilled when they found out that their principal was interested in making the change. They are currently in the process of getting approval from the district to change to metal utensils.

Brown had an ambitious team of adults and students this year that wanted to tackle every project they came up with, and being able to divide and conquer helped in their success. The early closure of schools did cause some slowdown, but they are working through the kinks, and are still planning to complete their projects. The recycling team will be dropping off bottle caps to the bench partner, and when students return, they will see a new bench in the playground. The cafeteria waste team worked hard to research and advocate for change, and Ms. McKenna is working with the building leaders to push for their changes to cafeteria procedures to begin when students return to school. Working with the EarthWays Sustainability Network helped Brown look at their waste and understand the recycling system better so that they understood what changes would need to happen to begin reducing waste in the cafeteria. Once they knew what they wanted to do, the students were motivated to learn all they could to help make a case for their opinion that plastic utensils were bad for the school.

Their participation in this program helped empower them to make a change in their world and taught them that even kids can change the world for the better. Brown plans to continue to look for new ways to reduce waste at school, teaching students how to be conscious of their mark on the world, and advocate for balance between humans and the planet.

RALPH M. CAPTAIN ELEMENTARY

Never Too Young for Sustainability

At Captain Elementary in Clayton, Cathy Chamberlin knew that many of the first grade families and students practiced sustainability in their homes. Students practiced waste reduction by bringing lunch and snacks in reusable containers. She wanted to build upon this base of knowledge and commitment to encourage sustainable practices throughout the school.

Their starting place was a waste audit. The EarthWays Center staff helped the first grade students sort and weigh trash from classrooms around the building. The result showed paper was the most common type of material being thrown away. In a school setting where paper is used daily, this was alarming to Mrs. Chamberlin.

Beginning in the first grade classroom, students became more aware and careful with how they threw away waste, practicing how to sort things into compost, recycling, and landfill.

Next, the class discussed what they wanted to learn more about and do after the waste audit. The big question was “Why do we need less trash?” They read books and learned about landfills. Students learned that they needed to reduce, reuse, and recycle things to lower the amount of trash that ends up in landfills.
The students got busy with their projects. They covered recycling bins with colorful recycling guides. Some students even started their own groups to collect trash around the schoolyard. They made short videos to share their learning about waste with students and families.

As their teacher, Mrs. Chamberlin wanted to provide experiences not only in sustainable practices but also to connect students to the natural world. They created a “Reuse It” area for all first grade students to create things. Items in the “Reuse It” area were things that normally would have been thrown away or recycled, but were given new life through the creativity of students. Students also made their own fresh decorative paper using a blender and used paper found in the recycling bin. Students managed a worm farm where they could compost food scraps in their classroom.

All of these experiences helped these young children see themselves as connected to their community and feel they have the capacity to create change. These first graders will continue their sustainable practices and commitment for years to come.

LONG ELEMENTARY

Recycling is a Whole School Effort

In the summer of 2019, Long Elementary teachers were asked to choose a passion project--something they felt motivated and excited about. Liz Rich and Michael Jobst along with a few other teachers wanted their students, staff and community to be "greener." The staff members noticed many students were confused about which items to place in the recycle bins and often found trash in the bins that led to contamination. Although their school already used a recycling service, the school was being fined for having trash mixed in with the recycling. The teachers also noted that staff members, including custodial staff, had gaps in their knowledge about proper recycling practices. This resulted in recycling being thrown away. Finally, students used to be in charge of helping to empty the recycle bins, but no longer were able to do so due to safety considerations in having students cross a busy parking lot. The staff members felt strongly that they could improve upon the current waste reduction and recycling practices. Most importantly, the goal would be to teach all members of the school community proper recycling procedures.

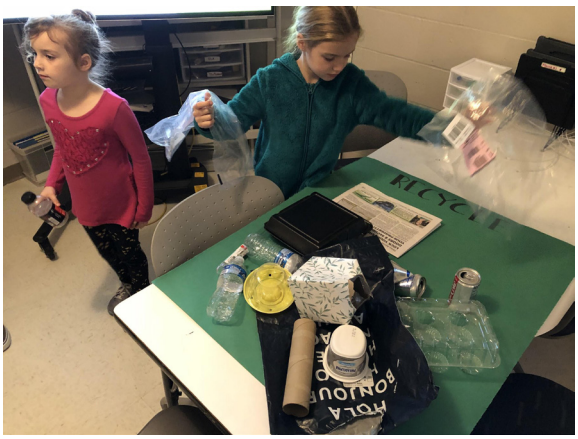
In the fall, students in grades K-5 chose to be on the newly formed Green Team based on similar interests as the teachers. That is how their group of 25 students and 5 teachers came to be known as, "Green Team." Students felt passionate about helping to make the Earth a better and more sustainable planet.

In October, the EarthWays Sustainability Network visited Long to assist with a waste audit. Students collected bags of trash from several classrooms throughout the building. They put on gloves and got to work sorting all of the contents of the garbage cans. The results were alarming. They found over 11 pounds of paper, 5 pounds of plastic, 3 pounds of aluminum and 1 pound of glass in the trash. Since they only audited a few classrooms they knew that the problem was much bigger and more widespread.

Their team came together to look at the data, and the students quickly got to work on brainstorming solutions, including the following:

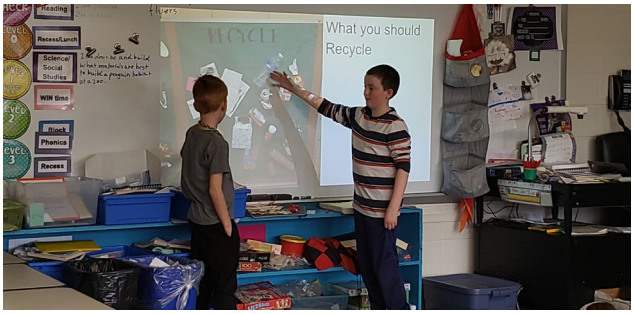
Create better labels or lids for recycling containers
Create signs throughout the school to show which items can/can't be recycled
Create lesson plans for classrooms to teach students about what can and cannot be recycled
Create weekly video announcements with "Green" tips of the week
Create a team to collect recycling once a week and check for contamination in the bins

Before the students could carry out these activities, we had to ensure all members of the Green Team were truly "experts" in single stream recycling. One of their activities was to do a sorting relay to see how quickly and accurately they could sort trash from recycling. They also took a virtual trip to a recycling center to see how the items are separated. The children learned about the detriments of not recycling responsibly.



After all students had a good understanding of goals, they broke into teams based on which solution they wanted to work on. The kindergarten and first grade students took on making posters to hang throughout the school. A group of second and fifth grade students created lesson plans and taught different grade levels using slide presentations, sorting activities, and review games. Having the students get to be the teachers gave them a powerful voice, and the children were eager to learn from each other. Yet another group of students created a series of videos with recycling and sustainability tips that were shared each Tuesday throughout the year on the school wide morning announcements.

An EarthWays Sustainability Network stipend allowed Long to purchase additional large recycling bins for each floor of the building. Now, student leaders from Green Team could empty the smaller classroom recycle bins into the large bins, making the job easier on the custodial staff. They also were able to buy a dumpster prop that helped the custodians empty the heavy bins into the recycling dumpsters. Long also received a grant from Recycle Across America, and were able to obtain labels for every recycle bin with pictures on them that clearly state what can be placed in the bin. This was a huge help for primary students who need visual reminders.



While Long was not able to complete a final waste audit, their efforts to increase student and staff awareness regarding responsible recycling was noticeable even without the data. Each week when Green Team members collected the recycling, they found less and less trash mixed in. Items were being placed in the correct bin. They also found that the custodial staff was very grateful for the time taken to consolidate the recycling into two central bins. This freed up their time to focus on cleaning and prevented recycling from being disposed of in the trash. Parents were proud and excited to see efforts that Long's principal shared in parent newsletters. Visitors to the school stopped and looked at the large recycling bulletin board at the front of the school.

Long's Green Team was hopeful to report their findings to district administration and the school board with the hope of finding additional district-wide ways to continue waste reduction efforts, including exploring composting and using more reusable materials in the cafeteria. A second grade student was prepared to speak passionately before the board about her experiences and findings this year with the Board of Education. Here is a sample of her speech:

> *The first goal we needed to make better was Lindbergh's recycling practices. Recycling bins throughout our schools were mixed with trash instead of items that could actually be recycled. This caused our custodians to throw most items into our school's dumpster. Many of the recyclables that made it to the outdoor recycling receptacle were contaminated or got contaminated once placed inside. If bins of recyclable materials are contaminated with things like food waste, rain water or trash, the items cannot be recycled. This also makes them not profitable for the hauler. When that happens, the hauler charges our schools. How did we fix this problem? Through education! We found out most staff and students lacked knowledge of what could actually be recycled so we brought in experts to teach us.*

Unfortunately, COVID-19 prevented Long from pursuing these end of year goals, however, they are looking forward to collaborating with the other two Green Teams at neighboring district elementary schools in order to unify on efforts in the coming school year. With the data collected from last school year, a group of passionate and motivated students and educators ready to help, the Green Team at Long knows that this endeavor is far from over and that the journey has just begun.

MERAMEC ELEMENTARY

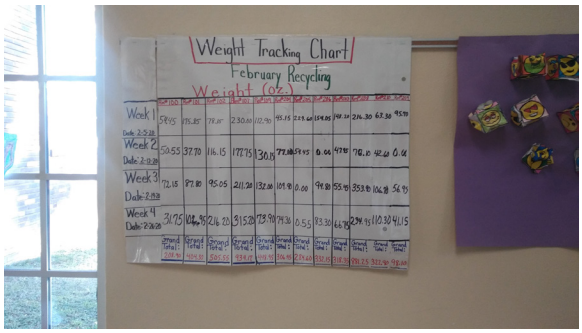
Student Leadership Creates Change

Prior to participating in the EarthWays Sustainability Network, Meramec was not doing anything to manage, recycle, or reduce waste. They had started a school community garden a few years earlier and were aware of the benefits of composting, but had not started the process of studying waste reduction.

Laura Watson, a science teacher at Meramec, started with the goal of raising awareness of sustaining Earth's resources. It was challenging to get students to separate their trash from recyclables. The fifth graders started their journey by collecting all the trash from the classrooms and sorting it during a waste audit with EarthWays staff. This helped them identify what items commonly found in their trash could be recycled.

Those same students decided that they would train the preschool through fourth graders on which items were trash and which were recyclable. They created their presentations and went from class to class presenting information on recycling. After each presentation, the students asked the class members to take a pledge to recycle. If they agreed to help the school improve recycling, their pledge leaf with their signature would go on the school pledge tree. Each Wednesday fifth grade students collected recycling cans from each class and weighed them. They would record the weight and post it for each class. The fifth graders would also pay attention to the items that were placed in the recycling bin. If there were items that did not belong in recycling, the fifth graders would give a friendly reminder and sometimes reteach the class about recyclables.

At the end of the month, the total weight recycled by each class was calculated and the class with the highest weight would be the recycle champions for the month. The class would be rewarded with a treat of their choice. There was no final waste audit due to COVID-19; however, Mrs. Watson saw Meramec's success each week and month when the fifth grade students demonstrated the rate of recycling improving.



As part of their learning, the fifth grade students at Meramec had the opportunity to take a field trip to the Champ Landfill to see first-hand what happens to trash when it is thrown away.

Students really enjoyed the recycling program. They shared that the project was fun. Third and fourth grade students were asking about having their chance to run the program when they entered fifth grade. During spring parent-teacher conferences, many parents picked up a free recycle bin for home use (bins provided by St. Louis City Recycles). Mrs. Watson observed that discipline issues decreased significantly among fifth graders in particular since the implementation of the program. She observed students working together that would normally struggle to complete assigned tasks. The recycling student action project made a huge impact on student learning at Meramec and the students are looking forward to continuing the program in the future.

CHALLENGES AND NEXT STEPS

This year, despite disruptions, the projects implemented by the Network teachers were incredibly successful. As in previous years, EarthWays staff and schools focused on overcoming challenges in three core areas: Continuity and Consistency, Communication, and Champions, Communities, and Administration Support.

Continuity and Consistency | The challenge this year in continuity was the need to shift to virtual learning due to COVID-19. This prevented all of the schools from completing a final waste audit and some of the schools had not yet received supplies for their project. One school had plans to present to their school board the same week all students were sent home. At the final cohort meeting, teachers discussed what next steps might be, but continuing this work in the coming school year will be a challenge.

Communication | Clear communication between all stakeholders is vital in order to create school wide change. All the schools this year worked on building bridges and lines of communication with the custodial staff at their schools. This included discussing what students and teachers could do to make recycling as easy as possible for custodians. Most schools also had student run campaigns to communicate with members of the school community what should be recycled.

Champions, Communities, and Administration Support | Outreach to administration was a key component in all the projects this year. Two of the projects had direct outreach from students to the school board and administrators on the topic of reducing single use plastics in the cafeteria. Other schools had support from administrators on implementing change in waste collection procedures in the schools. These relationships are essential to maintaining the movement towards reducing waste in these schools.

Next Steps | At this point, many of the schools in the St. Louis region are starting school virtually due to the COVID-19 pandemic. One of the goals of the EarthWays Sustainability Network is to empower teachers to change school culture on issues of sustainability and waste. That is a monumental task when nobody is in the school building. For this coming school year, EarthWays staff are looking at ways to continue the work of waste reduction by supporting teachers in a virtual learning space. This will involve developing creative solutions and shifting part of the work to examining waste in student homes and helping translate that learning into the school building when the time comes.

Since the work will be virtual this year, it presents an opportunity to re-engage members of the EarthWays Sustainability Network from the past four years. Teachers could support each other virtually by sharing ideas on how they are incorporating sustainability into their virtual teaching. Without having to travel, this mode of communication may be more conducive to having greater involvement of former members of the Network. The EarthWays Center is also looking at ways to expand the Network by asking teachers who have been through a cohort to serve as mentors for future cohorts.

While it will be difficult, the challenge of this upcoming year is exactly how the Network is meant to help teachers. There will still be champions of sustainability who are seeking creative ways to teach those same concepts with students at home. The EarthWays Sustainability Network can provide those teachers with support by working with a cohort of other teachers with the same goals and ambitions to create a more sustainable world for students.