

2015-16 GREEN SCHOOLS QUEST SUBMISSIONS

45 school and mentor teams participated in the 2015-16 Green Schools Quest. 35 of these schools submitted results of their projects for review by an impartial panel of judges. Please join us in celebrating ALL participants of the 2015-16 challenge!



ELEMENTARY PARTICIPANTS

POLLEN-AID-TORS PROJECT, CHESTERFIELD DAY SCHOOL

Mentor: Fred Hof, Hof Construction

Chesterfield Day school students, determined to help pollinators in their fight against habitat loss, decided to give native pollinator plants to the community. In need of a warm environment to grow plants over the winter, they set out to build a greenhouse out of used 2 liter plastic bottles. Students researched and selected native plants, organized a bottle drive, and designed and constructed the greenhouse. Thanks to the students' efforts, over 2,000 native plants will be distributed to the community!



PAPER WEIGHT, CHRIST PRINCE OF PEACE SCHOOL

Mentor: Richard Schuessler, Huntleigh McGehee

Christ Prince of Peace 4th graders set out to create a green school from the inside out, focusing on waste reduction and energy use. After documenting current recycling practices and measuring the amount of waste created by each classroom, they worked on increasing recycling rates. Taking their message throughout the school, they educating their fellow students about recycling in class and in the cafeteria. Their enthusiasm even inspired the Knights of Columbus, who hold fish fries at the school, to increase waste diversion! Students didn't stop there, exploring the energy used by their school and sustaining a vermicomposting system with their lunchtime food waste.



TAKING A TRIPLE BOTTOM LINE TREK, CITY GARDEN MONTESSORI SCHOOL

Mentor: Katie Belisle-Iffrig, Code Green Collaborative

After learning about the 3 Ps of sustainability – people, planet, and profit – City Garden 4th and 5th graders engaged in an interactive sustainability scavenger hunt highlighting existing community assets, encouraging support of local businesses, green spaces and policies while providing information and examples about how these treasures benefit society, economics and the environment. Included in the scavenger hunt is the vermicompost bin the students created in their classroom! Sustainability pre- and post-tests, documentation and reflections recorded in journals made from scrap paper, and cross curricular and historical connections were incorporated into the project. By integrating technology into this otherwise low-tech project, they aimed to create a platform that could easily be updated and used in the future.



3rd PLACE

RECYCLING REFORM, EAST ELEMENTARY (ALTON)

Mentor: Kimberly Petzing, Madison County Planning & Development

Single stream recycling was taken away from the Alton School District, but that didn't stop these 5th graders! After studying waste and recycling, conducting waste audits of their homes and school, and visiting a landfill and recycling facility, they created an awareness campaign about recycling, educating students, teachers, and administrators throughout their district. They're scheduled to present their findings to the Alton School Board and asking for a district-wide recycling or sustainability policy as well as the promise to consider reinstating single-stream recycling in the district in the future.



2nd PLACE

MOTIVATED BY MONARCHS, *EDUCATIONAL THERAPEUTIC SUPPORT AT MADISON SCHOOL*

Mentor: Rob Kennedy, Missouri Botanical Garden's EarthWays Center

These students became champions for the monarch butterfly. Eager to share all that they learned about these important pollinators, they created posters, puppet shows, and art on monarch butterflies. They designed pollinator gardens, cultivated milkweed plants, and have big plans for their butterfly garden!



SPORKTACULAR! *HANCOCK PLACE ELEMENTARY*

1st PLACE

Mentor: Beatriz Juan Miranzo, Hellmuth + Bicknese Architects

With a goal of reducing the waste created by their cafeteria, Hancock Elementary's fifth grade Green Team quickly noticed that the school used many plastic sporks each day. After collecting all the plastic sporks used in one week, students calculated that their building throws away over 2,000 pounds of plastic sporks in the school year! Students took their findings to the school district and requested real utensils. Thanks to their careful research and hard work, their request was granted! The Green Team is hard at work to share the benefits of their new real forks and spoons with the rest of the school, as well as tips and facts about going green.



THE NATURAL WAY, *HORACE MANN ELEMENTARY*

Mentor: Katherine Golden, EarthWays Center of Missouri Botanical Garden

Students in both of Mann's kindergarten classes began this year's Quest by creating a vermicomposting bin and engaging in trash bag relays and decomposer activities to build excitement and knowledge for reducing, reusing, and recycling. The team then composted leftover fruit scraps, allowing the worms to break down the waste and create nutrient rich soil. Their project was integrated into kindergarten curriculum in several ways. Math, literacy, science, and social studies were infused through counting, writing, reading, discussions, and research. Students journaled about their findings, conducted internet research, had open discussions, presented findings on composting and recycling via bulletin board displays and at PTO meetings, and engaged in scientific discovery through hands-on activities.



GATHERING PLACE, *KENNARD CLASSICAL JUNIOR ACADEMY*

Mentor: Amy Hargis, Saint Louis University

Kennard's Green Team committed to support the school's Outdoor Learning Garden committee in the creation of an outdoor learning space for science, math and art; as well as a place to be together as a group to read and eat lunch. Team members participated in meetings to determine mission, resources, goals and design of the Outdoor Learning Garden, and attended an orientation at Gateway Greening. Students and adults participated in an outdoor clean-up and beautification event at Kennard as part of Green Apple Day of Service. The team also continued their work on waste reduction and recycling, including continued advocacy for a milk carton recycling program.

PROJECT WHOLE BANANAS, *MALLINCKRODT ACADEMY*

Mentor: Ian Cook, Hellmuth + Bicknese Architects

The fourth graders of Mallinckrodt implemented school-wide cafeteria composting one day per week after learning how food waste could be diverted into compost and made into compost tea as a part of their Sustainability Project Based Learning (PBL). At the conclusion of their project, students had diverted school-wide lunch food scraps for 25 days which resulted in 92 buckets totaling 1,125 lbs. going to their three-bin compost system. Their goal is to not only continue composting but to increase it to 2-3 days per week by next year. Students will continue to learn about decomposition through a composting PBL developed during this competition.



CLARA CHLORINE AND PHIL FILTRATION, *MASCOUTAH ELEMENTARY*

Mentor: Mary Vandevord, HeartLands Conservancy

Five fourth grade classes at Mascoutah Elementary divided and conquered three areas of student interest. The Water Quality Group tested water samples from the bathrooms, kitchen, and water fountains at their school, researched health impacts of water quality, and presented their findings to the other fourth graders. Students in the Water Treatment Group studied the water treatment process, then worked with their teacher to write a play. Students created costumes and props, then explained the water treatment process through performances as characters such as “Clara Chlorine” and “Phil Filtration.” The play was recorded and shared with their school, parents, and community. The Recycling Group wrote short scripts, letters and a newspaper article to spread the word on accurate recycling.



RAISING THE BAR, *ROSS ELEMENTARY SCHOOL*

Mentor: Steve O'Rourke, Microgrid Energy

The theme at Ross Elementary this school year is "Raise the Bar." The Green Schools Quest team decided to help "raise the bar" by making it Green. Students focused on creating a communication campaign to reinforce the sustainable practices that were already in place. Their efforts culminated in the creation of a website, www.rossgreenteam.wordpress.com, and through presenting their ideas via skits and short plays. They engaged parent volunteers, a Girl Scout service team, and members from Cub Scout Pack 639 in their efforts.

CONNECTING THE DOTS, *TILLMAN ELEMENTARY*

Mentor: Lesli Moylan

Tillman’s Sustainability Committee asked students to help solve two sustainability-related issues. The commercial composting service the school has been using for food waste began ticketing them for plastic contamination in their compost. To address this issue, students embarked on an educational campaign addressing what, why, and how to compost. Activities included creating classroom-scale compost bins to observe decomposition, discussions with the head custodian, and recording a performance of the “FBI Song” (Fungus, Bacteria, Invertebrates) which was shared on morning announcements. They also implemented an anti-idling campaign. Baseline data indicated annual idling time at the school was equivalent to a car taking 6 trips around the earth! Through education and outreach (including incentives for positive behavior), the campaign saw a 40.9% drop in idling!



HOME GROWN, *W. W. KEYSOR ELEMENTARY*

Mentor: Rachel McShane, Professional Environmental Engineers, Inc.

Keysor Elementary set out to better utilize existing outdoor garden spaces and three hydroponic tower gardens to grow healthy, organic food and to find a way to share that bounty with the entire school and community. In addition, the school established new satellite garden sites through a partnership with a nearby church. Through use of all of these sites, Keysor was approved for participation in a Garden to Plate Initiative offered by their food service provider. Staff, families and community members created cold frames to enable winter produce production and engaged in sustainable gardening and eating educational opportunities. In addition, the school took steps towards their goal of obtaining National Wildlife Federation (NWF) habitat certification for green spaces on their grounds.



NO SALE YARD SALE, WEBSTER ELEMENTARY

Mentor: Emily Spindler, FGM Architects

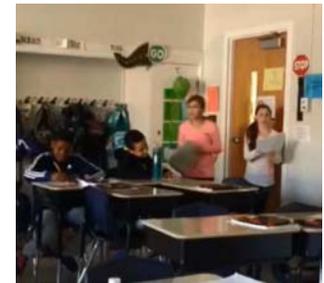
With a school population that consists of 87% poverty level, many families could benefit from receiving support in the form of goods and services. The team at Webster decided to arrange a “No Sale Yard Sale” where community members could come and shop from a donated collection of gently used shoes, clothing, and toys free of charge. The event was held a month before Christmas, and opened with their 1st Annual Free Pancake and Sausage Breakfast for all school families. Additionally, the school participated in the Trex Recycling Program which resulted in the collection of nearly 64 pounds of recyclable plastic, and The Shoeman Water Project which collects new or used shoes and directs them to a secondary market for reuse; revenue generated is then used to fund water projects in developing countries to provide clean water for their communities.



DOWN WITH OPERATING COSTS! WESTCHESTER ELEMENTARY

Mentor: Alice Kranz

With the increased amount of technology in their school district, energy costs have risen and school leaders have been asked to help reduce costs at the building level. Westchester’s Green Team, spearheaded by fourteen fifth graders, aimed to help by seeking ways to reduce energy use in their school therefore reducing operational costs. To begin, students researched the energy audit process, designed an audit checklist specific to their school, and conducted an energy audit of their school building. The team created an informational video, educating students about energy audits and their school’s audit results. They created room specific feedback posters highlighting successes and tips for improvement which now hang in each room in the building. In addition, they educated families about ways to save energy at home, and continued to support existing sustainability initiatives at the school including no idling, composting and recycling.



MIDDLE SCHOOL PARTICIPANTS

MISSION POSSIBLE, BRENTWOOD MIDDLE SCHOOL

Mentor: Jon Youngman & Katie Belisle-Iffrig, Code Green Collaborative

The BMS team’s project was threefold. They started a worm compost and began composting in the cafeteria. Data collected over six weeks indicates they diverted an average of 40.7% of waste from the landfill. Using a Kill-a-Watt meter, students measured energy use of computers left on overnight, calculated savings that would result from turning off computers in the lab at night, and educated teachers on their findings. If all computer labs are turned off at night, they will reduce CO₂ emissions by 12.93 Metric tons/year. Lastly, they have planned and are building a shade garden with native plants. Efforts were supported via educational posters and presentations to homeroom classes on these efforts and lessening one’s carbon footprint.



NO WASTE CAN HIDE, COOLIDGE JUNIOR HIGH

Mentor: Barb Anderson, Oates Associates

Students asked, “Why don’t we recycle like we did in elementary school?” The team was determined to expand the school’s recycling efforts which had been focused solely on paper. No waste can hide from these kids who collected batteries, old cell phones, crayon, markers etc. and sent them off to be recycled or repurposed. The team created a Classroom Trash Can Audit Report Card to be hung outside each classroom door to build students awareness of recycling efforts at school, and foster friendly competition. The project goals have been incorporated into the curriculum using Next Generation Science Standards. The team has devised a plan after the current school year and to carry on for next year.



HIDDEN GEM, CROSSROADS COLLEGE PREPARATORY SCHOOL**Mentor:** Ross Watson, Jacobs Engineering

Crossroads has a LEED Platinum building, but few students and staff know about all of its green features. 32 seventh graders became experts on the sustainability aspects of their school, then educated their peers and community via tours of the building. Focus areas included: Brownfield Redevelopment, Rain Garden and Native Landscaping, Reducing Heat Island Effect, Energy Efficient Lighting, Solar Panels, Water Efficiency, Acoustic and Thermal Comfort, and Indoor Air Quality. The seventh graders will be giving tours to the Board of Trustees and will be responsible for educating the new class of seventh graders about the green features of Crossroads.

**GARDEN PARTY, FORSYTH SCHOOL****Mentor:** Carolyn Green, Green Design

Forsyth School has maintained raised garden beds in the Lower School space on campus and set their sights on expanding an outdoor classroom into the Upper School space. Throughout the school year, students, faculty, and staff learned about gardening through classroom activities, presentations, field trips, workshops, and leadership from the facilities department. This year's education about gardening is part of the development of the ongoing Sustainability Curriculum documented in their school-wide curriculum-mapping program. The sixth graders will maintain the garden beds during the school year.

**BRING BACK THE CHICKENS! HOECH MIDDLE SCHOOL****Mentor:** JoAnn Brookes & Becky McMahon, DJM Ecological Services, Inc.

In the past, Hoech created an outdoor classroom, complete with vegetable and native plant gardens, a green house, a small flock of chickens, and educational signage. However, the courtyard had been neglected in recent years. The Green Club was determined to reinvigorate this space! They began by creating a mission and goals for their team, and presented their goals to the Ritenour School Board and pitched their plan to regain urban chickens. A new chicken coop was designed. Students took measurements of the courtyard and drew blueprints of the garden. Green Club members learned about native plants and how they should be maintained, as well as how to utilize the green house.

**GREENHOUSE EFFECT, HOLY REDEEMER CATHOLIC SCHOOL****Mentor:** Alan Ely, Ely Consulting Engineering

The Green Machines at Holy Redeemer began the year with gusto and determination to plant a winter garden! The first step was to scope out the best location on their campus. The team then engaged an Eagle Scout to design and develop the site and build four raised beds. An arched PVC framework tented with a clear plastic tarp was placed over one raised bed. Once completed, the beds were planted with organic spring greens destined for a Salad Bar Lunch at the school. Throughout the project, students discussed the meaning of "organic" and importance of making healthy food choices.

**LED-ING THE WAY, LITTLE FLOWER CATHOLIC SCHOOL****Mentor:** Franklin P. Eppert, PE

Last year, Little Flower students completed an ENERGY STAR benchmark and found their building was horribly inefficient, garnering a score of 10 (out of 100). They were determined to increase energy efficiency at their school! After learning about the benefits of LED lights, students focused their efforts on converting existing T12 light fixtures to LED-compatible fixtures. They calculated the potential energy and cost savings: 15,660 kWh and more than \$1,600.00 annually. To show how easy it would be to make this conversion, students created an instructional video in which two students removed a fluorescent ballast and rewired an existing light fixture to accept LED lights. The students will be delivering this presentation and their findings to the Parish Finance Committee this Spring and recommending action during the 2016 summer break.



RAIN RAIN GARDEN, MAPLEWOOD RICHMOND HEIGHTS MIDDLE SCHOOL**Mentor:** Todd Hanger, FGM Architects2nd PLACE

A rain garden was planted at MRH-MS several years ago, but was not being used for classes. The team was determined to increase its use as an instructional resource by increasing awareness and providing teachers with instructional assistance. Students developed drawings and a model of an accessible walkway they would like to build through the garden; these were presented to and approved by central office staff. Students led early childhood classes about the water cycle, seed dispersal, pollinators, and pollution in a hands-on investigation of the rain garden. Several students made a music video with a rap "Rain Rain Garden" to educate the school community about the importance of rain gardens to community and ecosystem health.

**TRASH TO TREASURE, MARIAN MIDDLE SCHOOL****Mentor:** Shelley Simon, FGM Architects

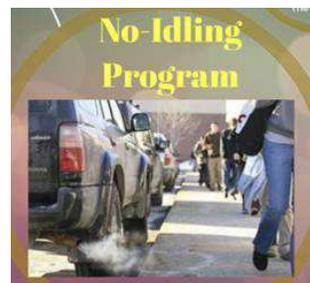
The girls of the MMS STEM club noticed that little to no recycling was being done at their school, and that recyclables were not being sorted properly, and set out to increase recycling awareness and participation. The group took a field trip to a large recycling station, and created a video to encourage recycling for display at an all-school assembly that the school's maintenance team will be invited to. Additionally, they are preparing two projects for MMS's Maker Faire in early April: a simple bird feeder designed using recycled materials and a Mason Bee House constructed of donated wood.

**INTERNATIONAL GARDEN, NAHED CHAPMAN NEW AMERICAN ACADEMY****Mentor:** Stephen Herring, Republic Services

The science and social studies classes of Nahed Chapman challenged themselves with three projects. Students promoted recycling by designing and delivering recycle bins to every classroom and school office, then providing volunteers to retrieve the bins weekly. They began a 'No Idling' campaign to remind parents and bus drivers to turn off their vehicle engines while waiting, and have plans to lobby their representatives to pass legislation to limit idling to when the temperature is at or below 32 degrees. Additionally, the team designed and built a six bed International Garden with plants as diverse as their student body which is comprised of students from nearly two dozen countries.

**DIVIDE AND CONQUER, NORTH KIRKWOOD MIDDLE SCHOOL****Mentor:** Thomas Bruns PE, The Green House1st PLACE

The ecology class focused on six areas: Litter Removal— removed nearly 400 pounds of trash & recycling from Sugar Creek Valley Road and Sugar Creek; Tower Gardening – students learned about the advantages of vertical gardening and built a tower garden for vegetables; Rain Garden Improvements - students addressed maintenance needs on a rain garden they planted last year to control run-off from the new science wing; Continuation of the No-Idling Campaign - educated & incentivized parents to stop idling. Surveys indicate idling is down 15% from last year when they conducted a similar campaign; Cafeteria Waste Reduction; Plastic Grocery Bag Use Reduction through parent education.

**SUSTAINING SUSTAINABILITY, PREMIER CHARTER****Mentor:** Michael Rodney, M2 Architecture Studio

A team of five 6th grade students in the gifted program began by establishing short and long term goals, and discussing plans to ensure their programs would keep going and growing for years to come. After delivering a presentation to the school's administration, the team started a pilot compost collection program during 6th grade lunch and quickly caught the eye of other grades. They built a composting drum followed by a larger compost bin. The 6th graders actively recruit and mentor 4th and 5th graders to take over. Their lights-off campaign began by analyzing electric bills from the last 5 years and identifying ways to decrease energy use. A program based on positive recognition of positive behavior was used to get teachers to flip the switch.



TAKING A BITE OUT OF CAFETERIA “WASTE” *ROGERS MIDDLE SCHOOL*

Mentor: Joyce Gorrell, EarthWays Center of Missouri Botanical Garden

The robotics team at Rogers Middle School aligned their project with the Trash Trek Lego Robotics competition in which they had to design a robot to complete 12 environmental and sustainability oriented challenges. As the year progressed, they drew attention beyond their technological innovation as they took on waste reduction in their cafeteria. After a field trip to St. Louis Composting, the students created their vision of a composting project for their school cafeteria, and then began diverting unnecessary food waste from landfills to their community garden to be used as fertilizers. Students showed their project to the members of the Affton School District Board of Education and their work was featured in the quarterly Affton School District newsletter.



DRAINING GAINS, *SAUL MIROWITZ JEWISH COMMUNITY SCHOOL*

Mentor: Ralph Bicknese, Hellmuth + Bicknese Architects

When it rains, the playground at Saul Mirowitz retains water and looks like a huge lake. Classes spend significant amounts of time in outdoor learning areas and are greatly impacted when the playground is flooded. The 6th grade students wanted to investigate solutions for this problem. After working in small groups to research options, the team determined creating a french drain to channel the excessive water on the playground towards their rain garden would be their best route. Though they have more work to do before reaching their goal, students have identified necessary materials and next steps for moving the project forward.



HIGH FIVE FOR HABITAT RESTORATION, *THE COLLEGE SCHOOL*

Mentor: Litzinger Road Ecology Center staff

The College School's team focused on habitat creation and restoration on a ¼ acre site at their school's La Barque Campus. Their goal was to remove invasive plant species, and then create a grassland with several small pools that would function to slow the movement of water into their creek and create micro-habitats. Students studied the area via Google maps, mapped out where five micro-wetland habitats would be constructed, dug the areas, and sowed seed they had gathered from surrounding plant life. The team also engaged the larger community in removing an extensive amount of bush honeysuckle on the property. To complement their work, students studied prairie and wetland ecosystems using the Nature Unleashed curriculum from the Missouri Department of Conservation.



HIGH SCHOOL PARTICIPANTS

GROWING THE GREEN LYFE NETWORK, *EDWARDSVILLE HIGH SCHOOL*

Mentor: Stacey Towell, CxE Group LLC

Last year, students in the environmental club at Edwardsville High School founded a non-profit organization with the goal of connecting students and youth across the state of Illinois to share ideas and organize action plans for environmental issues: Green LYFE (Leading Youth for the Environment.) This school year, the team established a youth council of students from multiple high schools in their area. They formed partnerships with local environmental organizations such as the Sierra Club and substantially supported their education and advocacy initiatives such as the Illinois Clean Jobs Bill through public outreach, presenting at community events, and regularly engaging political figures.



2nd PLACE

ALL FOR PLANTS, AND PLANTS FOR ALL! GOVERNOR FRENCH ACADEMY

Mentor: Mary Fitzgerald

Students monitored the carbon dioxide levels in their classroom. They found levels begin around 500 ppm then rise to 2000 ppm each day (levels between 1000 and 2500 ppm can result in drowsiness.) Students researched which indoor plants were best for removing CO₂ and placed these plants in their classroom. To expand, they are launching a competition in which classrooms create upcycled planters and teachers implement lesson plans to support their goal of reducing CO₂ levels to below 1000 ppm. The team also worked to advance energy efficiency efforts. The school received an energy audit, then applied for and received Energy Star Certification as part of their Green Schools Quest project last year. This year, they began implementing recommendations from the energy audit and updated their Energy Star Portfolio Manager account. Lastly, the team took initial steps towards developing plans for an outdoor classroom for their school which currently does not have a single blade of grass!



1st PLACE

RECYCLING BENCHMARK NOTTINGHAM COMMUNITY ACCESS JOB TRAINING HIGH SCHOOL

Mentor: Alyse Garbisch, HOK

The benches around the school's athletic field provide a resting place for teams waiting their turn during Fall and Spring Challenger Baseball games, most especially for students with physical disabilities – but several of these benches were rotting away and some had been built too low for high school aged bodies. The green team, comprised of students in the Grounds Maintenance and Horticulture classes, aimed to replace one or more benches. After finding a company that takes plastic caps and recycles them into benches, students began a campaign to collect plastic caps. Additionally, they designed and created two mosaic bench tops which will be built upon bases made from recycled plastic lumber. The team also made planting pots out of toilet paper tubes and grew plants to share with their community.



TRANSPARENCY MATTERS, ST. JOSEPH ACADEMY

Mentor: Mary Patterson, St. Louis County Department of Public Health

The Earth Angels green team focused on improving recycling at their school. They began by surveying trash and recycling patterns, through which they made an important discovery: janitorial staff was collecting recyclables in black, plastic bags. Many waste haulers treat contents in black bags as trash so it's likely that all of their recycling had been going straight to the landfill! The students are preparing a presentation to school administration to use transparent bags for recycling. The team visited a land fill and recycling center to gain insight and feedback for their efforts.

3rd PLACE

PRACTICE MAKES PERFECT, ST. LOUIS UNIVERSITY HIGH SCHOOL

Mentor: Zach Carter, Farnsworth Group

The "Sustainabills" found that waste was not being properly sorted at their school, then set out to educate the student body on the what, how, and why of separating recyclables, compost, and trash. They designed signage to assist with decision making; held meetings with the school's administration to incorporate waste reduction into SLUH's curriculum as early as the class of 2020; promoted efforts via the school's student newspaper; created an informational video detailing what item goes into which bin which was shown at lunch for every class, ensuring the entire student body of 1,100 watched the video; and engaged Student Council Representatives in working with the Sustainabills to present on the topic in each homeroom.

