Denton Sustainable Schools
2019-20 Resource Guide

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DENTON SUSTAINABLE SCHOOLS RESOURCE GUIDE

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Denton Sustainable Schools Program 2019-2020

The mission of the Denton Sustainable Schools Program is to encourage students, families, faculty, and staff to improve our environment, create economic value, and support and strengthen the Denton community through the implementation of comprehensive sustainability education. Denton schools have partnered with the City of Denton for years to bring environmental education and programs to area students, in the classroom and with field trips to places such as the City Landfill and Pratt Material Recovery Facility, the Pecan Creek Water Reclamation Plant, and Clear Creek Natural Heritage Center.

The Denton Sustainable Schools Program provides one central point of contact and one website, where teachers can access resources in many areas of Sustainability. Denton Sustainable Schools rewards individual schools for activities in several focus areas, including recycling. The focus areas reflect the City’s Sustainability Plan, Simply Sustainable: Water, Air Quality and Greenhouse Gas Management, Transportation, Material Resource Management, and Environmental. Participating schools will be eligible for Environmental Award money based on their implementation of activities outlined in this guide, as well as “innovative” activities proposed by the teachers/schools themselves. Find out more about the Simply Sustainable plan at www.cityofdenton.com.

Program Enrollment Requirements

The following are requirements for participation in the Denton Sustainable Schools Program to be considered for Environmental Award Money:

- Designate a Sustainable Schools Campus Coordinator who will serve as the liaison between the school and the Denton Sustainable Schools staff.
- Designate an Administrative Contact for your school, preferably a Principal or Vice Principal.
- Turn in an enrollment form by September 27, 2019.
- Complete mid- and end-of-year reports, including submission of the Points Tracking Form.

Program information and resources, including the Enrollment Form and Points Tracking Form, are found on the program website: www.dentonsustainableschools.com.

Earning Program Points

This guide provides resources, suggested activities, and point opportunities for Denton Sustainable Schools Program participants. Several categories may not have resources or suggested activities. We encourage you to think of your own ideas, and share them with us. Additional point opportunities may become available and communicated through the monthly newsletter.

Awards are available to schools that have the highest total amount of points! Your Campus Coordinator tracks and reports these activities to Denton Sustainable Schools staff at the end of each semester, using the forms provided at: www.dentonsustainableschools.com.

The Sustainable Schools Newsletter will be sent to each Campus Coordinator on a monthly basis. It will serve as an important source for additional resources and point opportunities, and is where we will communicate upcoming events, provide progress reports, and share information and ideas.

To schedule a visit from any of our City outreach staff, schedule a tour, or just ask a question, please contact: SustainableSchools@cityofdenton.com or call (940) 349-8152.
Careers on Wheels (Grades K-5) – This partnership between Denton ISD and The City of Denton is perfect for introducing children to municipal career choices, safety and connects the ways that their current studies relate to the real world. Team work, responsibility and valuable character building is also covered.

Denton Sustainable Schools Teacher Training (Grades K-12) – This annual training allows teachers to connect with other educators, learn about new resources available to them and to earn CEUs. Every year is a different experience!

Keep Denton Beautiful Environmental Education Grant Training (Grades K-12) – KDB offers an Environmental Education Grant Training to help educators apply for funds to address environmental needs of their campuses and further beautification.

## POINTS OUTLINE

<table>
<thead>
<tr>
<th>Activity Descriptions</th>
<th>Class (1-30 students)</th>
<th>Entire Grade (30-120 students)</th>
<th>Entire School (120+ students)</th>
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</thead>
<tbody>
<tr>
<td>Service Learning based or “Roots and Shoots” lessons</td>
<td>5 points</td>
<td>10 points</td>
<td>15 points</td>
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<tr>
<td>Field Trip/Tour or Careers on Wheels</td>
<td>4 points</td>
<td>8 points</td>
<td>12 points</td>
</tr>
<tr>
<td>All Presentations, DSS Teacher Training, KDB Grant Training, visits from Sustainable Schools Staff and affiliates</td>
<td>3 points</td>
<td>6 points</td>
<td>9 points</td>
</tr>
<tr>
<td>Activities, Lessons, Environmental Holiday Celebrations</td>
<td>2 points</td>
<td>4 points</td>
<td>6 points</td>
</tr>
<tr>
<td>Stem Kit Check-outs, Club Meetings, Morning Announcements</td>
<td>1 points</td>
<td>2 points</td>
<td>3 points</td>
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Mid-year reports due by January 17, 2020  
End-of-year reports due May 29, 2020
**WATER**

**Background:** As the DFW Metroplex continues to grow, increasing demands are being placed on finite water resources. Practicing water efficiency and conservation, and minimizing water pollution in our homes, schools, businesses and institutions, will help to maintain our local water resources. The City offers or recommends several resources to educate students, faculty, and families about watershed science, conservation, and efficiency.

**Watershed Protection (Grades K-12)** – administers programs to reduce the overall pollutants within the surface waters of Denton and to ensure compliance with the National Pollution Discharge Elimination System (NPDES) Storm Water Phase II rule. In Texas, the Texas Commission of Environmental Quality (TCEQ) administers the Texas Pollution Discharge Elimination System (TPDES). As a TPDES phase II City, Denton operates and maintains a ‘municipal separate storm sewer system’ or MS4 for residents and businesses within the City of Denton. Website: https://www.cityofdenton.com/en-us/residents/make-a-difference/sustainability/watershed-protection or contact: watershed@cityofdenton.com

**Storm Water Education (Grades K-12)** — Topics of school presentation by City of Denton Watershed Division. Staff include:
- Watershed/Water Cycle (Grades K-12)
- Nonpoint Source Pollution (Grades K-12)
- Aquatic Ecology (Grades K-12)
- Aquatic Insect Training (Grades K-12)
- Other approved water related topics by request

**Major Rivers Curriculum/Activities (Grades 4-5)** — Major Rivers, a program offered by the Texas Water Development Board, is designed to help fourth- and fifth-grade students learn about Texas’ major water resources, how water is treated and delivered to their homes and schools, and how to care for their water resources and use them wisely. Activities are TEKS and STAAR aligned. Curriculum activity kits are available to check-out for teacher led lessons at the North Branch or South Branch Libraries: (940) 349-8752, http://www.cityofdenton.com/departments-services/departments-g-p/library/about-dpl/contact-us
For more information: http://www.twdb.texas.gov/conservation/education/kids/MajorRivers/

**Waste Water Demonstration (Grades K-12)** — this hands on experience demonstrates the multi-step process involved in purifying wastewater to the point where it is able to be integrated back into our lakes. Students will get to watch a sample of wastewater go from a cluttered, murky mess to a clean and clear sample of treated water which will then be compared to a control sample of the original, untreated wastewater.

**Tour of the Pecan Creek Water Reclamation Plant or Ray Roberts Water Production Plant (Grades K-12)** — At the Pecan Creek Water Reclamation Plant, visitors will learn about how wastewater generated from their homes, schools, and businesses is treated and returned to
natural streams. The tour includes information on the treatment process, industrial monitoring, and watershed protection efforts. The Ray Roberts Water Production Plant demonstrates the water treatment process that turns lake water into potable drinking water, water that has consistently won taste awards, including the “Best Tasting Drinking Water in Texas” for 2013.

**World Water Monitoring Challenge (Grades K-12)** — World Monitoring Challenge is an International education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local water bodies. More information and free monitoring kits are available at: [http://www.worldwatermonitoringday.org/](http://www.worldwatermonitoringday.org/).

**Storm Water Outfall (Drains) Marking (Grades 6-12)** — Students can assist city officials with marking storm water drains and outfalls around the city to let people know that any illegal dumping of oil, chemicals, trash, and even lawn clippings goes straight to our creeks and lakes; not to the water treatment facility!

**Drinking Water Week Special Project (Grades K-12)** — Drinking Water Week is a national event held annually in the second week of May. Ideas and activities are available at: [http://www.awwa.org/resources-tools/public-affairs/public-affairs-events/drinking-water-week.aspx](http://www.awwa.org/resources-tools/public-affairs/public-affairs-events/drinking-water-week.aspx).

**Texas Aquatic Science (Grades K-12)** – build your knowledge of the aquatic ecosystems of Texas. Online curriculum written for middle school and high school students with 14 online chapters and accompanying teacher guide, including 78 lesson plans. Website: [https://texasaquaticscience.org/](https://texasaquaticscience.org/)

**Project WET Foundation (Grades K-12)** - a not-for-profit organization supporting water education through water resource publications, teacher training workshops, community water events, and a growing network of educators, water resource professionals, and scientists. Publications include lesson plans and kids’ activity booklets. Website: [https://www.projectwet.org/](https://www.projectwet.org/)

**Water Environment Association of Texas (Grades K-12)** - environmental resource professionals engaged in protecting and enhancing Texas’ water resources. Outreach and advocacy efforts include Texas WET magazine and K-12 teaching materials. Website: [https://www.weat.org/](https://www.weat.org/)

**Texas A&M AgriLife Water Education Network (Grades K-12)** - service dedicated to water conservation, water management, irrigation and water quality. Resources include education curricula and educator materials, events, and classes and training. Website: [https://water.tamu.edu/](https://water.tamu.edu/)

**School Water Conservation (Grades K-12)** — If your school administration is interested in pursuing a more comprehensive operational approach to water conservation, the City Water
Utilities staff recommends the following resources. Please contact Sustainable Schools for more support, if interested.

- American Water Works Association: http://www.awwa.org/
- Texas Water Development Board: http://www.twdb.state.tx.us/

Stream Clean (Grades K-12) — Stream Clean is an annual volunteer waterways clean up event held each fall by the City of Denton. Register your group at www.cityofdenton.com.

Texas Stream Team (Grades 7-12) — A network of trained citizen volunteers that monitor water quality in streams throughout the state, administered by Texas State University. Trainings are held twice a year in Denton, generally in the spring and fall. Sign up for training or get more information by emailing watershed@cityofdenton.com.

Car Wash Kit (Grades K-12) — this kit helps prevent runoff from carwashes from going down storm drains. The kit is available to check out for car wash fundraisers, where appropriate. Contact: watershed@cityofdenton.com

WaterSense (Grades K-12) – WaterSense, a voluntary partnership program sponsored by the U.S. Environmental Protection Agency (EPA), is both a label for water-efficient products and a resource for helping you save water. Their goal is to promote water efficiency and conservation to all generations. Their website provides a variety of tools and can be helpful in March during “Fix a Leak Week”. Website: https://www.epa.gov/watersense/watersense-kids#tab-4

AIR QUALITY & GREENHOUSE GAS MANAGEMENT

Background: Air quality and climate change can potentially affect the overall health of Denton citizens, communities, environment, and the economy. The City of Denton is working to track and reduce locally generated Greenhouse Gas (GHG) emissions and other air pollutants. The potential impacts of climate change to Denton residents include environmental, economic, and health impacts, such as heat-related illness, increased severe weather events, vector-born disease, and deteriorating air quality. Denton is located in a non-attainment area for ozone. On-road vehicles cause approximately 50% of ozone forming emissions. High ozone levels cause shortness of breath and coughing, and are linked to lung diseases including asthma and emphysema. There are many opportunities for students, faculty, and families to increase understanding in these areas, and help to reduce GHGs and other air emissions.

Global Climate Change and Greenhouse Gas Emissions (Grades K-12) — Conservation program presentation can include discussion of the science of climate change and greenhouse gas emissions and the link between human-generated greenhouse gas emissions and global climate change, including global warming. Impacts and mitigation strategies at various levels of society (global, national, regional, local) can be presented, including the City of Denton’s work to reduce emissions.
Air Quality (Grades K-12) — City staff can also present the basics of air quality, and discuss regional efforts for improving air quality. Appropriate scale for problem-solving discussed.

Announce Ozone Action Days (Grades K-12) — Let staff and students know about Ozone Action Days through email, social media, or announcements. Schools should already be signed up for daily air quality alerts from: www.AirNorthTexas.org.

Air Quality- School Flag Program (Grades K-5) — This program is run by the U.S. Environmental Protection Agency, The School Flag Program helps children, parents, school personnel, and the community be aware of daily air quality conditions using brightly colored flags. Each day, a flag is raised in front of participating schools that signals the level of air pollution for that day. http://airnow.gov/index.cfm?action=school_flag_program.index.

Anti-Idling Education/program development (Grades K-12) — during school pickup and drop-off times, long lines of idling cars and buses are a regular occurrence. Reducing idling in school zones can help in protecting the health of school aged children and contribute to improved air quality in our community. The City also participates with regional governments to educate and support schools about opportunities: http://www.epa.gov/cleanschoolbus/antiidling.htm

USEPA Clean School Bus’s Idle Reduction Campaign (Grades K-8) — USEPA’s resources for creating an anti-idling program at your school. http://www.epa.gov/cleanschoolbus/antiidling.

Walking School Bus or School Train (Grades K-8) — “A walking school bus is a group of children walking to school with one or more adults (http://www.walkingschoolbus.org/). “A” school train” is a variation of bicycling to school. A walking school bus or school train program can be informal or formally organized. The link above provides information on how to start either program.

Air North Texas (Grades K-12) – offers all North Texans, including individuals, businesses and governments, resources related to improving air quality. You can also monitor Arlo the armadillo on their website to see what the air quality index is. Website: https://www.airnorthtexas.org/teach

National Center for Science Education’s (Grades K-12) – NCSE helps train teachers and community volunteers in approaches that have been proven to reduce conflict and help learners overcome even deeply held misconceptions about evolution and climate change. NCSE also helps local communities block legislation and other efforts that would result in the miseducation of students on these critical topics. Website: https://ncse.com/climate/stars-science-history-education-honored-by-ncse.

The National Education Association (Grades K-12) – The National Education Association (NEA), the nation's largest professional employer organization, is committed to advancing the cause of public education. They provide resources on a variety of topics including Climate Change. Lists some sources: http://www.nea.org/climatechange


ENERGY EFFICIENCY & CONSERVATION

Background: The City and its community-owned power company, Denton Municipal Electric (DME), are committed to conservation and investment in renewable energy. Approximately 50% of locally generated greenhouse gas emissions are from energy use (non-transportation). The City offers and recommends several resources to educate students, faculty, and families about sustainable energy, including energy resources, technologies, and impacts of energy choices and behaviors.

Renewable Energy Presentation (Grades 2-12) — City staff can tailor a presentation on the various renewable energy resources. Depending on grade and class, the presentation can emphasize technology, focus on one specific technology (i.e. solar energy, wind energy), share resources for student research, and/or challenge students to consider local resources and impacts.

Energy Efficiency Presentation (Grades 2-12) — City staff can tailor a presentation on the importance of energy efficiency. Hands-on activities are under development.

Arcing Demo (Grades 3-5) — DME personnel will set up a demonstration in your school parking lot and show students what electricity is and how to use it safely.

Kill-o-Watt Ours Activity Kit (Grades 5-12) — Toolkit for students to measure electricity used by a variety of appliances, electronics, or larger electric loads (vending machines, etc). Also includes educational video. Available to check out from all City Libraries- includes Watt Meter and DVD. (940) 349-8752, http://www.cityofdenton.com/departments-services/departments-gp/library/about-dpl/contact-us.

Infinite Power of Texas (Grades K-12) — these activities were developed by education professionals and energy experts to teach the science of energy and renewable energy. Teacher resources and activities are accessible at: http://www.seco.cpa.state.tx.us/schools/infinitepower/lesson-plans.php.

Project NEED (Grades K-12) — Project NEED provides standards aligned hands-on energy education resources for students and teachers as well as teacher training. They emphasize activities that allow for students to teach students. http://www.need.org/.

Texas Energy Education Project (TEEP) (Grades K-12) — is a resource for science teachers that provides high quality energy supplement to teach their students about natural gas and other Texas fuels. Website: https://stemcenter.utexas.edu/projects/teep/
Take Care of Texas (Grades 1-6) - is a statewide campaign from the Texas Commission on Environmental Quality that provides helpful information on Texas’ successes in environmental protection and encourages all Texans to help keep our air and water clean, conserve water and energy, reduce waste, and save a little money in the process. This site allows you to order FREE publications at the website below. Website: http://takecareoftexas.org/publications

TRANSPORTATION

Background: Our current transportation system reflects a time when fuel sources and construction costs were less expensive, and air pollution was less of a concern. The transportation sector is responsible for about 50% of locally generated greenhouse gas emissions, and is the primary source of ozone forming emissions. The City is taking steps to invest in a more sustainable transportation system, including support for multiple forms of transportation such as walking, bicycling, telecommuting, carpooling, and use of high efficiency or alternative fuels and mass transit.

Bike Safety (Grades K-8) — The Bicycle and Pedestrian Coordinator from the City of Denton can come to your school and to teach students about bicycle safety and rules of the road. Contact Marc.Oliphant@cityofdenton.com.

BikeTexas’ SafeCyclist Program (Grades 4 and 5) — This 15-lesson curriculum focuses on: rules of the road, safe cycling skills, strength building and stretching using fun physical exercises that are at least 15 minutes in length, and designed to be integrated into Physical Education classes. http://www.biketexas.org/. Please contact Sustainable Schools for DISD contacts.

DTCA Tour/ ride (Grades K-12) — consider a tour of DCTA or utilizing DCTA buses or trains on a field trip. http://www.dcta.net/

Preferred parking for employee carpools, hybrid, or electric vehicles. A school can allocate parking spaces on campus for environmentally friendly transportation options such as hybrid vehicles, carpools, etc.

International Bike/Walk to School Day (Grades K-8) — Organized by the Partnership for a Walkable America, Walk to School Day in the USA began in 1997 as a one-day event aimed at building awareness for the need for walkable communities. Today, thousands of schools across America and in more than 40 countries worldwide celebrate walking to school every October. Bike to School Day is every May. http://www.walkbiketoschool.org/.
MATERIAL RESOURCE MANAGEMENT

Background: The best way to manage Municipal Solid Waste (MSW) is to not create it in the first place. After that, by using a sustainable integrated waste management system to maximize resource recovery and reuse of materials. The City of Denton promotes source reduction, reuse, recycling, composting, and education. The following resources support local schools in reducing waste and creating a goal of “zero waste.”

City of Denton staff will present lessons and hands-on activities designed to promote sustainable waste management and resource conservation. Lessons & Activities can be customized for any grade or group and can range from 30 minutes to one hour.

- **Recycling 101 (Grades K-12)** - Students learn what IS and is NOT recyclable, the process of recycling, and why recycling is important locally and globally. This presentation can be adapted for small and large groups.
- **Natural Resource Conservation: Reduce, Reuse, Recycle** — Students learn the environmental impact of everyday products, from extraction of natural resources to disposal; often referred to as the ‘Cradle to Grave’ concept.
- **Conscious Consumerism** — Students learn how their purchases have power and the global and local implications of their choices. From packaging to vocabulary, terms that are used in marketing and advertising are explained to help students make informed decisions.
- **Customized presentations** — any of the presentations and activities listed above can be modified to meet curriculum needs for grade levels.
- **Recyclesaurus Rex** — A fun visit from The City of Denton’s recycling mascot is a great way to create excitement and raise awareness for school recycling! Schedule Rex to walk the halls of your school, promote recycling at lunch, and even make appearances at your special events and pep rallies.

**SCRAP Denton (Grades K-12)** — SCRAP staff will come to your school for a one hour presentation about creative reuse. Visit [www.SCRAPDenton.org](http://www.SCRAPDenton.org).

**Tour the City of Denton’s Recycling Center (Grades K-12)**
Schedule a free tour for your group to see firsthand where Denton’s recycling goes after it is collected. The tour can include any or all of the following:
- **Pratt Material Recovery Facility (MRF)** — See where recycling is sorted by machines and by hand, then prepared to ship to manufacturers for creating new products.
- **Dyno-Dirt Compost** — Biosolids from the Pecan Creek Water Reclamation Plant are processed with clean wood and yard wastes to create rich soil amendments and mulch that are available for sale to the public.

*To schedule a tour send requests to SustainableSchools@cityofdenton.com.*
Trash Audit (Grades 4-12) — for this activity, students and teachers separate and weigh a sample of your school’s waste! City of Denton staff can guide your group and provide safety clothing and equipment for the event. Participants learn research methods to determine how much waste is being sent to the landfill instead of being reused or recycled.

Creative Reuse Center (Grades K-12) — Students and teachers can donate leftover classroom materials for others to use by establishing a Creative Reuse Center. Contact the Denton Sustainable Schools staff to help plan your center.

Green Team (Grades K-12) — Several schools have found success in creating a student/staff or a mixed Green Team. This is a great way to encourage social responsibility and get everyone involved.

Staff Development (Grades K-12) — City of Denton Staff will give a short presentation to school faculty, staff, and administration about reducing waste and recycling on campus. Solid Waste and Recycling Department staff are also available to help train school faculty, cafeteria, custodial and administrative staff to maximize recycling and improve your school’s diversion weights.

Recycling Weights (Grades K-12) — Recycling weights are maintained by City Staff and you will receive periodic updates on how much your school is recycling in the Denton Sustainable School’s Newsletter. Your school will earn points based on how many pounds are recycled per student from July 1, 2019 - June 30, 2020.

Cafeteria Recycling Plan (Grades K-12) — A representative from the City of Denton Sustainability can help your school create a cafeteria recycling plan, and visit during lunch to show students how to properly recycle or dispose of their lunch waste.

Special Event Recycling (Grades K-12) — Borrow free, portable special event recycling containers for school events such as Fall Festivals and Field Days. Contact Brandi.Neal@cityofdenton.com.

TRASHion Fashion (Grades K-12) — Designers and artists of all ages are invited to participate in the third annual TRASHion Fashion Show. Participants create wearable and artistic fashions made of trash, and research facts about waste, then show them off on the runway at the Keep Denton Beautiful Redbud Festival in April 2019. A creative and fun activity for Earth Day!

Bicycle to Recycle! (Grades K-12) — Celebrate America Recycles Day on this guided bicycle ride that starts on the Downtown Denton Square and to the Recycling Center for an insiders’ tour! School riding groups are welcome. Hosted by the City of Denton Solid Waste and Recycling Department and Pratt Recycling. More info at www.dentonrecycles.com.
ENVIRONMENTAL

**Background:** Food plays a critical role in community health, economy, environment, and culture. The City encourages local agriculture and gardening to support local businesses, increase public access to food, and reduce air pollution and fossil fuel consumption. Our community has several resources for educating students about local food production.

**Clear Creek Natural Heritage Center (Grades K-12)** - operates a large scale garden that allows class participants and volunteer’s to get hands on experience throughout the year in seasonal workshops. The food harvested from the garden is donated to local non-profits. Seeds are collected for reuse and native seeds are placed in the seed library at the Emily Fowler library.

**Emily Fowler Seed Library (Grades K-12)** – located at the Emily Fowler Library is a collection of seeds available free of charge to anyone in the community. These are all native species that can be used in student’s garden at home or in the class.

**Local Farmer (Grades K-12)** — The Denton area has many farmers and gardeners, including organic farmers (several can be found at the Denton Community Market), who might be willing to visit the school, or arrange a farm visit.

**Denton County Beekeepers Association (Grades 3-12)** – is dedicated to teaching, sharing, and informing our community about bees and beekeeping. This group serves as a great resource for schools to learn more about pollinators. Website: [https://dentonbees.com/about/](https://dentonbees.com/about/)

**Denton Community Market (Grades K-12)** — this community market takes place between April and November each year. It offers a variety of products including local food, crafts and services. As mentioned earlier, it is a great way to meet local sustainable farmers within our community. Website: [http://dentonmarket.org/](http://dentonmarket.org/)

**Texas A&M AgriLife Extension Service (Grades K-12)** – is an educational outreach agency of Texas A&M University. It is funded through a partnership of the United States Department of Agriculture, the Texas A&M University System, and the county commissioners courts of Texas. Each county office is supported by Extension program specialists and research scientists in the College of Agriculture and Life Sciences at Texas A&M University who provide research-based information and educational materials which are then delivered by the local county faculty to citizens in their county. Website: [https://denton.agrilife.org/](https://denton.agrilife.org/)

**Ray Roberts State Park (Grades K-12)** – is a part of the Texas State Park system and can provide both resources at the facility and away. The Ranger program also offers interpretative lessons to facilities outside of the park. Website: [https://tpwd.texas.gov/state-parks/ray-roberts-lake](https://tpwd.texas.gov/state-parks/ray-roberts-lake) or contact for Ranger Rick: rick.torres@tpwd.texas.gov
Denton County 4-H (Grades K-12) - is a community of young people across America who are learning leadership, citizenship and life skills. 4-H is about having fun, learning, exploring and discovering. In 4-H, young people make new friends, develop new skills, become leaders and help shape their communities. More than 65,000 Texas youth are enrolled members of 4-H community clubs in Texas. Website: https://denton.agrilife.org/4h-and-youth-development/ or contact: colleen.carpenter@dentoncounty.com

Field trip to Clear Creek Natural Heritage Center (Grades K-12) — Visits to CCNHC have already been integrated into the science curriculum for DISD 2nd, 4th, and 5th grades. Points will be awarded for field trips to CCNHC outside of these existing visits. Field trips can include additional/ extended natural science study and exploration, or can expand into the areas of art (painting, photography, and videography), English (journaling), or social studies.

Field trip to Elm Fork (Grades K-5) — Elm Fork Education Center offers hands-on discovery experiences for K–5th grade in Aquatic studies, Paleontology, Archeology, and Ecology. All lessons are aligned with TEKS. www.efec.unt.edu.

Native Plant Garden (Grades K-12) — Plant a water-wise, native plant garden. Such gardens are excellent resources for onsite science activities.

Tree Survey (Grades 2-12) — Students can work with teachers or naturalist volunteers to identify trees on campus.

Biodiversity (Bioblitz) (Grades K-12) — a “bioblitz” is a unique biological inventory, conducted in a short amount of time, where students, citizens, families, and scientists work together to inventory as many living organisms in a particular area, as possible. It is a great way to enhance understanding and connection to a student’s local environment. See http://education.nationalgeographic.com/education/encyclopedia/bioblitz/?ar_a=1&ar_r=3.

Keep Denton Beautiful (Grades K-12) – is a nonprofit organization that engages Denton neighborhoods, businesses, and residents of all ages in creating a clean and beautiful Denton. Our vision is a clean, beautiful, and vibrant city. Website: https://kdb.org/ or contact: autumn@kdb.org

The Native Plant Society of Texas (Grades 9-12) – wants to protect our state’s native plant heritage and preserve it for future generations. We are a non-profit organization, run by volunteers, sponsoring educational programs, workshops, demonstration gardens and many other types of projects. Website: https://npsot.org/wp/ or contact: state@npsot.org

The Texas Wildlife Association (Grades K-12) – is a statewide membership organization that serves Texas wildlife and its habitat, while protecting property rights, hunting heritage, and the conservation efforts of those who value and steward wildlife resources. Website: https://www.texas-wildlife.org/
SWAT: Science With Attitude (SWAt) (Grades K-12) – was established to share, support and enhance the knowledge of horticultural and environmental education with Denton County teachers, parents, and students. The SWAt team is a group of Texas AgriLife Extension volunteers working collaboratively through these three local organizations: Denton County Master Gardeners, Elm Fork Chapter Texas Master Naturalists and Denton County 4-H. Website: https://txmn.org/elmfork/staying-connected/swat-science-with-attitude-educational-outreach/ or contact: sciencewithattitude@gmail.com. They also have a list of activities and Stem Kits available: https://dcmga.com/files/2017/08/EOP-DESCRIPTION-PAGE-W-CHECKLIST-ADD-IN.pdf

Texas Master Naturalist (Grades K-12) – are a corps of well-informed volunteers to provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities for the State of Texas. Volunteers can help with implementing youth education programs; for operating parks, nature centers, and natural areas; and for providing leadership in local natural resource conservation efforts. Website: https://txmn.org/elmfork/ or contact: elmforkcmn@gmail.com

Texas Master Gardeners (Grades K-12) – are members of the local community who take an active interest in their lawns, trees, shrubs, flowers and gardens. They are enthusiastic, willing to learn and to help others, and able to communicate with diverse groups of people. Website: https://dcmga.com/ or contact: master.gardener@dentoncounty.com

Outdoor Learning, (Texas Parks & Wildlife Department) (Grades K-12) – outdoor activities for children, publications, and other resources for parents and teachers. TPWD has classroom resources including activities and lesson plans and educational loaner trunks available free of charge to formal and informal educators and youth leaders. Explore Project WILD, a hands-on program for K-12 grades. Website: https://tpwd.texas.gov/

Conservation Education (Texas Water Development Board) (Grades K-12) – variety of school-based programs, workshops for adults, and a collection of conservation materials, including K-12 curriculum. A Kids portal offers visualizations and interactive games centered on water resources and conservation. Website: http://www.twdb.texas.gov/

Conservation Education (Texas A&M Forest Service) (Grades K-12) – variety of resources to ensure people of all ages appreciate why trees, water, and animals are important including the Texas Nature Challenge that gets families outdoors by completing activity challenges in participating parks and nature areas. Website: http://texasforestservice.tamu.edu/

Project Learning Tree (Texas Forestry Association and Texas A&M Forest Service) (Grades K-12) – a statewide, environmental education program for pre-K – 12 grades. The program’s trained facilitators lead workshops with hands-on activities; its website provides teacher guides, an Environmental Exchange Box, and other resources. Website: https://www.texasforestry.org/educators/forest-awareness-tours
Monarch Joint Venture (Grades K-12) – MJV supports monarch conservation planning and implementation efforts on a broad scale by facilitating information sharing, partnership building, and carrying out identified conservation priorities. We facilitate multiple working groups that focus on things like communications, agriculture, and monitoring. Additionally, the MJV funds our partners to carry out priority actions identified in the Implementation Plan. Beyond this, we provide key and accessible information on monarchs and their conservation to various sectors and the public. Website: https://monarchjointventure.org/

Monarch Watch (Grades K-12) – Monarch Watch is a nonprofit educational outreach program based at the University of Kansas that focuses on the monarch butterfly, its habitat, and its spectacular fall migration. They provide a variety of resources including grants to help restore milkweed in regions. There Monarch Watch program is also great for all ages to participate in citizen science. Website: https://www.monarchwatch.org/
Grant Application: https://monarchwatch.org/bring-back-the-monarchs/milkweed/free-milkweeds-for-restoration-projects/

Pollinator Partnership (Grades K-12) – Pollinator Partnership’s mission is to promote the health of pollinators, critical to food and ecosystems, through conservation, education, and research. They provide a variety of resources online for educators including curriculum, activities, fact sheets and other useful tools.
Website: https://www.pollinator.org/learning-center/education

TWU Butterfly Garden (Grades K-12) – TWU has a native plant butterfly garden on campus that both attracts and sustains monarchs as well as many other butterflies, bees, and birds. Contact Information: Camelia Maier, Ph.D.
E-mail: cmaier@mail.twu.edu
Website: https://twu.edu/butterfly-garden/

National Wildlife Foundation (Grades K-12) – This organization is dedicated to, “uniting all Americans to ensure wildlife thrive in a rapidly changing world”. They provide tons of educational resources as well as pathways to creating registered wildlife habitats and monarch waystations. Their website can also help you provide directions on how to create your own school garden.
Gardening Website: https://www.nwf.org/Garden-for-Wildlife/Create/Schoolyards
Educational Resources: https://www.nwf.org/Educational-Resources/Education-Programs
# STEM KITS

## Snap Circuits

This kit can be used to help your students begin to learn how electrical circuits are created and the power necessary to complete the machines.

## Snap Circuits Arcade

This kit is much like the original Snap Circuits kit, but adds games to be played depending on how the circuit board is set up. Students can get a quick introduction to programming and coding from the activities offered.

## Code-a-pillar

This kit is excellent for teaching young learners problem solving, experimentation, and open-ended thinking via coding. Great for kindergarten classes because of the lights and sounds of the Code-a-pillar.

## Bloxels

Bloxels is an advanced kit that allows the student to use their creativity to create a video game of their own design. This kit prompts critical thinking skills and experimentation all while maintaining your student’s attention.
### Makey Makey

This kit is great for lessons about natural energy production and conductivity. Creating activities from this software highlights new ways of using sustainable energy sources to students.

### Solar Cell Kit

Solar Cell Classroom Sets have all the equipment to allow hands-on explorations of solar power and electricity. They contain enough solar cells, motors, and equipment to engage a classroom full of students. Activities using the Solar Schoolhouse Solar Cell Classroom

### SolRun Kit

Motor bushings slide onto the motor shaft, and into the hub-hole of any of the three sizes of pulleys or five sizes of gears, giving a wide selection of direct solar drives. Experiment with different gear ratios and pulley combinations, as well as different drive mechanisms.

### Solar Oven

This activity is perfect for teaching your students about alternative energy sources and keeping them attentive with an edible award! The solar oven requires minimal set up and clean up, so it is great for a quick lesson
<table>
<thead>
<tr>
<th><strong>Advanced Wind Kit</strong></th>
<th><img src="image1" alt="Advanced Wind Kit" /></th>
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</thead>
<tbody>
<tr>
<td>This kit is an introductory activity to the engineering behind wind energy. Students will construct a windmill while learning about the physics necessary to propel the machines and create the energy that they store.</td>
<td></td>
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</tbody>
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<thead>
<tr>
<th><strong>McGuyver Wind Kit</strong></th>
<th><img src="image2" alt="McGuyver Wind Kit" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>This wind kit is geared for experimentation in harvesting the full potential of wind energy by allowing them to use different materials to discern the most effective method to catching the wind.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>STEAM Student Set</strong></th>
<th><img src="image3" alt="STEAM Student Set" /></th>
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</thead>
<tbody>
<tr>
<td>The kit helps engage students in hands-on inventing to teach engineering &amp; design. Great for grades 3-8.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Watershed Enviroscape Kits</strong></th>
<th><img src="image4" alt="Watershed Enviroscape" /></th>
</tr>
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<tbody>
<tr>
<td>Hands-on, interactive demonstration of the sources and effects of water pollution. Easily demonstrate how storm water runoff carries pollutants through the watershed to a pond, lake, river, bay, or ocean. Available for check out via the City of Denton Watershed Protection Department.</td>
<td></td>
</tr>
</tbody>
</table>
About the Program:

Leaders from the playground to the boardroom hold the key to shaping the world. To make the world a better place, we have to change the way we make decisions. We need leaders who care about how their actions affect the world we all share.

Roots & Shoots empowers young people (like YOU) to become the type of leaders who will make right choices to build a better world. Through the program, youth lead local change through service while developing skills and traits of compassionate leaders.

Hundreds of thousands of Roots & Shoots members all over the world are working to improve their communities and be the kinds of leaders that our world needs. Together, the actions taken by each individual weave together to create a tapestry of hope...a powerful ripple of change. Join us in our mission!

1. Sign up at https://www.rootsandshoots.org/signup
2. Join a one-click campaign at https://www.rootsandshoots.org/campaigns
3. Create your own group at https://www.rootsandshoots.org/user/register
4. Design your own service campaign using these four steps:
   - Get Engaged - https://www.rootsandshoots.org/engage
   - Observe - https://www.rootsandshoots.org/mapping
   - Take Action - http://rootsandshoots.org/takeaction
   - Celebrate - http://rootsandshoots.org/celebrate

Resources:

- Download your own free resource guide at: https://www.rootsandshoots.org/toolkit
- Website: https://www.rootsandshoots.org/
- Contact: rootsandshoots@janegoodall.org
- Social Media: Roots & Shoots Communities on Facebook.