



KACEE

KANSAS ASSOCIATION FOR
CONSERVATION &
ENVIRONMENTAL
EDUCATION

KANSAS



GreenSchools
www.kansasgreenschools.org

Learning Community Investigation



**KACEE- Kansas Association for
Conservation and Environmental Education**

Kansas Green Schools Program

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Part 1: Introduction



KACEE

KANSAS ASSOCIATION FOR
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E D U C A T I O N

- KACEE has been promoting and providing conservation and environmental education for all Kansans since 1969.
- KACEE supports community education, outreach and engagement programs statewide to advance the mission of our natural resource agency, higher education, and non-formal education partners.
- KACEE’s environmental education curricula help teachers improve student achievement, engagement in STEM, critical thinking, problem solving, and 21st century job skills.
- KACEE’s professional development programs give educators the confidence to take students outdoors to learn with hands-on activities that are fun and meaningful for students.
- Environmental Education connects kids to nature, supports healthier, active lifestyles, and encourages students to take action to improve their school and environment.
- KACEE encourages and recognizes outstanding achievement through Excellence in Conservation and Environmental Education Awards and Kansas Green Schools Recognition programs.
- Kansas is the only state to have a unique, collaborative partnership with KACEE, Project Learning Tree and the National Wildlife Federation to coordinate Green School certification and recognition between state and national programs.
- Since 1998, the KS Green Schools Program has connected students to their community and the world, while growing problem-solving and leadership skills through service learning projects.
- KS Green Schools investigations engage students in exploring their school’s energy, water, school grounds, waste management and creating a greener and healthier learning environment.
- The KS Green Schools Network supports teachers in creating greener and healthier schools through training, networking, grant funding, curriculum resources, and more!
- The KS Green Schools program celebrates and recognizes schools across the state for their green achievements through the KS Green Schools recognition program.
- The KS Green Schools Network connects and inspires teachers in over 500 Kansas Green Schools through an annual Green Schools Conference, Online Forum, Green Schools Updates, Professional Development Workshops, Facebook, and more!



Fan us on Facebook at www.facebook.com/groups/kansasgreenschools

Here you can connect with KACEE and to hundreds of Kansas Educators!

Part 2: Leadership Resources

Correlations to Academic Standards

The Kansas Green School Investigations are designed to support your efforts in the classroom with many national education standards. To keep up to date with the correlations, visit <http://www.plt.org/correlations>.

Career and Technical Education for Kansas Kids

This investigation is designed to expose students to different career opportunities related to designing and maintaining school sites. We encourage you to introduce your students to real world professionals throughout the investigations to increase the direct learning opportunities and to increase the depth of experiences. Here are a few of the fields that students may discover throughout the investigations:

- Hydrologist
- Arborist
- Cartographer
- Gardening Specialist
- Wildlife Biologist
- Integrated Pest Management Specialist
- Irrigation Engineer
- Landscape Design and Architecture
- Forester
- Environmental Health and Safety Technician
- Environmental Scientist
- Grounds Maintenance
- Irrigation Engineer
- Surveyor

What are the benefits of integrating outdoor learning with your school grounds?

Creating and maintaining schoolyard habitats and outdoor learning spaces will give students the opportunity to connect with nature and to learn more about plant and animal species indigenous to their area. Outdoor learning spaces also provide a site for science observations, experiments, reflective writing, measurements and calculations, sketching and ways to increase science, technology, engineering and math (STEAM) learning and incorporate the Next Generation Science Standards.

Outdoor learning environments are also important to provide students with a designated area for play and physical activity. Over the past three decades, childhood obesity rates in America have tripled, and today, nearly one in three children are overweight or obese. If this trend continues, one-third of all children born in 2000 or later will suffer from diabetes at some point in their lives. Many others will face chronic obesity-related health problems such as asthma, cancer, heart disease and high blood pressure.

School Gardens

School gardens can serve as educational tools to help students see real-world applications of science, technology, engineering, art and math (STEAM). A few of the skills that can be taught through gardening include analyzing data, charting, classifying, collecting data, measuring and reporting. Science lessons might include day lighting investigations, ecosystems, life cycles, soil analysis, weather monitoring and more.

Gardening projects can range from simple herb gardens to extensive outdoor vegetable gardens. Here are some popular school garden themes:

Alphabet garden: Grow plants and flowers that start with each letter of the alphabet.

Bird garden: Grow plants that provide food and shelter for birds.

Flower garden: Harvest flowers to brighten the indoor school environment or to deliver to hospitals, nursing homes, etc.

Herb garden: Grow a variety of herbs that can be used for sensory activities.

History garden: Plant seeds for crops that Native Americans or early settlers may have used.

Phenology garden: Monitor the garden throughout the year to observe seasonal changes and their effect on when certain plants appear, when flowers bloom, when insects appear, and so forth.

Pizza garden: Grow vegetables that can be used as pizza toppings.

Pollinator garden: Plant native plants that attract butterflies and other pollinators.

Rain garden: Select plants and design landscaping to prevent runoff.

Reading garden: Intersperse benches, large boulders, and other seats so students can read in the garden.

Did You Know? On the Kansas Green Schools website, we have an entire section about Kansas School Gardens, including curriculums already created as you are going through the process of building your own school garden and virtual tours of other school gardens from across the state of Kansas! Visit www.kansasgreenschools.org and then click the “Garden Gate” button.

Pervious and Impervious Areas

As students are conducting the Learning Community Investigation, they will calculate the percentage of pervious and impervious areas in their site. Pervious areas allow rainwater to percolate through the earth’s surface. Examples include grassy areas, natural athletic fields, playgrounds with a wood chip surface and other green spaces. Pervious areas replenish the ground water table and reduce storm water runoff.

Examples of impervious areas include asphalt, concrete, paved courtyards, paved driveways, parking lots and sidewalks. According to the U.S. Environmental Protection Agency (EPA), impervious surfaces have a variety of negative impacts on local watersheds and significantly alter the natural water cycle. Click [HERE](#) to review the affects of impervious runoff areas.

<https://nepis.epa.gov/Exe/ZyNET.exe/20004VVI.txt?ZyActionD=ZyDocument&Client=EPA&Index=1995%20Thru%201999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C95THRU99%5CTXT%5C0000002%5C20004VVI.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=5>

Some specific negative impacts of impervious surfaces include:

Impervious areas increase the rate and volume of storm water runoff, which contributes to flooding and erosion along streams and rivers.

As storm water runoff flows over impervious areas, the temperature of the water increases. As this warmed water flows into streams, it increases the stream temperature. Warmer waters hold less dissolved oxygen, which negatively affects aquatic animals.

Pollutants and sediment carried from impervious surfaces into nearby aquatic environments will decrease water quality and impair fish, their habitats and spawning grounds.

Because stream degradation can occur with as little as 10-20 percent imperviousness, it is useful for students to assess the percentage of area on the school grounds that is impervious. To increase filtration and reduce excess storm water runoff, Green Teams can implement a variety of simple strategies such as the following:

- Design green roofs to absorb rain and reduce runoff.
- Develop a rain garden (a planted depression that allows runoff to be absorbed).
- Plant trees and shrubs around the school.
- Use rain barrels to capture rainwater for release when and where the water is needed.

More intensive strategies include the use of permeable pavement, the development of a wide buffer zone of native vegetation around parking lots to absorb runoff before it reaches natural habitats, and the creation of an infiltration basin. An infiltration basin is a vegetated depression that catches runoff from parking lots and other impermeable surfaces and then slowly filters the runoff back into the groundwater.

Kansas Case Study

See the Kansas Case Study, “All About OWLS” (Outdoor Wildlife Learning Site) in the Learning Community attachments. Thank you to Theresa Farris and Service Valley Charter Academy for your example to other schools across the state.

Why is Connecting Our Kids to Nature and Environmental Education Important?

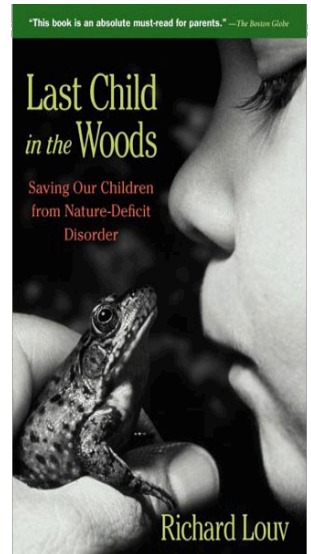
Here are some statistics about the average child in the United States.

- In 2004, American children spent less than half as much time outdoors as their parents. (Kaiser Family Foundation, 2005).
- Kids are reported to spend 7.5 hours per day on electronic equipment during their free time. (Kaiser Family Foundation, 2010).
- A longitudinal study found that children under 13 living in the United States spend on average only about half an hour of unstructured time outdoors each week (Hofferth & Sadberg, 2001).

In 2005, **Richard Louv** coined the term, “Nature Deficit Disorder” in his book, **“Last Child in the Woods.”** This term was used to define the potential impacts on children of spending less time outdoors.

Louv states, “Nature-deficit disorder is not an official diagnosis but a way of viewing the problem, and describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. The disorder can be detected in individuals, families, and communities” (Louv, 2005).

The reduced contact children are having with nature is leading to a rise in many emotional, mental and physical health risks. Some examples in his book are a rise in childhood ADHD, correlation with rises in childhood obesity and negative impacts on cognitive and conceptual development.



How Does Nature and Environmental Education Help Our Students?

Numerous studies have shown that environmental education has many benefits to children.

- **Science Scores-** Numerous studies have shown that environmental education boosts science scores.
- **Physical Health-** Physical activity is shown to improve children’s health, and a growing body of evidence suggests that exposure to natural environments can improve attention & decrease stress in children. (McCurdy et. Al, 2010)
- **Increased Focus/Improved Cognition -** Wells observed that proximity to nature, access to views of nature, and daily exposure to natural settings increases the ability of children to focus and improves cognitive abilities. (Wells, 2000)
- **Behavioral Management-** Taylor and her colleagues found that children with attention-deficit disorder (ADD) benefited from more exposure to nature –the greener a child’s everyday environment, the **more manageable are the symptoms of ADD.** (Taylor, 2001)
- **Emotional Health-** Taylor also observed that access to green spaces for learning and play, and even having views of green settings, **enhances peace, self-control, and self-discipline** among inner-city youth, especially among girls.
- **Group Cohesion/Increased Creativity-** At the school environment level Bell and Dymont observed that children who experience school grounds or play areas with diverse natural settings are **more physically active, more aware of good nutrition, more creative, and more civil to one another.** (Bell & Dymont, 2006)

- **Community Involvement-** Getting students involved in recycling projects, composting, community swap days and waste education can promote stronger social ties to the community.

Learning Community Education Resources

Many organizations provide educational resources related to the Learning Community. See the **Resources** section in Part 5 for a list of organizations that provide curricula, professional development and more.

Educational Opportunities for Teachers

KACEE provides professional development opportunities for educators across the state with the option to attain one hour of college credit for participating in the workshop. For a current program schedule, visit <http://www.kacee.org/>

Home Connection

The results of this investigation will show students how they can make a variety of improvements to their school grounds. Many of the ideas they generate can also be used at home. See page 36 for a **Home Connection** chart that can be distributed or made available on school websites for families to download and use.

Part 3: Learning Community Investigation Materials

Directions for Green Team Leaders

There are five areas you might want to investigate as a part of becoming a Kansas Green School of Excellence. These areas include:

- 1) **Energy-** This investigation will help your team identify current energy management practices and will help in thinking of ways to modify these practices to make your school greener and healthier! Your results will inform school staff and students where they can make improvements and also to generate an action plan to reduce school energy use.
- 2) **Waste and Recycling-** This investigation will help your team identify current waste management practices and will help in thinking of ways to modify these practices to make your school greener and healthier! Your results will inform school staff and students where they can make improvements and also to generate an action plan to reduce school waste.
- 3) **Water-** This investigation will help your team identify water practices and will help to identify ways in which your school can conserve water! Your results will inform school staff and students where they can make improvements and also to generate an action plan to improve water efficiency, improve water quality and create conservation ideas for students and staff.
- 4) **Healthy School Environments-** This investigation will help your team identify air quality and transportation management practices and will help in thinking of ways to modify these practices to make your school greener and healthier! Your results will inform school staff and students where they can make improvements and also to generate an action plan to improve school health for students and staff.
- 5) **The Learning Community-** This investigation will help your team identify improvements for your school grounds, and ideas to help local wildlife, flora and fauna, the school community, and your neighborhood, city, state, country and world. Your results will inform school staff and students where they can make improvements and to also generate an action plan.

Getting Ready to Begin the Investigation

Step 1. Identify Leaders- Identify one or more Green Team Leaders to be in charge of the Learning Community Investigation.

Step 2. Obtain Permissions- Leaders will want to obtain the necessary permissions from schools administrators before starting the investigation. They should decide how and when the investigation will be conducted to avoid conflicts with school classes and activities.

Step 3. Form Your Green Team- Leaders should decide who will be conducting the investigation. A team approach is recommended. The more diverse the representation on your Green Team, including students and their grade levels, members of the community, etc. the higher the Globe Level you can apply for. Consider including the following representatives:

- Teachers
- Students
- Administrative staff members
- Custodial and maintenance staff members
- Cafeteria staff members
- Parent/Grandparent volunteers
- Resource Professionals in the community

Step 4. Develop Questions for Discussion - Before you begin, gather your KGS Green Team and come up with a list of items and/or questions you have regarding your school grounds and outdoor learning spaces. Be sure to add on any items/questions you have that are not included in the KGS's Investigations.

Step 5. Develop a Schedule and Assign Roles- Discuss how team members are going to conduct the investigation. Will the team always work together, or will the team split into groups and assign sections to each group? Are specific school staff members (custodial, maintenance, administrative) needed during certain parts of the investigation? If so, contact them to schedule a time for that part of the investigation. Develop a schedule for how the team will conduct the investigation.

Step 6. Print the Investigation- Provide a printed copy of the entire investigation to the Green Team members who will be conducting the investigation. Then, they can record information as they walk around the school and complete the investigation. Encourage team members to answer the questions to the best of their ability according to time allotted and documents and materials available to them. The **“Teacher Print Out Packet”** contains the **Plant and Animal Observation Charts** to record information on and are available for distribution throughout your

school faculty. The Print Out Packet is available on the KGS Website under the Investigation you are completing.

Add any questions that your Green Team discussed that were not covered in the investigation.

Step 7. Gather Documents and Supplies- If possible, gather the following documents and supplies before the team begins the Investigation:

- Copies from the **“Teacher Print Out Packet”** for the investigation that’s on the KGS Website under the Learning Community Investigation.
- Any written policies your school has related to your school ground habitat management practices.

Step 8. Conduct the Investigation- Green Team should answer the questions to the best of their ability within the time allotted, and with the information and equipment available.

Step 9. Develop and Implement an Action Plan- Based on the information and data collected, the Green Team will prioritize their ideas for action projects and implement one or more of their plans.

Step 10. Apply for Recognition- Once your investigation and action plans are complete, you will apply for a Silver, Gold, or Gold Globe Level of Recognition. Rubrics on how each level will be scored along with the applications are available on the KGS website. Visit <http://www.kansasgreenschools.org/apply-recognition> for more information.

Step 11. Celebrate Your School’s Success- Communicate your school’s findings and action plans with the school, school administrators, families, the community and your representatives!

Part 4: Learning Community Investigation



The Learning Community!



Introduction

DISCOVER what makes your school and your school grounds special as a learning community! Students will explore the different areas of your school and give students the opportunity to connect with nature while applying STEM learning and the Next Generation Science Standards.

This investigation will help your team identify improvements for your school grounds, and ideas to help local wildlife, flora and fauna, the school community, and your neighborhood, city, state, country and world.

Your results will inform school staff and students where they can make improvements and to also generate an action plan.

Objectives

- Students will explore and identify factors that create a healthy and safe outdoor school environment.
- Students will investigate and explore how the schoolyard can be used as a learning resource.
- Students will evaluate the habitats within their school grounds and other outdoor learning areas.
- Students will explore the school's use of learning opportunities that expand their learning community beyond their school grounds.
- Students will learn about the best approaches to manage the different learning communities in their school grounds and why it is important to adopt sustainable practices.
- Students will generate a plan to help improve the quality of their learning communities.
- As approval, time and funding permit, students will implement one or more of their improvement strategies.

Time Requirement

The Learning Community will take several 45 minutes sessions to complete, depending on the documentation available, and help from supporting school staff. Be sure to gather all of the needed supplies and documents ahead of time.

Documents and Supplies

- Any written policies your school has related to your school ground habitat management practices.
- The Learning Community Investigation and print off packets

Learning Community Investigation Overview

1. Creating a School Map
2. A Look at Our School Building
3. A Look at the School Grounds
4. School Site Assessment
5. Calculating the Value of Trees
6. Green Hour Assessment
7. Global Connections
8. Curriculum and Community
9. Action Planning (School based recommendations)



Learning Community Investigation: School-Wide Survey



This School Site Investigation will help you learn more about the many factors that create a healthy and safe outdoor environment for your school grounds. The investigation will help you identify current management practices for the school’s grounds and start you thinking about ways to modify these practices to make them more environmentally friendly and sustainable. Sustainable practices are those that meet the needs of the present without compromising the ability of future generations to meet their needs.

School Name: _____ **Date:** _____

Conducted By:

(Please include administrators, teachers, school staff, students, and parents involved in this investigation)

Name

Title/Role

School Population

Students: _____

Staff: _____

Part 1: Creating a School Map

1. Make a map of your school site. First look for any existing site maps, aerial photographs, or blueprints that can be used as a base map. If you can't find any of these, you will have to make your own map. The following website may be helpful: (<http://earth.google.com/index.html>). Include the school building, sidewalks, roads, fences, trails, parking areas, utilities, and all of the green spaces. Examples of green spaces include courtyards, grassy areas, athletic fields, gardens, wooded areas, and so forth. The map will help you study your school ground, the watershed you're in and help plan for future improvements.
2. Using your map, assess the pervious and impervious areas of the school grounds. (**Pervious** means that rainwater can percolate through the surface, for example grassy areas, natural athletic fields, and other green spaces. Pervious areas replenish the ground water table and reduce storm runoff. **Impervious** surfaces do not allow rainwater to pass into the ground and increase storm water runoff. Examples of impervious areas include asphalt, concrete, sidewalks, paved courts yards, paved driveways, and parking lots.)
 - a. List the pervious areas:
 - b. List the impervious areas:
 - c. Approximately what percentage of your school site is **pervious**? _____
 - d. Approximately what percentage of your school site is **impervious**? _____

Part 2: A Look at Our School Building

1. When was your school built? (Include dates for major additions and remodeling projects) _____
2. What is the square footage of your school building? _____ sq. ft.
3. Besides your main building, does your campus have additional building structures?
 Yes
 No
If yes, please list: _____
4. What other features that are used for learning are found on your school site? (e.g. outdoor classrooms or learning spaces, athletic fields or courts, weather stations, gardens, wooded areas, prairies, vacant areas, etc.)

Part 3: A Look at Our School Grounds

1. Where is your school located?
 - In the town or city limits
 - In the country
2. What type of land borders your school grounds (for example, residential, agricultural, natural, commercial, or industrial)?
North _____ East _____
South _____ West _____
3. Where does water that runs off the school's roof, parking lots, and grounds go?
 - Storm drain
 - Retention pond
 - Rain Harvesting System (rain barrels, rain boxes, rain silos, etc.)
 - Recessed grassy areas
 - Drainage ditch
 - Rain garden
 - Rain barrel
 - Natural pond, stream, or wetland
4. Does your school or classrooms keep a log for wildlife/animals regularly seen on your school grounds?
 - Yes
 - No
5. Does your school contain all four wildlife habitat requirements (food, water, shelter, places to raise young?). Check examples that apply.
 - Houses (Bird, Bat, etc.)
 - Gardens (Butterfly, Vegetable, Cultural, etc.)
 - Feeders
 - Water
 - Other: _____
6. What areas does your school use for outdoor study on the school grounds?
7. What areas does your school use for recreational use on the school grounds?
8. Are there quiet, shaded places to sit and talk?
 - Yes
 - No

Create a Butterfly Waystation at your school! A waystation is a stopover point for butterflies to have enough food to make it through their migration. Learn more at www.monarchwatch.org and get free seeds at www.livemonarch.org.

9. Are there murals, mosaics or other artworks?

- Yes
- No

10. Which green spaces are present on your school grounds and who uses them?

(Complete all sections that apply)

Green Spaces	Present	Classes &/or Grades Levels	Student Athletics (Duration & Description of Use)	Independent Student Use (Duration & Description of Use)	Instructional Use (Duration & Description of Use)	School Clubs (Duration & Description of Use)	Community Use (Duration & Description of Use)
Sample: Lawn	Yes	All Grades (9-12)	Basketball & Volleyball (Practice) Approx. 4 hours per week	Yes (Before and After School Release point Approx. 4 hours per week	Yes (Biology Science Instruction) Approx. 3 hours per week	Safety Patrol (Meetings) Approx. 2 hours per week	Yes (Weekend basketball) Approx. 12 hours per week
Courtyard							
Athletic Field							
Garden							
Lawns							
Prairie							
Vacant Area							
Aquatic Area							

Wooded Area							
Outdoor Learning Area							

Part 4: School Site Assessment

a. **Lawns** (Complete if applicable.)

1. Are pesticides used on the lawn?

- Yes
- No

2. Is Integrated Pest Management (IPM) used in place of pesticides?

(According to the National IPM Network, Integrated Pest Management is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks.)

- Yes
- No

3. Are chemical fertilizers used on the lawn?

- Yes
- No

4. Are leaves raked off the lawn in the fall?

- Yes
- No

If yes, what happens to them? _____

5. Are any of the following animals found in the lawn?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

6. What changes would you recommend to make the lawn areas more inviting, useful, safe, or environmentally sound?

b. Courtyards (Complete if applicable.)

1. What type(s) of vegetation is found in your courtyard?

- Mowed grass
- Flowers
- Tall grass
- Trees
- Other: _____

2. What activities take place in the courtyards?

- Studying
- Meetings
- Eating
- Observing wildlife
- Other:

3. What items are present in the courtyards?

- Benches
- Ponds
- Tables
- Bird feeders
- Other: _____

4. Is the courtyard being managed in an environmentally sound way?

(Environmentally sound management means that the area is being managed with minimal use of pesticides or other chemicals that may be harmful to humans and wildlife.)

- Yes
- No

5. Are any of the following animals found in the courtyard?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

6. What can be done to make the courtyards more inviting, useful, safe, or environmentally sound?

c. Athletic Fields (Complete if applicable.)

1. Are pesticides used on the athletic fields?

- Yes
- No

2. Is Integrated Pest Management (IPM) used in place of pesticides?

(According to the National IPM Network, Integrated Pest Management is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks.)

- Yes
- No

3. Are chemical fertilizers used on the athletic fields?

- Yes
- No

4. Are the grass clippings left on the athletic fields to increase moisture retention and lessen the need for watering?

- Yes
- No

If no, what happens to them? _____

5. Are any of the following animals found in the athletic fields?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

6. What can be done to make the athletic fields more inviting, useful, safe, or environmentally sound?

d. Gardens (Complete if applicable.)

1. What type(s) of garden(s) does your school have?

- Butterfly
- Vegetable
- Rain
- Fruit
- Herb
- Flower
- Wildlife
- Specialty (for example, gardens with all the fixings for pizzas, tacos, etc) _____
- Raised bed
- Container garden

2. How are any products from the school garden used?

- Left in garden for all to enjoy
- Given to cafeteria for lunches
- Sold to school and community members
- Donated to local food pantry
- Other _____

3. Are any of the following animals found in the garden?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

4. Who maintains the school garden(s)? Provide a brief description.

- Specific classes: _____
- After School Club: _____
- Volunteers: _____
- Combination: _____
- Other: _____

5. What can be done to make the gardens more inviting, useful, safe, or environmentally sound?

If your school is interested in starting or enhancing a garden, check out the Kansas Green Schools “Garden Gate” for virtual tours of other Kansas school gardens as well as additional ideas and resources.

www.kansasgreenschools.org/green-schools-garden-gate

e. Prairie (Complete if applicable.)

1. What type of prairie does your school have?

- Tall grass
- Mixed grass
- Short grass
- Other: _____

2. How is your prairie maintained?

- Burning
- Pruning
- Not maintained
- Mowing
- Other: _____

School Prairie Grass Survey- What types of grasses are found in the prairie?

The Kansas Native Plant Society has a Plant/Wildflower Identification Gallery that may be useful.

www.kansasnativeplantsociety.org

3. Are any of the following animals found in the school prairie?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

4. What can be done to make the prairie more inviting, useful, safe, or environmentally sound?

f. Vacant Area (Complete if applicable.)

1. What types of plants are found here?

- Grasses
- Non-native grasses
- Shrubs
- Flowering plants
- Trees
- Other: _____

2. Are any of the following animals found in the vacant areas of your school?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

3. What can be done to make the vacant area more inviting, useful, safe, or environmentally sound?

g. Aquatic Areas (Complete if applicable.)

1. What types of aquatic communities are found on your school site?

- Lake
- River
- Marsh
- Pond
- Stream
- Ditch
- Other: _____

2. What facilities have been placed in aquatic communities to make them better for teaching?

- Trails
- Decks
- Signs
- Boardwalks
- Piers
- Other: _____

3. Are any of the following animals found in the aquatic areas of your school?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Fish
- Turtles
- Small mammals: _____
- Large mammals: _____
- Other species: _____

4. What can be done to make the aquatic areas more inviting, useful, safe, or environmentally sound?

h. Wooded Areas (Complete if applicable.)

1. What types of trees are found in the wooded areas?

- Deciduous
- Coniferous

2. Are the trees native?

- Yes
- Some
- No

3. What types of vegetation grow under the trees?

- Short trees
- Grass
- Moss
- Shrubs
- Ferns
- Flowering plants

4. What facilities have been placed in the wooded areas to make them better for teaching?

- Trails
- Signs
- Shelters
- Benches
- Other: _____

5. Are any of the following animals found in the wooded areas of your school?
- Birds
 - Toads
 - Snails
 - Invertebrates
 - Snakes
 - Small mammals: _____
 - Large mammals: _____
 - Other species: _____

6. What can be done to make the wooded areas more inviting, useful, environmentally sound or safe?

i. Outdoor Learning Area (Complete if applicable.)

1. What types of vegetation are found in the outdoor learning area?

2. Is the vegetation native to our area?

- Yes
- Some
- No

3. What facilities have been placed in the outdoor learning area to make it better for teaching?

- Benches
- Shelter
- Other: _____

4. Are any of the following animals found in the outdoor learning areas of your school?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

5. What subjects are taught using and the outdoor learning area? Who uses the outdoor learning area?

6. Who is responsible for maintaining the outdoor learning area?

7. What can be done to make the outdoor learning area more inviting, useful, safe, or environmentally sound?

j. School Forest (If you don't have a school forest, skip this section.)

1. Is the school forest registered with the Kansas Forest Service?
 Yes
 No

2. Does your school forest have a manager or coordinator assigned by the school district?
 Yes
 No
 If yes, who is it? _____

3. How many school forest parcels does your school district have and how many acres is each parcel?
Parcel 1: _____ acres Parcel 3: _____ acres
Parcel 2: _____ acres Parcel 4: _____ acres

4. How long has your school district had the school's forest? _____

5. Has your school district developed a forest management plan for the school forest?
 Yes
 No

6. Has your school district developed an education plan for the forest?
 Yes
 No

7. What types of management activities have been done in the school forest?
 Harvesting trees
 Planting trees
 Pruning trees
 Other _____

8. What facilities are available at the school forest? (check all that apply)

- Parking lot
- Rest rooms
- Pond
- Nature trails
- Drinking water
- Stream
- Service road
- Teaching stations
- Nature center
- Skills course
- Other: _____

9. Are any of the following animals found in the forested areas of your school?

- Birds
- Toads
- Snails
- Invertebrates
- Snakes
- Small mammals: _____
- Large mammals: _____
- Other species: _____

10. Is the school forest open to the public?

- Yes
- No

11. What can be done to make the School Forest more inviting, useful, safe, or environmentally sound?

Part 5: Calculating the Value of Trees on your School Grounds (Optional)

The following “tree benefits” website <http://www.treebenefits.com/calculator/> helps you to calculate the value of a tree based on the geographic location of your school. You can repeat the calculation for multiple trees and different species.

You will need to know the diameter of each tree at 4.5 feet from the ground. This calculation can be made by measuring the circumference of the tree at 4.5 feet above the ground and then applying the following formula:

Diameter = circumference/ π

“i-Tree” is another online tool that can help you calculate the value of trees. This software suite is available online from the U.S. Forest Service. i-tree is available through the i-Tree website : <http://www.itreetools.org/>.

Common Tree Name	Scientific Tree Name (if known)	Number of Trees	Tree Condition (Good, Fair, Poor)	Tree Diameter (at 4.5 feet above the ground)	Calculated Value (Fill in once data is put into the tree benefits or i-Tree online calculators)

*Students will input the above information into the “tree benefits” or “i-Tree” online calculator to get a value for each tree on their school site.

What is the collective value of the trees on your school site?

Would your school site benefit from more trees? Explain?

Where might you plant more trees? (Indicate this on your map)

The Arbor Day Foundation also has a tree identification online tool where students can learn about the trees on the school grounds (info in the Resources section). Students can pick and identify a tree and use the online tool to see if they can find the name of the tree. How can you use the above tools as a part of the investigation and action plans?

Part 6: Green Hour Assessment

Students and staff will assess the current amount of time spent outside (“Green Hours”) both during and after school. Time spent outdoors will be collected and recorded.

Use this worksheet to help you prepare a Green Hour Action Plan. Have students and staff answer the questions below. If your school population is *more* than 500 students go to *at least 50%* of your school’s classrooms to answer the assessment. After you complete the Classroom Assessment, complete the School Assessment.

Green Hour Classroom Assessment Worksheet

Classroom #:	Teacher:	
Grade Level:	Subject:	
Total # in Class (Students & Staff):	Date of Assessment:	
Estimate how many hours per week students and staff spend outside doing school-related activities:		Calculate the average amount of time per week students and staff spend outside doing school-related activities:
Service Learning:	_____ hrs.	_____ hrs.
Outdoor physical education:	_____ hrs.	_____ hrs.
Walking to/from school:	_____ hrs.	_____ hrs.
Classes outside:	_____ hrs.	_____ hrs.
Outdoor field trips (zoo, nature center, etc.)	_____ hrs.	_____ hrs.
Outdoor sports practice:	_____ hrs.	_____ hrs.
After-school outdoor activities (school-sponsored, not sports team)	_____ hrs.	_____ hrs.
Additional time spent working in the schoolyard habitat or taking care of the school’s gardens:	_____ hrs.	_____ hrs.
Other: (please describe, in addition to the # of hours)	_____ hrs.	_____ hrs.
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Green Hour Student and Staff Assessment Worksheet

Estimate how many hours per week students and staff spend outside when they are not at school:		Calculate the average amount of time per week students and staff spend outside doing when they are not at school:
Dog walking:	_____ hrs.	_____ hrs.
Outside jobs:	_____ hrs.	_____ hrs.
Playground time:	_____ hrs.	_____ hrs.
Park time:	_____ hrs.	_____ hrs.
Yard work:	_____ hrs.	_____ hrs.
Walking to do errands:	_____ hrs.	_____ hrs.
Family walks:	_____ hrs.	_____ hrs.
Playing in the backyard/neighborhood:	_____ hrs.	_____ hrs.
After-school outdoor activities/sports (not school-sponsored)	_____ hrs.	_____ hrs.
Other (please describe, in addition to # of hours):	_____ hrs.	_____ hrs.

Part 7: Global Connections

1. Have the students had an opportunity to interact with students living in other parts of the country and/or around the world?
 Yes
 No
If so, how:

2. Do students acknowledge and celebrate cultural differences among their own classmates?
 Yes
 No
If so, how:

3. Are the opportunities for considering global environmental issues maximized in the curriculum?
 Yes
 No
If so, how:

4. What materials does the school use to enhance opportunities to learn about global issues?

5. Have students considered other global issues, such as:
 Human rights and ethics
 Fair trade
 Conflict resolution
 Environmental justice
 Availability or use of natural resources in other countries
 Other:

6. Has the school encouraged and provided opportunities for students to:
 Volunteer their time
 Engage in service learning
 Learn about the political process
 Involve themselves in the community
 Other:

7. Additional Comments:

Part 8: Curriculum and Community

1. Does your school have a landscape management/natural resources plan for the school grounds?

Yes, when was it developed? _____
 No

2. Has your school received any grants related to outdoor school site use and development?

Yes
 No

3. Are outdoor areas adequately used for education?

Yes
 No

If no, how could outdoor areas be used to teach certain concepts and how could you encourage new uses? (For example, concepts that might be taught outside include measurements, weather, plant growth, plant identification, animal identification and habitats, erosion, pollution, poetry, and so forth.)

4. Does your school use any nearby natural areas for education?

Park
 Stream
 Wetland
 Nature Center
 Zoo
 School Forest
 Other: _____

5. Does your school have a student-monitored garden on school property?

Yes
 No

6. How many school-sponsored outdoor field trips does your school host per year? _____

7. Has your school implemented wellness policies that address nutrition and physical activity?

Yes
 No

Part 9: Action Planning

Based on the information you found out from this investigation, what recommendations do you have for the school to improve your school's Learning Community?

What additional information from your investigation did you find that might have implications for developing for your action plan:

To develop your action plan, consider the following questions:

- Does your school maximize outdoor areas for wildlife and student/staff uses (learning, recreation, sports, eating lunch, taking a break, etc).
- Are you school grounds managed in ways that maximize their potential to be inviting, safe, healthy and environmentally sustainable?
- How does your school expand the boundaries of your learning community to include the broader community, region, state, country and world?
- How can you engage the broader school and community in your action plan?
- What are some potential strategies you might use to address those areas where your Green Team would like to make improvements?
- What resources (including funding) will your school need to implement strategies and where might your school obtain these resources?
- How can you engage students, school personnel, parents and community in helping to develop and implement these strategies?

The following template may be helpful to create an action plan for success!

Learning Community Action Plan				
Date:				
School Name:				
Learning Community Goals:				
Strategies	Resources Needed	Persons Responsible	Timeline	How will you measure, communicate and celebrate success?

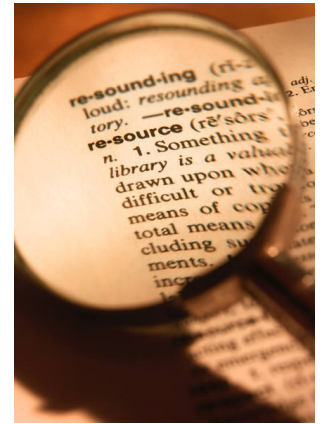
Home Connections



There are many simple things that you can do to make your yard, patio, or windows more appealing to your family and to wildlife. The following are some ideas and resources to get you started.

- Plant native vegetation that is adapted to the local climate so that it requires less watering.
- Plant flowers, shrubs, and trees that provide food and shelter for wildlife. Watching wildlife is a fun and relaxing family activity. Grab some wildlife guides to try and start identifying what you see!
- Plant a garden or use window boxes and containers on patios to plant flowering plants, herbs, strawberries, tomatoes and more!
- Place mulch around plants and trees to maintain moisture.
- Capture rainwater in a rain barrel and use it for watering plants.
- Set up compost bin for yard waste, as well as for fruit and vegetable scraps. The compost will make a good fertilizer for your yard, garden or potted plants.
- Vermicomposting bins are composting bins containing “red wigglers” which are a type of worm that consume your food scraps. The bins are inexpensive to make and the compost produced by the worms is a great natural fertilizer to use for your plants.
- Observe plants and wildlife in your yard, and keep a phenological record or chart of what you see each month. For example, tulips bloom in mid-April, and wrens build their nests in March. You can use the Plant and Wildlife Observation Chart included with this investigation to record sightings.
- Hang nesting boxes for birds and bats. Birds and bats eat lots of insects, including mosquitoes, which will make your yard more comfortable!
- Remove invasive species from your yard that compete with native species.
- Use solar-powered lights to light your walkways.
- Use nontoxic methods to eliminate or reduce the use of pesticides.
- If lawn and plants need to be watered, do so during the cooler parts of the day to minimize evaporation loss.
- To increase the wildlife in your yard, use several layers of plants: ground covers, shrubs, larger shrubs, and trees.

Part 5: Resources



General Links

- [Contact](#) the Kansas Association for Conservation and Environmental Education (KACEE at www.kacee.org) for local resource contacts or to set up a workshop at your school.
- Kansas Green Schools for resources and contacts with other schools in the state (www.kansasgreenschools.org)

Gardening Links

- www.kansasgreenschools.org/green-schools-garden-gate for ideas and curriculums to implement a school garden at your site.
- <http://pollinatorlive.pwnet.org>. Pollinator Live provides resources and tools for planting pollinator gardens.
- <http://www.kidsgardening.org/>. Kids Gardening is a resource of the National Gardening Association.
- <http://www.schoolgardenwizard.org/wizard/>. School Garden Wizard has been created for America's K-12 school community through a partnership between the U.S. Botanic Garden and Chicago Botanic Garden.

Tree Assessment Links

- <http://www.itreetools.org/design.php>. The U.S. Forest Service's i-tree Tree Benefit Calculator allows you to make a simple estimation of the benefits of school or community trees.
- <http://treebenefits.com/calculator/index.cfm>. The National Tree Benefit Calculator allows anyone to make a simple estimation of the benefits of individual street-side trees. This online tool was developed by Casey Trees and Davey Tree Expert Company.
- <https://www.arboday.org/trees/whatTree/> Arbor Day Foundation Tree Identification Tool

Wildlife Habitat Links

- <http://kdwpt.state.ks.us/Services/Education>. The Education Section of the Kansas Department of Wildlife, Parks and Tourism is responsible for outdoors-related educational programs. The programs enhance the knowledge, understanding and appreciation of Kansas natural resources including building an Outdoor Wildlife Learning Site (OWLS) at your school.
- www.monarchwatch.org. Learn about how your school can create and Monarch Waystation to help butterflies through their migration and get free milkweed seeds.

- <http://www.fws.gov/cno/pdf/HabitatGuideColor.pdf>. The U.S. Fish and Wildlife Service has developed the “Schoolyard Habitat Project Guide” that is available at this website. The guide provides a wealth of information on designing and implementing schoolyard habitats and outdoor classroom projects.
- http://www.audubon.org/bird/at_home/index.html. The Audubon at Home section of the website provides information on creating healthy yards and helping birds and wildlife.
- <http://www.nwf.org/backyard/>. The National Wildlife Federation provides information on gardening for wildlife.

Citizen Science Links

- **Smithsonian Tree Banding Project** at <http://www.si.edu/volunteer/citizenscience>. The Smithsonian Institution’s Tree Banding Project is a citizen science program that contributes to research about tree biomass and that tracks how trees respond to climate. Students monitor the rate at which their local trees grow and learn how that rate corresponds to Smithsonian research, as well as comparing their work to other students worldwide.
- **USA National Phenology Network** at <http://www.usanpn.org/>. The USA National Phenology Network brings together citizen scientists, government agencies, nonprofit groups, educators, and students to monitor the effects of climate change on plants and animals in the United States. The network collects and shares data, thereby providing researchers with far more data than they could collect alone. This website includes a variety of educational materials and lesson plans.
- **Project Budburst** at <http://neoninc.org/budburst/>. Project BudBurst is a network of citizens across the United States who monitor plants as the seasons change. The data collected on leafing, flowering, and fruiting of plants are used by scientists to learn more about the responsiveness of individual plant species to changes in climate locally, regionally, and nationally. The collected data are freely available to download and use. Project BudBurst is co-managed by NEON and Chicago Botanic Garden.
- **FrogWatch USA** at <http://www.aza.org/frogwatch/>. FrogWatch USA is the citizen science program of the Association of Zoos and Aquariums, and it encourages citizens to help conserve amphibians by reporting the calls of local frogs and toads. For more than 10 years, volunteers have been trained to enter their FrogWatch USA information. Ongoing analyses of these data have been used to help develop practical strategies for the conservation of frogs.
- **Project FeederWatch** at http://www.birds.cornell.edu/pfw/Overview/over_index.html. Project FeederWatch encourages students to periodically count the birds they see at feeders in their schoolyard, backyard, or other locations from November through early April and to send their counts to Project FeederWatch. FeederWatch data help scientists track broad scale movements of winter bird populations and long-term trends in bird distribution and abundance. Project FeederWatch is operated by the Cornell Lab of Ornithology and Bird Studies Canada.

Childhood Obesity and Physical Activity Links

- <http://www.letsmove.gov/>. Let's Move! is a comprehensive initiative that was launched by First Lady Michelle Obama and is dedicated to solving the challenge of childhood obesity. The Let's Move! website provides tools to help principals, teachers, and parents make schools healthier places to learn by providing quality nutrition, integrating physical activity during the day, and teaching children about the importance of embracing a healthy, active lifestyle.

Tree Canopy Links

- <http://www.forestsforwatersheds.org/urban-tree-canopy>. This website provides information on the importance of urban tree canopy and how to set goals for canopy cover. The website was developed from a partnership of the Center for Watershed Protection and U.S. Forest Service-Northeastern Area State & Private Industry.

Books

Grant, Tim, and Gail Littlejohn, eds. **Greening School Grounds: Creating Habitats for Learning**. Toronto: New Society Publishers, 2001: ISBN 0865714363. This book includes a series of articles from Green Teacher that provides some of the best strategies for transforming school grounds into natural areas for learning and playing. From vegetable and butterfly gardens to an amphibian oasis and avian attractors, this book offers lots of curriculum tie-ins, activities, and plans for educators, parents, and students. The book includes extensive resources.

Tai, Lolly, Mary Hague, Gina McLellan, and Erin Knight. **Designing Outdoor Environments for Children: Landscaping School Yards, Gardens, and Playgrounds**. New York: McGraw-Hill Professional, 2006; ISBN: 0071459359. This book provides a comprehensive toolkit for planning, designing, installing, and maintaining sustainable children's landscapes and play yards. The guide includes information on launching the idea, obtaining the funding, and planning the ecological activities to involve children as participants.

Part 6: Curriculum Connections

Project Learning Tree Curriculum Connections- Learning Community

Project Learning Tree (PLT) has a variety of environmental education curriculum materials that support and enhance the Kansas Green Schools “Learning Community” Investigation. Educators may want to conduct one or more of the following PLT activities to prepare students for the investigation.

Preschool – 8th Grade- *PLT’s PreK-8 Environmental Education Guide:*

#12 Invasive Species

Throughout history, people have intentionally and unintentionally moved plant and animals species to new environments. Some of these species have proved beneficial, but others invade natural habitats causing environmental, and sometimes economics harm. Students will research invasive species to determine how these species go to their new locations and what characteristics make them challenging.

#21 Adopt-a-Tree

Students “adopt” a tree, deepening their awareness of individual trees over time and encouraging a greater understanding appreciation of their local environment.

#22 Trees as Habitats

Students inventory the plants and animals that live in, on and around trees and discover how plants and animals depend on trees in many ways.

#23 The Fallen Log

Students become familiar with some of the organisms that live in and on rotting logs. They gain an understanding of how decomposition takes place and a better appreciation for microhabitats and communities.

#31 Plant a Tree

Students discover the many benefits of trees, learn how to care for trees, identify areas in the community that would benefit from having more trees, and organize and execute a class tree planting project.

#36 Pollution Search

Here’s a way for your students to take a closer look at pollution: what it is, what its sources are, and what people can do to reduce it.

#46 Schoolyard Safari

In this activity, students investigate their schoolyard for signs of animals and describe ways the school grounds provide habitats for animals living there.

#47 Are Vacant Lots Vacant?

In this activity, a nearby vacant lot, overgrown strip, or a landscaped area will provide a rich laboratory for students to examine elements of an ecosystem.

#48 Field, Forest, and Stream

In this inquiry-based activity, students will conduct a field study of three different environments as they focus on sunlight, soil moisture, temperature, wind, water flow, plants, and animals in each environment. By comparing different environments, students will begin to consider how nonliving elements influence living elements in an ecosystem.

#68 Name That Tree

Trees can be identified by looking at several different features: leaves, bark, twigs, flowers, fruit, and seeds. In this activity, students will learn more about trees through these identifying features.

#71 Watch on Wetlands

If a duck can paddle in it, it's a wetland. If a duck can waddle on it, it's not. If only wetlands could be defined as simply as this, wetlands issues and legislation would be less muddy. In this inquiry-based activity, students will conduct field studies in a local wetland, and they will learn how land use decisions and legislation affect wetland areas.

#96 Improve Your Place

Students learn about the steps involved in developing a service learning project. They plan and conduct a project that focuses on making positive environmental changes in their community.

PLT Secondary Level Materials:

Exploring Environmental Issues: Focus on Forests

#1 Monitoring Forest Health

In this activity, students conduct a forest health checkup of a local forested area, take forestry measurements, and evaluate the ecological services provided by trees and forests.

#6 Forest to Faucet

In this activity, students learn about the many ecosystem services that forests provide and explore the connections among forests, watersheds, and their local community's water.

#7 Forest Invaders

In this activity, students will learn why invasive species are a problem for forests, how invasive species can be controlled, and ways to conduct research to find out how invasive species may affect their local forest.

#8 Climate Change and Forests

In this activity, students will use a carbon footprint calculator to analyze their personal effect on carbon dioxide levels in the atmosphere, will calculate the amount of carbon stored in a single tree, and will explore how carbon sequestration can affect carbon dioxide levels.

Exploring Environmental Issues: Places We Live

#2 Community Character

In this activity, students explore community character and investigate the ways that communities, including their own, are responding to growth and development pressures.

#3 Mapping Your Community Through Time

In this activity, student teams investigate the social, cultural, economic, aesthetic, and environmental components of their community to create map overlays and reports describing the development of their community through time.

#5 Green Space

In this activity, students investigate green infrastructure and native plant communities at the neighborhood, community, and regional scales and then explore the dual needs of accommodating population growth while protecting green space and native plant communities.

#6 A Vision for the Future

In this activity, student teams develop and present a vision for the future of an area in their community.