About Space to Grow

Space to Grow transforms Chicago schoolyards into beautiful and functional spaces to play, learn and be outside. The schoolyards also use special design elements to help reduce neighborhood flooding. Schoolyard transformations prioritize physical activity, outdoor learning and community engagement. The green schoolyards incorporate landscape features that capture a significant amount of rainfall, helping keep the city’s water resources clean and resulting in less neighborhood flooding. It’s a win for students, neighborhoods and our city’s environment.

Space to Grow is managed by Healthy Schools Campaign and Openlands and is made possible through funding and leadership from Chicago Public Schools, the Chicago Department of Water Management and the Metropolitan Water Reclamation District of Greater Chicago.

HEALTHY SCHOOLS CAMPAIGN

Healthy Schools Campaign (HSC) is a nonprofit organization dedicated to making schools healthier places for all students. HSC believes that health and wellness should be incorporated into every aspect of the school experience. Founded in 2002, HSC advocates for children to have better access to nutritious school food, physical activity, school health resources and clean air to shape their lifelong learning and health. HSC facilitates collaboration between students, parents, teachers, administrators and policymakers to help prepare this diverse group of stakeholders to lead change for healthier schools at the school, district, state and national levels. For more information, visit healthyschoolscampaign.org.

Founded in 1963, Openlands protects the natural and open spaces of northeastern Illinois and the surrounding region to ensure cleaner air and water, protect natural habitats and wildlife and help balance and enrich our lives. Openlands’ vision for the region is a landscape that includes a vast network of land and water trails, tree-lined streets and intimate public gardens within easy reach of every city dweller. It also includes parks and preserves big enough to provide natural habitat and to give visitors a sense of the vast prairies, woodlands and wetlands that were here before the cities. In sum, Openlands believes that protected open space is critical for the quality of life of our region. For more information, visit openlands.org.
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About the Lesson Plans
At the end of the last two sections, we’ve included a few lesson plans. These lesson plans are meant to provide some examples of how to incorporate learning about health and wellness and the garden into your classroom—and into your new schoolyard!

The Space to Grow website is a great supplementary resource to this guide. Please visit spacetogrowchicago.org. These lesson plans are a work in progress, and we’d love to hear your feedback. Please contact Meg Kelly at meg@healthyschoolscampaign.org.

The symbols at the start of each lesson plan represent the subjects that each lesson encompasses:

- **Aa** LANGUAGE ARTS
- **Math** MATH
- **Science** NUTRITION ED
- **Social Studies** SCIENCE
WELCOME!
Welcome!

Space to Grow transforms Chicago schoolyards into beautiful and functional spaces to play, learn, garden and be outside.

Space to Grow is a unique partnership co-managed by Healthy Schools Campaign and Openlands to transform Chicago schoolyards into spaces that provide students, their families and the broader community with opportunities for active play and physical education, outdoor learning, gardening, environmental literacy and engagement with art, while addressing neighborhood flooding issues.

This new space supports your work by providing a valuable and vibrant outdoor learning space. The green schoolyards also incorporate innovative engineering and special landscape features that capture a significant amount of rainfall, helping keep the city’s water resources clean and resulting in less neighborhood flooding.

It’s a win for your students, your school, the community and our city’s environment.

How to Use this Guide

This guide provides you with an introduction to your Space to Grow schoolyard and outlines how the schoolyard supports student health and wellness, outdoor learning and stormwater management. Specific ideas for teachable moments featuring specific elements of the schoolyard are included in the schoolyard tour. These are just ideas! Be creative and add your own along the way.

The Space to Grow website is a great supplementary resource to this guide. On spacetogrowchicago.org, you can find resources around gardening, stormwater management, planting and more. We’ve collected specific resources, activities and lesson plans for each section in this guide and added them to an online resource center at spacetogrowchicago.org/forteachers. This resource center will be updated with new resources throughout the school year.
Space to Grow Schoolyard Benefits

Schoolyard transformations prioritize physical activity and wellness, outdoor learning, stormwater management, and community engagement.

Boosting Physical Activity and Wellness
Your Space to Grow schoolyard provides healthy, engaging places for students to be physically active before, during and after school. The schoolyard includes spaces for physical activity, such as turf fields, jogging tracks, basketball and tennis courts, and play equipment for all ages. This great new space empowers schools to implement new CPS policies around physical education and activity, recess, school gardens and nutrition education.

Supporting Learning
The schoolyards serve as a brilliant extension of your classroom for lessons ranging from science experiments to nutrition education. The space features areas for learning and exploration, such as outdoor classrooms, native trees and plants and vegetable gardens. When students spend time in nature, they reap benefits that transfer to the classroom on many levels. They get a break, they become active, they restore their attention and they’re less stressed. Plus, the boost in energy and focus that students get from running and playing outside helps improve their behavior and academic performance in the classroom. This means your students will be better able to focus while you’re teaching.

Improving Stormwater Management and Reducing Neighborhood Flooding
CPS schoolyards present a significant opportunity for changing the way stormwater is managed in Chicago. Your schoolyard includes special materials, surfaces and innovative engineering - called green stormwater infrastructure - that capture significant amounts of rain, which is especially helpful during heavy storms. These can include rain gardens, native plantings, permeable asphalt, permeable pavers, water storage under parking lots and turf fields, permeable rubber play surfaces and much more. Signage in your schoolyard interprets the green infrastructure process and its value for the school community.

Engaging Communities with Local Schools
Your schoolyard provides a welcoming space for community activity. A shared space in nature where people can sit, relax, play, exercise or gather with friends and family has immense benefits to the fabric of a community. It fosters social interaction, provides a sense of connection and helps boost health and well-being. The Space to Grow partners have helped engage with your school community from the very beginning, from schoolyard design to ribbon cuttings and planting days.
The CPS Schoolyard + Garden Landscape

In recent years, CPS has taken significant steps to support the health and long-term wellness of the city’s students.

Chicago Public Schools has made the health and wellness of its students a priority over the past several years. This includes bringing back daily recess, expanding daily PE, supporting school gardening, adopting a strong Wellness Policy and improving nutrition standards for school food. Nearly all of these initiatives can be enhanced through the transformation of a school’s outdoor space.

As part of the new Local School Wellness Policy for Students adopted by CPS in June 2017, all schools with an edible garden need to adhere to the guidelines, policies and procedures in the Eat What You Grow program. This program sets food safety guidelines and allows produce grown in school gardens to be consumed in the school dining center so that students can eat what they grow and participate in education activities related to agriculture, food and nutrition. Your Space to Grow schoolyard likely includes an edible garden.

The new policy also states that nutrition education should link the classroom, dining center and the school garden. CPS wellness policy states that all core subjects—including math, science, language arts, health and family consumer sciences—should maximize student attention and focus by integrating movement daily. Your Space to Grow schoolyard is a great place to get these daily movement minutes in.

These are great opportunities to further extend the impact of your school’s garden, and teach your students lifelong lessons about healthy eating and nutrition and make sure they’re getting the daily activity they need to focus in the classroom.
How Your Schoolyard Supports Student Health + Learning

Your Space to Grow schoolyard is a valuable asset that can help address childhood obesity, improve school performance and make communities happier, safer and healthier places.

The link between health and learning is clear: Healthy, active and well-nourished children are more likely to attend school, be ready to learn and stay engaged in class. And a growing body of research connects nature and outdoor play with incredible health and academic benefits.

Your Space to Grow schoolyard provides a healthy contrast to the indoor, sedentary lives many children live today. At home and at school, children have fewer opportunities for the physical activity that is so important for their healthy development. At the same time, young people are experiencing higher rates of obesity, diabetes, asthma, anxiety and depression than ever before.

Unstructured play is essential to children’s health, and a loss of free time for play has been shown to increase stress, anxiety and even depression. Studies have shown that students who have access to natural areas at school engage in more physical activity and have improved academic outcomes.

You can read more about how your Space to Grow schoolyard supports student health and learning in each of the following sections:

- Increasing Physical Activity + Healthy Knowledge
- Outdoor Education + Nature-Based Learning
Getting to Know Your Schoolyard

Tour some of the common elements found in Space to Grow schoolyards.

Your Space to Grow schoolyard is a fun and interactive place where you can do almost anything...outdoors! The possibilities include: classroom instruction, recess, physical education, school events, community gatherings, sporting events and gardening. Take some time to get to know the space with your students and fellow teachers. The following “tour” will help you get acquainted with some of the common elements in Space to Grow schoolyards, and help set the stage for ensuring your students become good stewards of the schoolyard. Tips and resources are included to spark ideas, but please be creative and add your own!

Your schoolyard is designed to support outdoor learning, physical activity, nutrition and healthy habits and to help reduce local flooding in the neighborhood.

The schoolyard helps reduce flooding because it was designed with permeable surfaces to capture rainwater (and melting snow) right where it falls.

Throughout the schoolyard, you’ll find signage that identifies the permeable surfaces and other elements designed to capture stormwater.

COMMONLY USED TERMS

Green Infrastructure: Using or mimicking natural processes to soak up (infiltrate) stormwater.

Impermeable: Does not allow liquid or gas to pass through.

Infiltration: The movement of water into and below the surface of the ground.

Invasive: An invasive species is one that is usually non-native to an ecosystem and whose introduction causes or is likely to cause harm to other species.

Native: A native species is one that occurs naturally in a particular place without human intervention.

Non-native: An organism is considered non-native when it has been introduced by humans to a location outside its native or natural range.

Permeable: Allows liquids or gases to pass through.

Stormwater: Water that originates as rain or melting snow/ice. Stormwater is sometimes called runoff.
Common Schoolyard Elements

All Space to Grow schoolyards are designed with elements to promote physical activity and outdoor learning and reduce flooding. Here are some of the elements you might find in your schoolyard.

Roof Runoff
Most often, rainwater that lands on rooftops is funneled into a downspout and that downspout is directly connected to the sewer underground, meaning that water flows directly from the rooftop into the sewer. Disconnecting the downspouts from the sewer and collecting the stormwater to be returned to the ground means less water in the sewer during storms. During the heaviest of storms, this means less water that can potentially cause flooding or basement backups.

Native Garden
The Chicago region was once a giant prairie! Most of the plants found in your schoolyard are native to Illinois and have very deep roots. These gardens have thirsty roots that drink up the stormwater when it rains, instead of it running off into the sewers. Native plants have very deep roots that can grow over 10 feet deep and soak up a lot of water. Compare that to typical turf grass that has roots only 2-6 inches deep!

Stormwater runoff in your schoolyard that flows into the native gardens is not only infiltrated by the plants, but the plants also filter out all chemicals or other pollutants that might be picked up along the way.

LEARNING MOMENT: WAIT FOR THE WATER WORKOUT
Test to see how long it takes for water to absorb into different surfaces of the schoolyard!

1. Pour a gallon of water on the play surface.
2. Have the students do 20 jumping jacks to see if the water has been absorbed.
3. If the water hasn’t been absorbed, you can switch to knee-highs or another exercise.
4. Try the activity on different surfaces throughout the schoolyard!
Teachable Moment: At home, you and your students can collect water from your downspout in a rain barrel (and use that water in your gardens later!), or just have the downspout flow directly into a yard or garden.

Teachable Moment: Natives, Non-natives, Invasives
Chicago’s natural areas comprise less than 3 percent (3,800 acres) of the entire city area, but represent all the basic types of northeastern Illinois ecosystems. Our wetlands, forests, savannas and prairies provide habitat for more than 400 species of mammals, birds, reptiles, amphibians and fish. Today, these important natural areas and the wildlife that depend on them are threatened by the spread of invasive plants. Invasive plants alter the local ecology and out-compete native species for resources.

Activities for Native Gardens:
- Have students create a plant ID guide with pictures from their native garden.
- Students can research the plants.
- What is the history of the plant?
- Is there anything interesting about the plant? Is it edible? Medicinal?
- Students can draw the native plants.
- Observe the native plants over the seasons. What happens to them in the winter?
- Create labels for the native plants.

Edible Gardens (Raised Planter Beds)
These are “edible gardens” where the school and community can learn about and grow their own organic food. The gardens support the school’s health and wellness initiatives. Once your school is Eat What You Grow certified, you can use the produce grown inside the school. Students, school staff, parents and neighbors can all become active members of the Garden Team, and help plant, water and harvest what’s grown here.

Teachable Moment: Annual vs Perennial
Many of the fruit and veggies are annual plants; meaning they need to be planted each year, which also gives you the opportunity to change the beds yearly. Examples of annual edible plants: Basil, Cilantro, Cucumbers, Peppers, Radish, Spinach, Tomatoes. Some fruits and veggies are perennials; meaning they will come back year after year. Examples of perennial edible plants: Asparagus, Blueberries, Chives, Mint, Oregano, Rhubarb, Strawberries, Thyme.

Runnel
River + Tunnel = Runnel! If your schoolyard has a runnel, it is carrying stormwater from one location in order to make sure it’s infiltrated by plants rather than heading directly into the sewer system. The runnel has neat features that allow for teachable moments:
- Intentionally shows the water going into the rain gardens
- Used to showcase the stormwater management
- The runnel carries stormwater runoff to water trees and gardens
Rain Garden
A rain garden is a shallow depression that is planted with deep-rooted native plants and grasses. These plants can survive with having their roots in wet soil for some time. Not all native plants should be used in rain gardens. The rain garden collects rainwater from the surrounding impervious surfaces. Sloped sides of the garden create a bowl (basin) and increase the amount of water that is captured. The plants in this area are adapted to live in a wetter environment. Underneath the topsoil layer is the stone reservoir. A perforated pipe (pipe with holes on its wall) in the stone reservoir slowly carries stormwater to the sewer.

Outdoor Classroom
The outdoor classroom has seating for 30 students. The outdoor classroom can be used as a setting to teach any lesson. Staff can work together to create a schedule for using the outdoor classroom. An enormous body of research documents the benefits of time spent outdoors. Read more about that in our Outdoor Learning section.

Track and Field
If your schoolyard has a track, that means lots of opportunity for physical activity—relay races, track and field sports, teacher or parent walking clubs—as well as a place to host healthy fundraisers such as walk-a-thons.

Trees & Shrubs
Many trees are planted around the schoolyard and provide a host of benefits, including:

- Shade, as they grow larger
- Stormwater management by absorbing rainwater in their roots (larger trees also have leaves that help slow the rainwater from hitting the ground)
- Habitat for birds, insects and animals

Shrubs also manage stormwater and provide food and habitat for birds, insects and animals.

Fun Facts:
- The field is made of plastic fibers and has a sand infill that keeps kids safe if they fall.
- There are layers of stones of increasing sizes (as deep as 6-10 feet in some areas) beneath the field—the water trickles through and is held underground—so after a heavy rain, the field will be dry and ready for play!
- A filter fabric separates the stones and the existing soil. This prevents the soil from mixing in with the stones and clogging the spaces between the stones.
- Water storage area fills up like a bathtub. From there, the water evaporates or is slowly released into the sewer system.
Teachable Moment:
An average sized maple tree (70 feet to 110 feet tall) can absorb 917 gallons of water per year.
Tree roots typically grow out beyond the farthest branches of the trees.
Most tree roots grow in the top 6-24 inches of the soil.

Learning Moment: Class Pledges
To build your classroom community and set expectations for your students while being outdoors, display these class pledges in a visible area and reference prior to going outside.

- We will treat all living things gently and with compassion - including trees, plants, animals, insects and each other.
- We will keep the schoolyard clean from any litter. If we see trash or litter in the schoolyard, we will pick it up and put it in the trash can.
- We will walk and run around - not through - the garden.

- If a ball accidentally falls into the garden, only one person will get it being mindful of the plants.
- If we are working in the garden, we will be safe with our tools.
- We will not move anything in the garden.
- We will ask before touching plants in the edible garden.

Play Surface
Permeable poured rubber play surface is used for play structures. This surface is safer for children when they fall, plus it soaks up a lot of stormwater.

The storage area underneath is very similar to the turf field:
- There are three layers of stones of increasing sizes (as deep as 6 ft in some areas) beneath the field.
- A filter fabric separates the stones and the existing soil.
- Water storage area fills up like a bathtub.
- From there the water is slowly released into the sewer system.
INCREASING PHYSICAL ACTIVITY + HEALTHY KNOWLEDGE
Increasing Physical Activity and Healthy Knowledge

Your Space to Grow schoolyard can help provide students with the physical activity they need to be the best learners they can be.

A growing body of research shows what teachers already know: Healthy students are better learners. Unfortunately, the prevalence of chronic diseases—including asthma, obesity and diabetes—has doubled among children over the past several decades. These health concerns disproportionately impact low-income African-American and Latino students, signaling health disparities as a possible cause of the academic achievement gap.

In particular, obesity rates have skyrocketed among children—both in Chicago and nationwide. While nearly one-third of students nationwide are overweight or obese, 43 percent of Chicago students are overweight or obese. The obesity rate among students of color are even higher. Consider these alarming statistics:

26 percent of white kindergartners in CPS are entering school overweight or obese compared to 34 percent of African-American students and 42 percent of Latino students.

The obesity rates vary drastically between Chicago community areas, from 26 percent in Lincoln Park to 38.33 percent in Douglas to 52.3 percent in South Lawndale.

Less than 20 percent of Chicago high school students were physically active at least 60 minutes per day per week.

While the challenge is great, teachers and schools have an important role to play in the reversal of these trends. Your Space to Grow schoolyard provides a place for students to be active. The American Academy of Pediatrics (AAP) states that 60 minutes of daily unstructured free play is essential to children’s physical and mental health. An AAP study showed how play actually protects a child’s emotional development; whereas a loss of free time for play leads to stress, anxiety and even depression in many children. In another study, students who had access to natural areas at school engaged in physical activity ten times longer than those students who had limited access to nature at school. Children with access to natural play areas are more active; they’re also better able to relax. Young people can more easily find refuge from stress and develop resilience when they have a natural schoolyard to visit.
Studies also show that children who are physically active are 20 percent more likely to earn an A in English or math. Playing outside makes children more physically active than playing inside—it gives them more space and opportunities to run, skip, jump and play. Being outside has also been shown to make children more creative in their play, less aggressive and better able to concentrate.

Over and over again, researchers are proving a simple fact: Nature is good for us. Studies link green space with better health and wellness, and even improved grades. Additionally, a host of research shows that green space makes neighborhoods safer and communities healthier. When secondary outcomes are considered, such as more creative play, physical activity and community engagement, the list of benefits grows.

A vast and growing body of research documents nature’s benefits on health. Access to nature promotes physical activity, which helps to make everyone, including children, healthier. Time spent in nature is also linked with decreased stress, mitigated attention deficit disorders, better eyesight, less asthma and improved Body Mass Index (BMI). People are happier in nature; sometimes just looking at nature can reduce stress. Exposure to green space has been linked with a positive effect on infant birth weight. Evidence suggests residents of public housing cope better with major life issues when they’re surrounded by trees instead of concrete.

Space to Grow Professional Development

The professional development offered as part of the Space to Grow program helps teachers and school staff incorporate health and wellness into every part of the school day.

This free professional development provides teachers with time-tested tools and techniques to help motivate and empower them to integrate physical activity and nutrition education into their classrooms and to be health and wellness leaders in their schools.

The program highlights ways to fit healthy habits into daily learning, integrating nutrition education and fitness into classroom lessons that meet standards in math, reading, science, social studies, art and music.

Teachers are encouraged to model healthy behavior and integrate healthy habits into daily learning through nutrition education and physical activity. Additionally, teachers are asked to help promote and share wellness ideas not only within their own classroom but with fellow staff members, students and parents.

This program also provides teachers tips and best practices for integrating outdoor spaces and school gardens. Teaching outdoors—whether using a school garden or not—is a good way to incorporate movement and reinforce healthy habits into lesson plans.
Tips for Incorporating Health + Wellness

Transition with activity! After long, sedentary periods, transition to a new lesson with an activity break.

Incorporate exercise! Use a weekly calendar with different morning and afternoon exercises for each day.

Have at least two touch points a month during the growing season with the school garden to encourage healthy eating.

Integrate nutrition education into academic lesson plans. Read about how food is grown, learn about healthy food in different cultures or swap out a flash card featuring French fries for one that features fresh fruit.

ACTIVITIES + RESOURCES
You can find resources, including lessons plans, at spacetogrowchicago.org/for-teachers.
It may come as a surprise, but several vegetables we eat every day are actually fruits! Generally foods that are sweet are labeled as “fruits,” and foods that are not sweet are called “vegetables.” But that is not entirely accurate.

In this lesson, challenge what your students already know to see if they can win the game of “Fruit or Not?”
FRUIT OR NOT?

Objectives
Students will be exposed to both familiar and new foods in a scientific way
Students will be able to identify produce as a fruit or vegetable
Students can compare and contrast similarities and differences between the two types of foods
Students will categorize the vegetables and fruits and count the number of each; students may count and record the number of seeds after measuring, if time allows
Student will organize, represent and interpret data with up to three categories; ask and answer questions about the total number of data points; identify how many fit in each category and compare groups of data; graph results (groups of students or teacher may graph)

Materials & Preparation
Several types of fresh produce, such as strawberries, bananas, oranges, apples, kiwi, peppers, pumpkins, cucumbers, mango and peaches as well as some examples of “true” vegetables such as potatoes, carrots, beets and broccoli
Fruits/vegetables will need to be cut in half and placed in a dish for each team of two students
Separate dishes for collecting the seeds
Measuring tools such as rulers or scales
Keep paper towels or wipes handy for clean up

Common Core Standards
1.MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less in one compared to the other.
RL.1.1. Ask and answer questions about key details in a text.
K.MD.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
K.MD.2 Directly compare two objects with a measurable attribute in common to see which object has more or less of the attribute and describe the difference.
RL.2.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
FRUIT OR NOT?

STEM Alignment
Analyzing and computational thinking
Reason abstractly and quantitatively
Construct explanations and design solutions
Obtaining, evaluating, and communicating information

Lesson Introduction
1. Begin a discussion about what makes a fruit a fruit. Student responses might include that it’s sweet, it’s healthy, it grows on a tree, it has a stem, it comes from a seed, etc. Have students imagine all the fruits they’ve ever eaten before. What other things do they have in common? Read excerpt from a non-fiction book that discusses this.
2. Challenge students to the “Fruit or Not?” competition. Show pictures or list a large variety of fruits and vegetables and have the class make a prediction about whether or not the picture or word is a fruit. Have a student keep track of everyone’s answers on the board.
3. If not already mentioned, introduce the idea that a fruit has seeds. Explain to students that they will be working in pairs to investigate if a type of produce is a fruit or not.

Body of Lesson
4. Pair students at a table across from a partner. If worried about potential messes, tables can be covered in newspaper first.
5. Give each pair a bowl/plate with one type of produce. Challenge students to discover if the produce is a fruit or not. If so, suggest that they collect and count the seeds. This exploration should take several minutes.
6. Once students have used the evidence in front of them to decide if their produce is a fruit or vegetable, discard or compost the produce and save the seeds. Have students clean up their workstations and return to the group discussion area.

Conclusion
7. Go through the produce one-by-one and compare with what the students found compared to their initial predictions. Was their prediction correct? Why or why not?
8. An option would be to conclude the lesson and discussion with the book “A Fruit Is a Suitcase for Seeds” by Jean Richards.
FRUIT OR NOT?

Assessment
As an assessment, quiz the students during meal or snack times about the food on their plate. Is this (carrot) a fruit or not?

Extensions
First grade: Count and measure the seeds (either size or weight) and make a graph comparing the number and sizes of seeds in different fruits. Why might the seeds be so big or so small? Why might there be so many of them? Which is the only fruit we explored that has seeds on the outside? (Answer: Strawberry)

Organize, represent, and interpret data by asking and answering questions about the total number of data points of fruits and veggies, how many in each category, and how many more or less are in one compared to the other.

If there are materials and space available, have students plant the seeds (an egg carton is a great seed starter) and see what the sprouts look like. Do tiny seeds produce tiny plants? Do large seeds produce large plants? Compare and contrast.

Guided reading, read aloud, home, or classroom library suggestions:

“I'm a Seed” (Hello Reader) by Jean Marzollo

“How and Why Seeds Travel” (How and Why Series) by Elaine Pascoe
There are many misconceptions surrounding the concept of calories. This lesson will introduce students to the role of calories in healthy living and the management of calorie intake and output in regards to reaching and maintaining a healthy weight.
CALORIES IN, CALORIES OUT

Objectives
Students will explain what a calorie is and what it means in terms of food eaten and activities performed

Students will calculate whether someone has gained or lost weight

Students will determine and discuss, with scaffolding, themes and/or characters (i.e. compassion, and bullying) and how they relate to their own feelings and experiences; they can also compare and contrast these themes and other books

Materials & Preparation
Calculators (unless you prefer that they calculate the amounts on paper)
Copies of the handout “Calories In, Calories Out”
This activity will require classroom space for small groups of students to complete the following activities in stations: lying down on the ground, walking in circles (or back and forth a short distance), jumping jacks, running in place, and sitting on chairs

Common Core Standards
RL.4.2. Determine a theme of a story, drama, or poem from details in the text; summarize the text.

RL.5.2. Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.

M.4.NBT. Fluently add and subtract multi-digit whole numbers using standard algorithm.

M.5.NBT. Fluently multiply multi-digit whole numbers using standard algorithm.

STEM Alignment
Reason abstractly and quantitatively
Make sense of problems and persevere in solving them
Model with mathematics
Constructing explanations and designing solutions
Using mathematics and computational thinking
CALORIES IN, CALORIES OUT

**Lesson Introduction**

1. Tell students they will be learning about what a calorie is and its role in healthy living. To kick off the lesson, they are going to rotate through five different activities at five different stations.

2. Demonstrate the five stations:
   - Lying down pretending to sleep
   - Walking in a small circle (or back and forth a short distance)
   - Jumping jacks
   - Running in place
   - Sitting in a chair pretending to watch television

3. Split students into five groups and assign each group to begin at one of the five stations. Students will stay at each station for one minute. Call/signal “time” every 60 seconds, with a short passing period, as they move to the next station.

4. Once students have rotated through all five stations, announce that during this activity they burned approximately 15.8 calories.

5. Write the following on a chalk/whiteboard:
   - Sleeping = 0.6 calories
   - Walking = 2.5 calories
   - Jumping jacks = 6 calories
   - Jogging = 6 calories
   - Watching television = 0.7 calories

**Body of Lesson**

6. What is a calorie?

   Think-Pair-Share: Have students discuss their predictions about the question: “What is a calorie?” Next, have students discuss their answer with a partner and share some ideas with the class.

   Define a calorie as: a unit to describe the amount of energy stored in a food, and the amount of energy used performing an activity... even sleeping! We need calories to keep our hearts pumping, our lungs breathing and our mind working. We also need them to move our bodies from one place to the next. In other words, we need calories to stay alive.

7. You may hear people talking about calories when they are trying to lose weight. People gain weight when they eat more calories than they burn, and they lose weight when they eat fewer calories than they burn. “What would somebody have to do in order to never gain or lose weight?”

   Answer: The number of calories they ate would have to equal the number of calories they burned.

8. Read a related book such as “Nothing’s Fair in Fifth Grade” by Barthe DeClements or “The Berenstain Bears and Too Much Junk Food” by Jan and Stan Berenstain.
Calorie word problem

1. Tell students they will complete a math word problem to calculate if someone has gained, lost or maintained his weight. Distribute the Calories In, Calories Out handout.

2. State: Terry is a high school senior on the basketball team. She has been eating healthy, working hard at practices, and has reached a weight at which she feels strong, fast and confident. The Calories In, Calories Out handout lists foods Terry ate yesterday and the number of calories in those foods. It also lists the activities Terry performed and the number of calories burned doing those activities. If Terry’s goal is to maintain her current weight, is she on track?

3. Using the charts in the handout, students calculate the number of calories eaten and the number of calories burned. Answer: 2057 calories eaten; 2204 calories burned.

4. Explain that the calories burned are based on Terry’s weight of 100 pounds. People who weigh more would burn more calories because more energy is required to move a larger body around and keep them alive; people who weigh less would burn fewer calories because less energy is required to move them around and keep them alive.

5. To calculate if Terry gained or lost weight, one must: subtract the number of calories eaten from the number of calories burned. In the case of our word problem:

   \[2057 \text{ calories eaten} - 2204 \text{ calories burned} = -147\]

   The negative number means she burned more calories than she ate. Ask: “So did she gain or lose weight?” Answer: She lost weight.

   Note: Depending on the math level of students, you can also calculate how many pounds of fat she lost. There are 3500 calories in 1 pound of fat. To calculate fat lost or gained, divide the difference between the calories burned and eaten by 3500. In the case of our word problem, it would look like this: \(-147 / 3500 = -0.042\) pounds of fat. Have students check their work with multiplication.

6. Ask: “If Terry wanted to make sure that she didn’t lose weight, what would she have to do?” Answer: eat more food (consume more calories) or do less activity (burn fewer calories.) Another option would be to eat foods higher in calories.

7. Explain that some foods have more calories than others. For example, \(\frac{1}{2}\) cup of apple slices has fewer calories (60 calories) than \(\frac{1}{2}\) cup of French fries (350 calories.) If someone were trying to gain or lose weight, not only can they change how much they eat, but also what they eat.
**Conclusion**

8. In conclusion, gaining weight and losing weight is a numbers game, and it is a numbers game you can play. Tie this into the theme of stories, compassion, and bullying. There are several websites you can use to keep track of the calories you eat and the calories you burn. Try the U.S. Department of Agriculture website choosemyplate.gov.

**Extension**

Non-fiction current event reading or research about obesity and what it is costing society (emotionally and fiscally).

Use the books “The Digestive System” by Christine Taylor-Butler or “Good Enough to Eat” by Lizzy Rockwell to connect to and come up with solutions to the characters' problems.
# Calories In, Calories Out Handout

<table>
<thead>
<tr>
<th>Food Eaten</th>
<th>Calories Eaten</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td></td>
</tr>
<tr>
<td>2 eggs, low-fat cheddar cheese omelet</td>
<td>320 calories</td>
</tr>
<tr>
<td>2 slices whole-grain toast</td>
<td>140 calories</td>
</tr>
<tr>
<td>1 small apple</td>
<td>47 calories</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td></td>
</tr>
<tr>
<td>Turkey sandwich (lettuce, tomato, 2 slices whole grain bread, 3 thin slices of turkey)</td>
<td>450 calories</td>
</tr>
<tr>
<td>½ cup of carrot sticks</td>
<td>40 calories</td>
</tr>
<tr>
<td>1 fruit cup</td>
<td>75 calories</td>
</tr>
<tr>
<td>1 glass (8 oz) of 2% milk</td>
<td>120 calories</td>
</tr>
<tr>
<td><strong>Snack</strong></td>
<td></td>
</tr>
<tr>
<td>1 granola bar</td>
<td>180 calories</td>
</tr>
<tr>
<td><strong>Dinner</strong></td>
<td></td>
</tr>
<tr>
<td>1 small baked potato with small pat of butter</td>
<td>180 calories</td>
</tr>
<tr>
<td>1 cup steamed broccoli</td>
<td>50 calories</td>
</tr>
<tr>
<td>2 slices (1 inch thick) meatloaf</td>
<td>250 calories</td>
</tr>
<tr>
<td>1 glass (8 oz) of 2% milk</td>
<td>120 calories</td>
</tr>
<tr>
<td><strong>Snack</strong></td>
<td></td>
</tr>
<tr>
<td>1 chocolate pudding cup</td>
<td>85 calories</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>???</td>
</tr>
</tbody>
</table>
### Calories In, Calories Out Handout

<table>
<thead>
<tr>
<th>Hours</th>
<th>Activity Performed</th>
<th>Calories Burned (for 100 lb. person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Sleeping</td>
<td>327 calories</td>
</tr>
<tr>
<td>2</td>
<td>Watching television</td>
<td>130 calories</td>
</tr>
<tr>
<td>6.5</td>
<td>Sitting at a desk at school</td>
<td>531 calories</td>
</tr>
<tr>
<td>1.5</td>
<td>Sitting/eating</td>
<td>102 calories</td>
</tr>
<tr>
<td>1</td>
<td>Walking to/from school</td>
<td>136 calories</td>
</tr>
<tr>
<td>2</td>
<td>Playing basketball</td>
<td>726 calories</td>
</tr>
<tr>
<td>1</td>
<td>Sitting while doing homework</td>
<td>81 calories</td>
</tr>
<tr>
<td>1</td>
<td>Getting ready in the morning/for bed</td>
<td>90 calories</td>
</tr>
<tr>
<td>1</td>
<td>Sitting/reading</td>
<td>81 calories</td>
</tr>
</tbody>
</table>

24 hours Total Calories Burned = ???
WALKING THE WALK

SUBJECTS

Learn with pedometers! Pedometers are great tools for measuring physical activity levels and motivating students. Some PE departments may have funds for these or companies may be willing to make a donation for a healthy school initiative.

GRADE LEVEL

4 - 5

TIME

30 min
WALKING THE WALK

Objectives
Students will explain the importance of physical activity
Students will calculate the number of steps taken during physical activity
Students will identify and describe cultures, foods, and physical activities from other countries

Materials & Preparation
At least one pedometer
“Passports” for all of your students
A map, posted somewhere in your classroom
A “Destination Guide” or a list of cities, monuments, heritage sites or other attractions your class decides to reach as their mileage goals (see example on page 32)
A “Travel Journal” or place for recording the number of steps and their mileage equivalent

As the teacher, you decide how many steps read on the pedometer will equal a distance traveled. For example, 10 steps equal one mile. Have students round to the nearest tenth or mile. Have a world map hung near the Destination Guide so students can see where they’re headed next. Near the map and Destination Guide, the Travel Journal will indicate how many steps you’ve taken so far, and how many you need to make it to the next destination.

Common Core Standards
5.NBT. Understand the place value system. Round decimals to any place.

STEM Alignment
Using mathematics and computational thinking
Reason abstractly and quantitatively
Obtaining, evaluating, and communicating information
Model with mathematics
Attend to precision
WALKING THE WALK

Lesson Introduction

1. Introduce the lesson to the students. You can wear the pedometer yourself and demonstrate various physical activities. Show them how many steps are recorded by walking around the room, doing jumping jacks and walking to the cafeteria. Show the students where the Destination Guide is hung next to the map, or a list of cities, countries, landmarks or heritage sites you decide as a class to “visit.” Ask students which cities in the United States or around the world they would like to “visit.” Make a graph and tally the votes for five to 10 different destinations! Introduce the Travel Journal, where the steps from the pedometer will be recorded.

Body of Lesson

2. Each day, you will also choose one student (or all, depending on the number of pedometers available for your classroom) to wear the pedometer. At the end of the day, the student wearing the pedometer can record in the Travel Journal the number of steps tracked and determine the mileage equivalent. The Destination Guide will also include facts about the destination, how many miles away the destination is from the school and the number of steps needed to reach the destination. As the students are recording more steps and about to reach a new destination, start exploring the facts.

Conclusion

3. There are several great ways to celebrate your accomplishments. Upon arrival to a destination, students can also journal or draw a picture about the journey they took to reach their mileage. What activity did they do to obtain mileage? What do they think about the place to which they traveled? What is something new they learned about their travel destination?
WALKING THE WALK

Extension

Get parents involved! Send home a newsletter informing parents and guardians of your pedometer adventure. Ask them to get involved by recording their steps throughout the day and during physical activity as a family. Brothers and sisters can participate too! You can also post in the school newsletter or on the class bulletin when your students reach a destination. This will also be a great way for other students and classrooms to learn about your project. Finally, an excellent way to celebrate the accomplishments of the students and families and acknowledge their hard work in physical activities is to plan a themed party with games, crafts and healthy food centered around one of your destination’s cultures! Remember to round miles to the nearest tenth or mile.

Example “Destination Guide”

Destination reached: ____________ (location name)

Distance to the city (miles away from the school): ____________ miles

Number of steps taken to reach that distance: ____________ steps

Geographic Location
(write or draw a picture about the destination, its geographic highlights and how the location looks)

Traditions or Customs
(write or draw a picture about a tradition or custom, unique to this geographic location)

Activities
(write or draw a picture of the destination’s major sports and describe what people there do for fun)

Food
(write or draw a picture of the types of food people near this destination eat)
OUTDOOR EDUCATION + NATURE-BASED LEARNING
Outdoor Education + Nature-Based Learning

Spending time outdoors has been shown to have a positive effect on health and learning, and teaching in your Space to Grow classroom is a great way to leverage those benefits.

Your Space to Grow schoolyard is the perfect way to extend your classroom. When students spend time in nature, they reap benefits that transfer to the classroom on many levels. They get a break, they become active, they restore their attention and they’re less stressed. Just looking at nature can improve test scores, too. A growing body of evidence shows just how important nature is not only for well-being, but for cognitive development and academic performance.

Studies have shown that garden-based, hands-on experiential learning directly impacts students’ science, math, and language arts knowledge and indirectly impacts social development positively. In an urban setting, high quality and quantity of green space is associated with a child’s increased resiliency toward stressful events and increased self-discipline. Exposure to green space was also linked to reductions in diastolic blood pressure, heart rate, and incidence of diabetes.

One study showed that classrooms with larger windows and more views of trees also had students with higher standardized test scores, higher graduation rates, and a greater percentage of students planning to attend college. Imagine how this is improved when students can directly connect with nature outdoors, in addition to just viewing it from the classroom.

Teaching outdoors can combat “nature deficit disorder” and promote ecological literacy. Nature deficit disorder was defined by Richard Louv in his book Last Child in the Woods. The term is meant to recognize that human beings, especially children, spend less time outdoors now than they did in past generations, resulting in a wide range of physical and behavioral problems.

Spending time outdoors is often a departure from what students are used to at home. A 2009 study found 8-18 year olds were spending an average of over seven hours watching television and movies, playing video games, listening to music, using computers and reading. Another study found that while children’s identification success for Pokémon characters rose from 7 percent at age 4 to 78 percent at age 8, their identification success for wildlife rose from 32 percent at age 4 to 53 percent at age 8. This suggests that more outdoor learning time can boost children’s understanding of the natural world around them.
Leveraging the outdoors to teach can also have academic benefits. Outdoor classrooms and nature-based opportunities for education such as learning in gardens mean students participate in active and experiential learning, proven strategies that improve academic learning. This type of learning has been shown to give students the tools they need for real-world success, motivate students and create self-directed learners. A study published in 2000 found that students who studied an environment-based curriculum scored higher on tests than students in a control group. Another study found children scored higher on tests after spending time in nature—in addition to demonstrating increases in cooperation and conflict resolution skills, self-esteem, problem-solving ability, motivation to learn and appropriate classroom behavior. Space to Grow schoolyards have been shown to increase physical activity and improve social interactions among students.

Schoolyards are the perfect complement to STEM curriculum, providing a living laboratory where students can engage in hands-on multidisciplinary lessons. The opportunities to support STEM curriculum are almost limitless and can include:

- analyzing soil samples
- growing gardens to learn about plant and water cycles
- tracking rainfall
- learning about watershed and stormwater management

Your schoolyard was even designed with innovative engineering for managing stormwater, providing a real-life example of STEM. Chicago, like many highly urbanized areas, faces challenges to water quality and many homes and neighborhoods suffer the impacts of basement flooding during heavy storms. Your schoolyard is working hard to address these issues by capturing water right where it falls. This keeps excess water and pollutants out of the sewers and waterways during the heaviest of storms. You can leverage the unique features of your schoolyard to teach about any element of STEM, and also help engage environmental stewards from a young age.

Edible school gardens, which are part of Space to Grow schoolyards, teach students about nutrition from an early age. By showing students where their food comes from, introducing appreciation of fruits and vegetables and getting students involved in hands-on gardening programs, your schoolyard helps support school nutrition. Children who might not otherwise be exposed to fruits and vegetables can learn about eating fruits and vegetables, and might also be more receptive to healthier school meal options.

Going outside and experiencing nature exposes children to new and unique situations, gives them real-world problems to solve and helps restore their attention. It promotes more and better quality physical activity, reduces stress and tempers aggression. In addition, exposure to nature has a particularly strong link to improved academic performance among low-income children.
Tips for Taking Your Class Outdoors

Outdoor teaching and learning is being practiced all over Chicago and in green schoolyards around the country. Here are some tips from Chicago teachers about taking your class outside:

- Evaluate your group, your setting, and other factors (special needs, location of area, size of group, behavior issues, length of class time spent outside, other classes using area, etc.) and go from there.

- Establish rules and procedures for the outdoor classroom just like you do for your indoor classroom.

- Be flexible and resourceful! Networking with others is a great way to work collaboratively with other staff.

- Start off small with maybe just taking the class outside for a 10 minute independent read. It also helps to have a set of rules and expectations specifically for the outdoors.

- The teaching site should be free of residual risk and with clearly established boundaries. Where risks exist, they should be highlighted to the group. For example, before taking a class outside for a lesson be sure to do a walk through of the space to check for garbage that might impact your lesson.

- Use a different door to access the schoolyard for class than the students would use for recess. This will help reinforce to students that it is class time not recess.

ACTIVITIES + RESOURCES

You can find additional resources, including lesson plans, at spacetogrowchicago.org/for-teachers.

To dive deeper into the research and studies referenced above, visit the Children & Nature Network’s collection of Tools and Resources: childrenandnature.org/learn/tools-resources.
Here are some additional tips and tricks, adapted from Boston Schoolyard Initiative:

**Review and practice routines periodically**
Invite students to reflect on how the class did after the first few times out. What went well? What needs improvement? Practice routines as needed throughout the year.

**Have a clear objective for going outdoors**
Be clear about the purpose of going outdoors for each lesson. Direct students’ attention to the specific things you want them to focus on this time out, and help them connect what they see and do outdoors to what they have been learning in the classroom.

**Have an outdoor “gathering spot”**
Designate a gathering area where students go when they first get outside to await initial instructions, and to which they return for a mid-lesson check-in, or closing discussion.

**Develop a signal for emergency situations**
Practice it so students know when and how to return to the building immediately, if needed.

**Anticipate and dress appropriately for the weather**
Teaching outdoors is useful in all types of weather! Though, you will likely spend less time outdoors if it is too cold or rainy. Prepare students for going outside the day before and remind them to bring appropriate clothing: hats if it’s sunny, boots if it’s muddy, etc. Keep a few extra hats or jackets available for students to wear for outdoor work. As they become used to working outdoors they will be increasingly motivated to come prepared.

**Have materials on hand**
Have your outdoor learning materials - such as clipboards, hand lenses, field guides, books, extra pencils - ready in a crate or a backpack so you can easily take them with you when you go out.

**Go out often!!**
The more you go out, the easier it gets. Students’ ability to work purposefully outdoors increases as they learn what to expect, experience the comfort of a routine, and develop confidence in their own outdoor observation skills.
Following is a list of academic studies and literature used to develop the content of this section.


Sample Schoolyard Use Schedule

The CPS Wellness Policy recommends a minimum of 20 minutes of daily recess for all students, which should occur before lunch. If your outdoor classroom is located near the area where recess will occur, avoid potential conflicts by scheduling outdoor instruction around the recess schedule.

Below is an example of a weekly sign-up sheet teachers could use to schedule class time in the outdoor classroom for each day. Of course, if your outdoor classroom is not located near the recess area, then teachers and staff are encouraged to sign up to use the outdoor classroom during all hours of the school day.

<table>
<thead>
<tr>
<th>OUTDOOR CLASS TIME</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 - 8:30</td>
<td>Ms. Williams, Room 107</td>
<td>Ms. Rose, Room 102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:30 - 9:00</td>
<td>Mr. Roberts, Room 205</td>
<td>Ms. Taylor, Room 307</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 - 9:30</td>
<td>Mr. Roberts, Room 205</td>
<td>Mr. Davis, Room 103</td>
<td>Ms. Taylor, Room 307</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 - 10:00</td>
<td>Ms. Daisy, Room 111</td>
<td>Mr. Edison, Room 305</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 - 10:30</td>
<td>Mr. Locke, Room 115</td>
<td>Mr. Edison, Room 305</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 - 12:30</td>
<td></td>
<td></td>
<td>Recess</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30 - 1:00</td>
<td>Ms. Smith, Room 214</td>
<td>Ms. Sanders, Room 210</td>
<td></td>
<td>Mr. Sullivan, Room 301</td>
<td></td>
</tr>
<tr>
<td>1:00 - 1:30</td>
<td>Mr. Eli, Room 303</td>
<td>Ms. Sanders, Room 210</td>
<td>Mr. Waters, Room 207</td>
<td>Mr. Sullivan, Room 301</td>
<td></td>
</tr>
<tr>
<td>1:30 - 2:00</td>
<td>Mr. Eli, Room 202</td>
<td>Ms. Garcia, Room 105</td>
<td>Mr. Waters, Room 207</td>
<td>Ms. Shareef, Room 208</td>
<td></td>
</tr>
<tr>
<td>2:00 - 2:30</td>
<td>Ms. Cadlwell, Room 202</td>
<td></td>
<td></td>
<td>Ms. Shareef, Room 208</td>
<td></td>
</tr>
</tbody>
</table>
The Lessons We Teach

Complete the table below for 2-3 lessons/units/projects you currently teach which could be adapted for instruction in your schoolyard. Think of lessons that are easy to teach and others that are difficult to teach outdoors in the garden. Identify adaptations to make it teachable outdoors.

<table>
<thead>
<tr>
<th>Name ______________________________</th>
<th>Grade Level/Subject ____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASSROOM LESSON DESCRIPTION</strong></td>
<td><strong>OBJECTIVES/STANDARDS MET</strong></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
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</tr>
</tbody>
</table>
IN OUR BUTTERFLY GARDEN

SUBJECTS

Help your students learn about the plants in the garden and about themselves! This lesson will prompt students to think critically about the good qualities of their classmates and how the good qualities of the plants in the garden benefit the environment.

GRADE LEVEL

K-2

TIME

45 MIN
IN OUR BUTTERFLY GARDEN

Objectives
To appreciate our personal good qualities and the qualities specific plants have and how those qualities benefit the garden and environment overall.

Materials & Preparation
Walk through the garden space to ensure that it is presentable to your students for this lesson, and locate a place where everyone can sit comfortably.

Gather seeds or bulbs for students to plant in the garden.

Lesson Introduction
1. Explain to students that they will be in the school garden for class today.
2. Students should brainstorm rules and/or best behavior for the garden (i.e. listening, following directions, boundaries, meeting place, etc.).

Body of Lesson
3. When outside, seat students in a circle in the garden.
4. Have each student take their turn to tell the group at least three good/positive qualities about the person sitting on their left. Go clockwise so that each student can take a turn and hear what their good qualities are.
5. Then discuss the good qualities that the plants have in this garden. For example: What is a good quality that parsley has in our garden? Answer: It is food for the caterpillars. What is the good quality of dill? Answer: It is a host for butterflies to lay their eggs. So, these are helpful and kind plants to the butterflies and caterpillars.
6. Give each student seeds or bulbs to plant in the garden.
7. Students will then help dig into the ground and/or in a flower pot. They will place the seeds and/or bulbs into the dirt.

Conclusion
8. At the end, each student will receive a sticker for their participation.
COMPARE + CONTRAST IN THE GARDEN

SUBJECTS

Aa 🌿🌿🌿

GRADE LEVEL

4-7

TIME

45 min

Students use plants in the garden to practice comparing and contrasting, and present their observations to the class. Students will develop their observation, writing and presentation skills.
COMPARE + CONTRAST
IN THE GARDEN

Objectives
Students will be able to compare and contrast features of plants in the school garden

Materials & Preparation
Pictures of plants
Paper
Pencil
Clipboard
Crayons
Rory’s Story Cubes are a set of nine dice with a picture/graphic on each face. The concept is simple; roll the dice, tell a story. One set of dice can be purchased on Amazon.com for about $8 per set, and you will probably need 4-5 sets for an entire class. Be sure to check your local book store or toy store, too!

Common Core Standards
CCSS.ELA-LITERACY.W.7.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts and information through the selection, organization, and analysis of relevant content.
CCSS.ELA-LITERACY.W.7.6: Use technology, including the internet, to produce and publish writing and link to and site sources as well as to interact and collaborate with others, including linkages to and citing sources.
CCSS.ELA-LITERACY.W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
CCSS.ELA-LITERACY.W.4.2c: Link ideas within categories of information using words and phrases (e.g. another, for example, also, because, etc.).
CCSS.ELA-LITERACY.W.4.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.
COMPARE + CONTRAST IN THE GARDEN

Lesson Introduction
1. Before visiting the garden, students should generate features of plants that can be compared (e.g. stem, leaves, and leaf organization, height, flowers, bark, and structure).

2. Direct students to create a blank T-chart (or Venn Diagram). Images can be shown of plant features to facilitate student understanding, especially for students lacking background knowledge.

3. Teachers can review compare/contract technique and anchor charts as needed. Share the objective of the lesson with students, and discuss norms and procedures for the garden.

4. Model effective observation in small groups. For example, look at pictures of two different plants to compare plant features.


Body of Lesson
6. When going outside, each student should take a clipboard, pencil, blank sheet of paper, and a copy of the student page.

7. With partners, (partners should be chosen ahead of time), students should do a walk-through of the school garden (less than 5 minutes) to identify two plants to compare.

8. On their blank sheet of paper, and with partners or independently, students will take time to sketch features or take notes about specific plants. Notes and ideas can be transferred into graphic organizer. Younger students can color their plants. This should take 10-15 minutes.

9. Staying in the garden or returning to the classroom for the writing component, students should write an informative text. This should contain a brief analysis of their two plants, including the details they observed from their walk-through and examination. Students should include inferences/questions about purposes of specific plant features and draw conclusions about the plants they studied. This should take approximately 15-20 minutes. Students should write a paragraph comparing and contrasting the two plants. They should write at least two similarities and two differences.

Conclusion
10. Students present their findings (after peer editing and revision) to the class as an oral presentation or cooperative presentation using bulletin board, tri-fold poster board, or online posting (e.g. school website, Openlands website).
COMPARE + CONTRAST
IN THE GARDEN

Extension Options
Technology extension: When outside, students may take pictures with phones, tablets, or iPads, to include as an attachment to their writing product. Back inside, direct students to use online research methods to correctly identify (including scientific name and genus) the plants they used in their compare/contrast informative text.

Diverse Learner Support
Presentation/Instruction Accommodations: Provide students with pictures of plant features (from plants in the garden) to aid in identifying plants (e.g. find the plant with the yellow flowers, students match picture to the plant with the yellow flowers).

Response Accommodation: Scribe can be assigned for aid in writing.

Setting Accommodation: Student can return to classroom for writing task if it aids in reducing distraction.

Timing Accommodation: provide students with 50% extended time to identify features, and 100% more time to finish writing.

Response Modification: Students can use/take pictures instead of using the student page. Students can record audio describing the plant instead of writing. Also, students could compare and contrast just one plant feature instead of all that is listed on the student page.

Lesson Accommodations for PreK-2
Read students the book “Planting a Rainbow,” by Lois Ehlert.

Students can then go for a walk through the school garden.

Teacher can ask, “What do you see that we read about in the book? What is different? What don’t you see?”

Students then can go back to their classrooms or stay outside in the garden to draw a picture of what they saw.
POETRY IN THE GARDEN

Encourage students to learn about plants in the garden through a fun poetry activity that culminates in an exciting poetry slam for the whole class!
POETRY IN THE GARDEN

Objectives
Students practice writing three poems, outdoors

Materials & Preparation
Walk through the garden space to ensure that it is presentable to your students for this lesson. Think about where you will be asking your students to go (i.e. are there particular paths for them to stay on? Are there defined borders?).

Gather copies of poetry worksheet included on page 47.

Common Core Standards
CCSS.ELA-Literacy.CCRA.R.1-2, R.4-5, R.7, W.3-6, W.10, SL.1, SL.5-6

Background
Poetry is a great way for students to express their ideas. Giving students a specific poetic form helps provide a structure for these ideas. Below are examples of poetic structures to use with your students:

**Haiku:** A Japanese form of poetry with three lines: the first line has five syllables, the second line has seven syllables, and the third line has five again. Third line also has a surprise or tension element.

**Cinquain:** Consists of five lines, each with a specific purpose and fixed number of syllables. (1) The title in two syllables, (2) description of title in four syllables, (3) a description of action in six syllables, (4) a description of a feeling in eight syllables, and (5) another word for the title in two syllables.

**Acrostic:** A poem where the first letter in each line, when read vertically, spells out the name of something or conveys a message.

**Shape Poetry:** Words are written in a way that forms a picture of what is happening in the poem.

**Windspeak:** A poem with five lines in the following pattern: (1) “I dreamed,” (2) “I was...” (something or someone), (3) where, (4) an action, and (5), how.

Example:

I dreamed
I was a tree
On a hillside
Playing in the wind
Joyfully.

**Free verse:** Follows no set formula or style
POETRY IN THE GARDEN

Lesson Introduction

1. Explain to students that they will be in the school garden for class today. Students should brainstorm rules and/or best behavior for the garden (i.e. listening, following directions, boundaries, meeting place, etc.).

2. Explain that they are going outside mainly to write poetry, but they will also play a game to get them familiar with the garden (and to release some of their built-up energy from being inside all day). Ask students what kind of poetry they have written before? Consider sharing examples of poems from the Project Learning Tree website. When going outside, the instructor should take enough pencils, worksheets, and clipboards (optional) for the class.

Body of Lesson

3. Game (10 minutes): Gather students in an area of the schoolyard where there is plenty of space for the class to move around. Have students describe an item in the garden by only using adjectives and their senses to see if others can guess their item. For example, if the item is a sunflower, students might say, “Yellow petals, green stem, bees visit, looks like summer.”

4. Poetry Writing (15 minutes): Pass out pencils, worksheets, and clipboards to students. If there are no clipboards, they can bring a book to write on or find hard surfaces to write on instead - benches, sidewalk, even each other’s backs! Students have 15 minutes to write their poems. Everyone needs to try at least one! Below are a few poetry prompts to help get them started.

- Write about being a leaf on a tree. What are you thinking about? How does it feel?
- Write from the perspective of a season (Winter, Summer, Spring, Fall).
- What do you feel when you are outside? What do you see, smell, taste, hear?
- Write about your favorite memory outside.
- Write about the soil and how it feels when it rains.

Pick a time and meeting place for everyone to come back together when they are done.

5. Poetry Slam (15-20 minutes): Have the students get into groups of 3-4 people to share their poems with each other. They have 7-10 minutes to do this. After the time is up, have everyone come together closely, where they can hear each other. Take 8-10 minutes for students to nominate each other to read their poems aloud, in a Poetry Slam. Perhaps your school garden has a space that could act as a stage for the poem reader to stand on. The class can show their appreciation of poems by snapping their fingers after a poem is read.
Conclusion
6. Go back inside (5 minutes): Thank students for their participation, collect worksheets, and provide directions on what to do when they return inside.

Assessment
Collect poems for a participation grade.

Extension
Consider involving students in a younger grade. For example, if you teach 4th grade, connect with a 1st grade class, and go outside together. It’s a bit much to play the game with that many children at once, but 1st graders and 4th graders could be paired up to write poems together and share them with everyone.
POETRY IN THE GARDEN WORKSHEET

Directions
Use this space to create your own poems. Take your time to write your thoughts, and feel free to add a sketch to your poem. Also, make sure your poem has a title.

Poem 1
Write a poem related to something you see in the garden.

Poem 2
Write a poem about anything that crosses your mind while sitting or standing in the garden.

Poem 3
Write your own!
BUILD A WATERSHED

SUBJECTS

Students discover and model watersheds and demonstrate the relationships between the hydrosphere, geosphere, and atmosphere. From the Park District of Highland Park Ravine Education Program.

GRADE LEVEL

4 - 6

TIME

45 min
**BUILD A WATERSHED**

**Objectives**
Students will be able to explain what a watershed is and make a model of a watershed.

Students will show relationships between the hydrosphere, geosphere, and atmosphere.

**Materials & Preparation**
- Paper
- Pencils
- Markers
- Spray bottles
- Compasses
- Clipboards
- Buckets
- Schoolyard Watershed Student page

**Common Core Standards**
- NGSS.4-ESS2-1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
- NGSS.4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth’s features.
- NGSS.5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- NGSS.5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.
- NGSS.MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- NGSS.MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.
- NGSS.MS-ESS2-4: Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.
- NGSS.MS-ESS3-1: Construct a scientific explanation based on evidence from how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.
BUILD A WATERSHED

NGSS.MESSS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

CCSS.ELA-LITERACY.RST.6-8.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

CSS.ELA-LITERACY.WHST.6-8.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.

CSS.ELA-ELA-LITERACY.WHST.6-8.9: Draw evidence from informational texts to support analysis, reflection, and research.

CCSS.MATH.CONTENT.4.MD.A.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Vocabulary

Watershed: An area of land where all of the water drains off into the same place

Permeable: Allows liquids or gases to pass through

Stormwater: Water that originates as rain or melting snow/ice
Stormwater is sometimes called runoff

Runoff: Rainwater that is not absorbed by the ground and runs directly into the sewer underground
BUILD A WATERSHED

Lesson Introduction
1. Begin a discussion to find out what students know about how water moves. Ask these questions:
   - What are the main steps of the water cycle?
   - Where does water go when it falls as precipitation?
   - How do we know when water will soak into the ground or move downhill?
   Next, introduce the concept of a watershed, the area of land where all of the water drains to one place.

Body of Lesson
2. Watershed Modeling (10 minutes): Students should sit in groups. Each student should have two white pieces of paper, a pencil, and a marker or pen. Each group should have a full spray bottle.
3. Modeling: To build the watershed model, each student should crumple up their white paper into a ball and then carefully unfold the paper without ripping it. Wrinkled paper simulates a watershed, one that has been carved by wind, water, and ice over time. Students use their pencils to mark the high points of the watershed.
4. Making predictions: Ask students to analyze their watershed. Where will the water go when it rains? Is there any place where it will soak into the ground? They might make pencil marks on their papers to show where they think most of the water will end up.
5. Each student should spray five times to simulate precipitation on their watershed.
6. Class discussion (5 minutes): What happens to the rain water when it falls on the watershed?
7. Exploring the Local Watershed (20 minutes): Each group should have one bucket with about one gallon of water, one compass, and a clipboard with the “Schoolyard Watershed” student page.
8. Take students outdoors in their groups. Pick three different locations around the school to empty the buckets. Students should complete the data table on the student page as each bucket is emptied. How much water soaked into the ground? 25%? 50%? 100%? How much water stayed in place, and how much flowed to another location? Use compasses to determine the direction of water flow. Where did the moving water stop? Consider what this data means about the local watershed.
9. Watershed Modeling with Pollution (5 minutes): Students return to their groups indoors and follow steps 2-4 with their second piece of paper. This time, they should use the marker to draw lines and dots on their papers before spraying precipitation. The ink represents pollution in their watershed. The pollution could be sediment, oil, pesticides, herbicides, chemicals, road salt, fertilizer, lawn waste, or garbage. How will the pollution behave when it rains? Will it move? If so, where will it go?
BUILD A WATERSHED

Conclusion
10. Class Discussion (5 minutes) Discuss the following:
   - When pollution was added, how did the watershed change?
   - Is the watershed healthier or less healthy after it rained?
   - What solutions might eliminate or decrease the amount of pollution in the watershed?
   - What are the model’s limitations?
   - How could we make the models more realistic?

Assessment
As an assessment, check student page for completion. Reflect on the class discussions to determine student understanding about the watershed model, how pollution affects watersheds and further explorations on the relationships between watersheds and the hydrosphere, geosphere, and atmosphere.
### SCHOOLYARD WATERSHED WORKSHEET

**Directions**
Estimate the results from your test of the local watershed. Remember that each bucket contains about one gallon of water.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>HOW MUCH WATER SOAKED INTO THE GROUND?</th>
<th>WHERE DID THE REST OF THE WATER GO?</th>
<th>WHERE DID THE WATER STOP AND HOW MUCH WAS THERE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: Garden</td>
<td>About 1/2 a gallon or 50%</td>
<td>Toward the sidewalk, South</td>
<td>About 50% or 1/2 a gallon stopped at a low point in the sidewalk.</td>
</tr>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
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</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other Notes**

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
STORMWATER WALK

Adapted from the University of Nebraska Lincoln Extension Stormwater Management Education Team.

PreK-3 accommodations are available at the end of this lesson.
STORMWATER WALK

Objectives
Students will be stormwater sleuths exploring their schoolyard to identify the permeable surfaces that absorb water
Students learn through this activity how their schoolyard helps enhance water quality and reduce urban flooding

Materials & Preparation
Pencils
Clipboards or hard writing surface to use outside
Stormwater Walk Recording Sheet
Before starting lesson, teachers should walk the schoolyard to identify their schoolyard elements

Stormwater Vocabulary
**Green Infrastructure:** Using or mimicking natural processes to soak up (infiltrate) stormwater

**Green Space:** An area of grass, trees or other vegetation

**Impermeable:** Does not allow liquids or gas to pass through

**Infiltration:** The movement of water into and below the surface of the ground

**Permeable:** Allows liquids or gases to pass through

**Runnel:** River + Tunnel = Runnel - A runnel carries stormwater runoff to water trees and gardens

**Runoff:** Water that originates as rain or melting snow and moves over and off a surface

**Stormwater:** Water that originates as rain or melting snow/ice
Stormwater is called runoff when it is moving over a surface.
*Example:* During a rainstorm, rain falls on the roof of your house, in your backyard, and on your driveway. This is all stormwater.

Common Core Standards
NGSS.3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

NGSS.4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind or vegetation.
STORMWATER WALK

NGSS.4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

NGSS.5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

NGSS.MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

NGSS.MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

NGSS.MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

NGSS.MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

CCSS.ELA-LITERACY.W.3.7 Conduct short research projects that build knowledge about a topic.

CCSS.ELA-LITERACY.RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

CCSS.ELA-LITERACY.W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

CCSS.ELA-LITERACY.W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

CCSS.ELA-LITERACY.W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

CCSS.ELA-LITERACY.WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.
STORMWATER WALK

Lesson Introduction
1. Begin a discussion to find out what students know about where rainwater goes once it falls to the ground. Ask questions like:
   - What happens when we get lots of rain?
   - Where does the rainwater go, once it’s on the ground?
   - How do we know when water will cause flooding?
2. Explain how outside there are permeable surfaces, like a sponge, that soak up water or other liquids. There are also impermeable surfaces that do not allow liquid to pass through so the water keeps moving. Ask students to think of a time when they saw a flooded area? Why was there so much water?
3. Explain to students that their schoolyard has been designed with special surfaces to slow down and hold lots of water below the surface of the ground. Otherwise this water would run straight to the sewer system.
4. Inform students that they will take a walk of their schoolyard and be stormwater “sleuths” to investigate permeable or impermeable surfaces outdoors.
5. Confirm an outdoor meeting spot and the signal you will use to bring them back together outside to review their observations. Distribute the Stormwater Walk Recording sheet.

Body of Lesson
6. Stormwater Tour (15 minutes): Allow students to walk the schoolyard to observe and fill out their sheet.
7. Outside discussion (15 minutes): Bring students back together to review their observations and answers.
   - Ask if they noticed more impermeable or permeable surfaces in the schoolyard? These surfaces mimic natural surfaces in nature.
   - Ask if they noticed the interpretive signage in the schoolyard? Remind them that their schoolyard was designed and constructed to hold over 150,000 gallons of water (about 3,500 full bathtubs).
   - Climate change can bring more rain. Ask why they think the schoolyard was designed the way it was? How do they think green spaces help with flooding?

Conclusion
8. Go back inside (5 minutes): Thank students for their participation, collect the recording sheets, and provide directions on what to do when they return inside.
STORMWATER WALK

Assessment
Collect their observation sheets to confirm their understanding of the concepts presented.

Extension Options
This activity can be extended by having students conduct a stormwater walk of their home and/or neighborhood. Explore and discuss ways homes in the neighborhood could manage stormwater. Do they have rain gutters and downspouts? Where do they lead to? Is it better for rainwater to fall onto soil or plants like grass, flower beds and trees. What is the difference? Is one better than the other?

Lesson Accommodations for PreK-3
For grades PreK-3, the concept of absorption is new. This activity can be set up and done outside to show how permeable surfaces absorb water and impermeable surfaces don’t absorb water. This can be a teacher demonstration or stations set up outside where students can test the different surfaces while they are exploring the schoolyard.

Materials:
Tray to hold 2 clear containers side by side
2 clear square containers that can each hold a plastic cup
2 -9 oz. plastic cups
Sponge
Small piece of plastic wrap to cover 1 clear cup
Clear tape
Cup with 1 cup water
Teaspoon or dropper

Assembly Instructions:
The impermeable model: secure the plastic wrap around the edge of one plastic cup. Use tape around the edge of the cup if the plastic wrap does not hold taut over the top
The permeable model: place the sponge over the second plastic cup.
Place both cups in their plastic containers to catch any overflow water, and place on the tray
Have a cup filled with water and a teaspoon or dropper for students to test.
Procedure:

Gather, assemble and set up the activity. Take the class outside to demonstrate the activity and the two surface types by adding drops of water on each of the models. Talk about what happens and where the water goes on each cup to demonstrate the concepts of permeable and impermeable. Consider gathering the materials and allowing them to work in groups to assemble and test how each surface responds to the water. Then follow Steps 6 and 7 outlined in the Body of the Lesson above, filling out the Stormwater Walk Recording sheet together. Use the schoolyard signs that show how the rainwater is stored underground.

Lesson Extension for 6-8

After completing the Stormwater Walk, older students can explore the engineering connection around how their schoolyard captures rainwater by trying a hands-on lesson offered by the Teach Engineering STEM Curriculum, which can be found after page 73 of this toolkit, or online at teachengineering.org/activities/view/usf_stormwater_lesson02_activity2.

Ask students to think about what is happening underground in the schoolyard when there is excessive rain. How does the rainwater infiltrate into each element? Where does it go? Discuss how the deep root systems of native plants encourage infiltration which is something plant roots do to help absorb nutrients and filter out pollution. How does the material under the permeable surfaces allow for infiltration? You can have students draw and label what is happening in these areas out in the schoolyard.
**STORMWATER WALK RECORDING SHEET - SIDE 1**

**Directions**
As you walk around your schoolyard fill out the chart to find out which elements absorb rainwater.

<table>
<thead>
<tr>
<th>Schoolyard elements</th>
<th>Put an X in this column if your schoolyard has this element</th>
<th>Put a P if permeable or I if impermeable</th>
<th>Write what you observed that helped you decide. If you are not sure add a star and write why.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioswale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete/Cement</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Edible Gardens</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Green Space</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native Gardens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain Gardens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubber Surfaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runnels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrubs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Look over your chart and count the permeable surfaces. How many does your schoolyard have?

2. Which permeable surfaces are man-made?

3. Look over your chart. Are there more permeable or impermeable surfaces?

4. What do you notice about the impermeable surfaces?

5. Which surface would help absorb stormwater so there is less flooding?

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### STORMWATER WALK RECORDING SHEET - SIDE 2

**Directions**
Continue to fill out the chart.

<table>
<thead>
<tr>
<th>Schoolyard elements</th>
<th>Put an X in this column if your schoolyard has this element</th>
<th>Put a P if permeable or and I if impermeable</th>
<th>Write what you observed that helped you decide. If you are not sure add a star and write why.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>