


Plants for Play and Learning



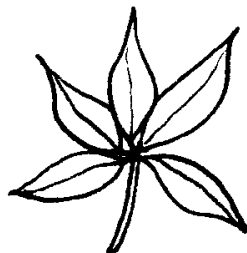
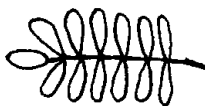
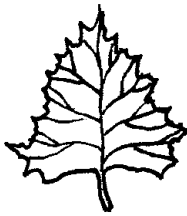
Plants are an extremely important element in the design of outdoor spaces. They can be used to organize space as well as provide texture, interest and a softer look to the hard elements of school grounds. They can also be incorporated into different types of settings for play and learning. Plants extend the range of play activity to include exploration of the shapes, colours and textures of leaves and flowers, discovery of the living things plants attract and creative play through hide-and-seek games and general exploration.

Design details

Tips for Using Plants for Play and Learning

(Adapted from: Robin Moore, *Plants for Play*)

- ✦ Vary the texture and shape of leaves: evergreen with deciduous; shiny with rough; serrated with smooth edges; thin with thick; simple with compound, and oblong with palmate.
- ✦ Vary the form, size, shape and colour of plants.
- ✦ Select plants that emphasize seasonal change: fall colour; early leaves; late flowers; and seeds and berries.
- ✦ Select plants with fragrant leaves and flowers.
- ✦ Select plants for craft and culinary activities.
- ✦ Select plants for auditory stimulation, such as reeds and grasses.

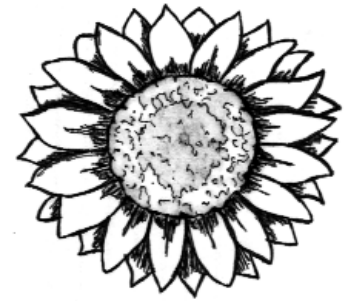


- ✦ Use plant species that are native to your region and that match the soil and sunlight conditions of your site. However, using plants for play, learning and nutrition provides some exceptions to using native species. For example, you may wish to include plants with cultural significance or annuals and perennials that have unique adaptations children can explore. Often plant donations will be non-natives. For schools using some non-native species on their grounds, here are a few suggestions to help you use them wisely.
- ✦ Research the needs of non-native species to ensure they will not require a lot of maintenance such as watering and fertilizing. If they do, it is likely not a wise choice.
- ✦ Ensure that the non-native species are not invasive. Invasive species reproduce rapidly by seed production or underground roots that can easily take over a natural area.
- ✦ Use non-native species in separate garden areas from your naturalized gardens, for example, by creating a separate donation garden.
- ✦ Use heritage species when selecting vegetables, annuals or perennials for learning gardens.

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Teaching Gardens

Plants have developed adaptations to help them survive and thrive in many conditions. Individual plant species have unique characteristics that can be used to demonstrate plant response to sun, shade, rain and drought. Designing a garden with these specialized plant species creates a great opportunity for students to understand some of the concepts related to the natural evolutionary adaptations of plants.



- Choose plants with flowers that respond to sun and shade. For instance, the bloom of a sunflower always faces the sun and will follow it throughout the day, using the sun's energy for the growth of its seeds. Flax develops new blooms each morning and drops its flowers by noon to conserve energy throughout the rest of the day.
- Select plants that have built-in adaptations like the compass plant whose leaves are oriented north-south, or the cup plant whose leaves form a cup around the stem to capture water.
- Include plants that are drought tolerant to demonstrate xeriscape gardening and energy efficiency in plants. Use gray-leaved plants (e.g. *Artemisia spp.*), or plants with fine white hairs over their leaf surface (e.g. *Antennaria spp.*, *Anaphalis spp.*) to demonstrate adaptations in reflecting the sun's light to conserve energy. Use plants that have narrow leaves (e.g. flax, whorled milkweed), allowing for less water loss through evapotranspiration (release of water through plant leaves). Also provide plants with succulent leaves that are able to store more water and endure longer periods of drought.
- Include plants that can tolerate extreme wet conditions. For example, use reeds and sedges to explore how the hollow stems store and transport water.

Plants for Play

a) Hiding places and quiet spaces

Trees and shrubs support hide-and-seek games and can be used to create a quiet secluded corner for reading, meeting, imaginative play (house, fort, cave) or small group interaction.

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Broadacres Junior School



K.B. Woodward Elementary School

- Use woody plants that have sparse branches (e.g. viburnums) close to the ground and cover a large area to establish safe, fun hiding places.
- Use cedars to create quiet corners with year round cover.
- Create quiet corners by using bushy shrubs and trees with loose over-hanging branches to help define the space and provide the feeling of walls and a roof. Use plants that are not too dense (e.g. larch, locust, birch, serviceberry) so sunlight can still penetrate.
- Provide moveable objects that can be re-arranged for seating and imaginative play. For more information see the fact sheet *Loose Parts Play* in Built Features.

b) Mazes

Mazes provide opportunities for exploration and discovery. They can be a fun and challenging exercise for students of all ages, drawing on memory and problem-solving skills.

- Use shrubs or trees, turf mounds or any combination of built and natural elements to create your maze.
- Use bushy, upright species (e.g. cedar) that will grow close together to build your maze walls.
- Place plants close together (approximately 50 centimetres apart) so children will not create shortcuts or become confused with too many perceived openings. While the plants for your maze are growing you may want to incorporate other elements like used tires or rope to connect the walls.
- Include different challenges throughout your maze. Provide clues to solve, colours to follow, or math equations to work out.

Theme Gardens

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a) Spiral Gardens

The spiral is symbolic of a journey of discovery. The spiral can be a path, leading to a destination or to a point of discovery within the garden. Spiral gardens also control traffic on school grounds as students slow their speed to manoeuvre through the spiral.

- Create a pathway to easily lead you through the spiral.
- Incorporate a variety of plant types to explore and interact with. Arrange the plants within plots throughout the spiral to create mini-gardens.
- Use signs and directions to personalize and animate the space.
- Arrange plants by themes to create a journey or to tell a story. For instance, a journey can be created through a meadow of wildflowers to an edge habitat of shrubs and wildflowers, and then to the forest so children experience different types of habitats. The possibilities are endless!

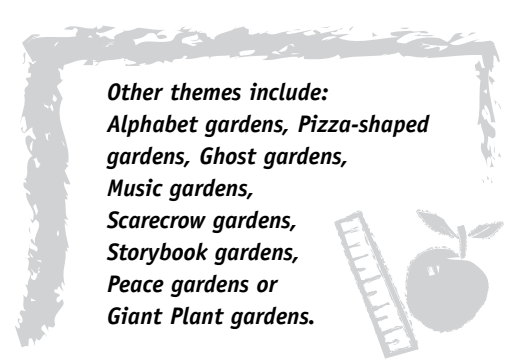
b) Rainbow Gardens

Rainbow gardens are a colourful addition to any school ground.

- Select plants with flowers that match the colours in a rainbow. Consider using white flowers to separate the colour sections and add contrast.
- Include stepping stones and mosaic tiles that add colour and interest and provide a passage to the end of the rainbow!

c) Bird Seed Gardens

- Plant seed from a bag of wild birdseed in the spring, covering the seed with two centimetres of soil. Water lightly but thoroughly to help the seeds germinate.
- Provide birdhouses, perches and feeders in the garden to allow for natural seed distribution from birds.



Sensory Gardens

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Plants can be included in your school's garden that add sensory variety and delight and awaken the senses.

- Include plants with smooth or rough leaves or bark for texture.
- Include plants with fragrant fruit or flowers, or plants that emit an odour when their leaves are crushed (e.g. herbs).
- Include plants with colourful fruit, flowers, leaves and bark.
- Include plants that have edible fruits and leaves for children to explore (taste is explored in more detail below with edible gardens).
- Provide sound from a number of trees, shrubs, wildflowers and reeds. Imagine the creak of a pine tree, the whispering of grass or the rustling of maple and aspen leaves in the fall.

Edible, Craft and Culinary Gardens

These gardens provide students with hands-on knowledge of food growing plants, an opportunity for understanding culturally significant plants and their uses, and the opportunity to create materials out of plant parts. Edible gardens can also include common herbs and vegetables that allow students to grow, harvest and cook their own locally grown organic food. For more information see the *Food Growing* fact sheet in Gardening Techniques.

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- Select species native to your region that produce edible fruit or nuts.
- Select annual and perennial herbs that students can use for cooking and general tasting experience.
- Incorporate culturally significant plant species that were traditionally used for food and medicinal purposes.
- Select species such as goldenrod that can be used for dye-making, and include grasses, reeds and willows for basket making.



Woodland Park Public School

Codes and Safety Standards

Accessibility

- Ensure that branches do not hang over pathways so that children in wheel chairs have a clear, unobstructed pathway.
- Provide areas with low-growing species where children in wheel chairs can experience the garden.
- Provide plantings in raised beds as well as surface planting for greater diversity and accessibility. For more information on raised planters see the *Container Gardening* fact sheet in Gardening Techniques.
- Use plants that are tolerant to foot traffic, that are quick-growing, self-perpetuating (e.g. staghorn sumac grows by underground root suckers) and that heal after breaking to allow children to interact completely with their environment.

Crime Prevention Through Environmental Design (CPTED) standards suggest using the "three foot" and "eight foot" rule for visibility. This means using trees with canopies starting at eight feet (2.5 metres) and under-story plants that mature to, or can be kept pruned to, three feet (1.2 metres) high.

Safety and Risk Management

- Do not place trees too close to buildings where children could climb and get on the roof.
- Do not place trees too close to play structures where children could climb between them.
- Plant trees with a crown that is 2.5 metres (eight feet) high and with an eight centimetre (three inch) caliper to discourage vandalism and avoid climbing.
- Choose thorn-less species in play areas.
- Do not place trees or shrubs with berries, cones or pods too close to pathways where they could cause slippery, messy surfaces.
- Use soft-branching plant material (e.g. staghorn sumac) to protect children if they fall.
- Do not include species that have poisonous parts or may pose allergy problems (e.g. nut trees).
- Complete regular pruning and maintenance practices to ensure low branches at eye level are removed.
- Provide educational information about the importance of trees, shrubs and other natural settings on school grounds to enhance the growth and learning opportunities of children. Also explain the safety standards that are in place at your school to alleviate any worries that parents and the community might have.



Where to go from here?

Sources for this fact sheet

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- Moore, Robin C., Goltsman, Susan M. and Iacofano, Daniel S. (eds.) *Play for All Guidelines: Planning, Design and Management of Outdoor Play Settings for All Children*. Berkeley, California: MIG Communications, 1987, 1992.
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- Wardle, F. "Outdoor Play: Designing, Building, and Remodeling Playgrounds for Young Children," Web site article, <http://www.earlychildhood.com/Articles>

Example projects

Maurice Cody Public School, Toronto, Ontario (spiral garden): (416) 484-4080

Organizations and Web sites

Learning through Landscapes, England: www.ltl.org.uk
Michigan 4-H Children's Garden: <http://4hgarden.msu.edu>
Peterborough Ecology Garden, Peterborough, Ontario: www.greenup.on.ca
Spiral Garden and Cosmic Bird Feeder, Toronto, Ontario: (416) 425-6220 ext. 3317