The Canadian Cancer Society’s
SunSense Shade Planning Guide
Acknowledgements

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Preface

Exposure to ultraviolet radiation (UVR) without protection is known to be an important risk factor for skin cancer. Shade provides effective protection from the sun’s ultraviolet radiation. The use of effective shade is a significant component of a comprehensive approach to sun safety. As shade is a key element to reducing exposure to UVR, increasing awareness and access to shade can play an important role in the prevention of skin cancer.

Shade: A Planning Guide For Schools is a resource designed to promote the use of shade for sun protection among schools as well as individuals. This planning guide outlines the importance of shade and provides practical tools and information to help you plan for shade and create shaded areas.

In addition to this Guide, SunSense program tools and resources can be found at www.cancer.ca/sunsense including lesson plans, policy guide and parent education tools.

To learn more about skin cancer and how to reduce your risk, visit cancer.ca.
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The Outdoors and Sun Safety

Outdoor play and physical activity are essential to children’s health and development. This guide will help you to plan for and create shaded areas on school grounds. The use of effective shade will ensure safe outdoor play and learning experiences at school – every day, all year round.

Research indicates childhood exposure to ultraviolet radiation (UVR) is an important contributing factor to the development of skin cancer later in life. Given students are at school during the highest risk period of the day – between 11 a.m. and 3 p.m.– schools play a major role in both minimizing students’ exposure and positively influencing student behaviour by creating environments that reinforce healthy sun safe habits.

Sun exposure and skin cancer

Skin cancer is the most common type of cancer in Canada, and it is also one of the most preventable! While the cause of many cancers remains unknown, the reason for this common cancer is too much UVR exposure.

1 in 7 people will be diagnosed with skin cancer in their lifetime; however, we know that this disease is largely preventable. Exposure to UVR before the age of 18 puts people at the highest risk. Children and youth spend more time outside than adults do – in fact, 80% of people’s exposure to UVR occurs before the age of 18.

Staying inside is not the answer

Research confirms that there are compelling benefits to children playing and learning outdoors. By enhancing shade on school grounds and play areas, children can enjoy a range of benefits associated with time in the outdoors while being sun safe. In addition to sun protection, shaded areas can also provide cooler areas during times of extreme heat as well as a comfortable outdoor learning environment.

Best Practices for Shade

There is no type of shade that is completely suitable for all situations, however for shade to be effective it needs to:

- Be comfortable to use and easy to access
- Protect against indirect ultraviolet radiation. This is UV radiation that is reflected from the ground, other surfaces or by particles in the atmosphere
- Provide protection at the right time of the day, at the right time of year
- Be sensitive to the surrounding environment
Planning for Shade

The planning stage of a shade project is crucial to the long-term success and impact of the project. The degree of planning involved will depend on the scope of the project and the proposed site. The planning process can take quite a bit of time and a phased-in approach may be needed to implement the plan.

There are several interrelated tasks involved in the planning process that should be taken regardless of the scale of the project:

Create a Shade Planning Team to coordinate the project

Identify any key stakeholder groups and include a representative from each group on the planning team. For most schools, stakeholders would include school administrators, school nurse, coaches, teachers, students, parents, groups that use the school grounds after hours, neighbours adjacent to the school. Consultation with school board administration as well as professionals in landscaping, architecture or horticulture may also be needed as you progress through the project, however engaging these individuals early can keep the project moving when their expertise is required.

Complete a Shade Audit

A shade audit is a tool you can use to identify how your outdoor space is used and whether the existing shade (natural or built) provides sufficient protection from ultraviolet radiation (UVR) for the users. A Shade Audit Tool is provided in Appendix A.

The shade audit will help the planning team understand how much shade is currently available on the school grounds and where more is needed. Before beginning the audit, it will be helpful to have a site plan of the school grounds drawn to scale. The audit could involve conducting interviews with stakeholders, observations of usage patterns of school grounds and taking measurements. Many resources are also available online that could assist you in conducting a shade audit.

Analyze the Shade Audit findings

Once the shade audit is complete analyze the quantity and quality of shade that is available on the school grounds and determine where additional shade is needed. Some questions to consider are whether the future growth of the trees will provide additional shade in the future, if any areas are protected from direct UVR but not protected from indirect/ reflected UVR and if there are any future building plans that might provide additional shade?

Develop an initial concept plan

Using your findings from the shade audit and analysis, develop a plan to create more shade. Use the site plan to indicate new structures, canopies, awning, trees etc. Consultation with professionals, such as landscape architects and horticulturalists, is advisable at this stage as they can provide valuable advice that could save time and money later on. A sample design concept plan can be found in Appendix B.
Define the project budget and determine funding sources

Once the plan is developed, a budget can be created to determine the expected costs to implement the plan. You may wish to also include any costs associated with the ongoing maintenance of the natural or built shade. To reduce costs, in-kind donations of labour or materials could be sought. The “Funding” section of this guide outlines ideas on how to acquire funds for the project.

Develop construction plans for any permanent shade structures

A construction plan will need to be drafted for any permanent structures that are included in the shade plan. Be sure to obtain the necessary permits and approvals that may be required depending on your municipality’s by-laws or school board policies. Consider also developing a maintenance plan that can be followed to ensure increased lifespan and structural integrity of the shade structure.

Arrange for purchase or contract with a builder/supplier

Supplies and materials will need to be purchased and depending on your shade solutions construction services may need to be contracted. Be sure to comply with school boards procurement policies if applicable.

Evaluate the effectiveness of the shade project

Once the shade plan is implemented, another shade audit can be conducted to determine if the goals of the initial shade audit have been met or if additional shade is required.
Types of Shade

Shade may be provided in the form of natural shade through the use of planted vegetation or by built shade structures that are either portable or permanent. To provide a shade solution specific to a site, consider professional consultation with local nurseries, landscape architects, arborists and/or architects.

Table 1: Comparison of shade types

<table>
<thead>
<tr>
<th>Type of Shade</th>
<th>Examples</th>
<th>Benefits</th>
<th>Drawbacks</th>
<th>Suppliers</th>
</tr>
</thead>
</table>
| Natural Shade (vegetation)  | Trees, Shrubs, Vines              | Can be very effective depending on the density of the foliage
Can offer seasonal variations in scent and colour
Aesthetically pleasing
Environmentally friendly | If newly planted, it may take years to reach maturity and provide adequate shade
Requires maintenance, especially for new trees
Some plants may be poisonous or attract bees/insects | Local nurseries and tree farms |
| Built Shade (Portable)      | Umbrellas, awnings, tent-like structures | Price can be reasonable
Ideal for locations like the beach, park
Can be adapted for use in a variety of situations
Readily available off the shelf. | Provides a temporary solution
Usually suitable for only one or a few people
Requires maintenance and possibly replacement in future. | Local businesses such as hardware stores and home stores
Shade manufacturers |
| Built Shade (permanent)     | Awnings, Pavillions, Gazebos, Pergolas and other Built structures | Provide a permanent solution
Can provide shade for a large number of people | Can be costly
Requires more extensive planning to implement
Requires maintenance | Local businesses such as hardware store and home stores
Shade manufacturers |
Reflection of UVR

When deciding to create a shaded area, consider that UVR is reflected and scattered by various surfaces and materials as well as particles in the atmosphere. Consider the following points:

- The further inward occupants are from the edge of the shade structure, the greater the protection provided from reflected UVR. This is helpful in deciding the size of your shade structure as well as the location of any playground equipment, tables etc. that may be placed under the shade structure. For example, the most popular play equipment should be placed in the centre of the shade structures as this is the area of maximum protection.

- Scattered and reflected UVR can be excluded by enclosing the sides of shelters. They can also be reduced with lower overhangs.

- Levels of reflected and scattered UVR can be reduced by choosing materials that have low reflection properties for the shade structure and for surrounding surfaces

To select materials that minimize reflected UVR, consider:

- Surface density – hard surfaces, such as pavement, or water bodies, reflect higher levels of UVR than softer surfaces, such as grass or soil

- Surface finish – smooth surfaces, such as metal sheeting and smooth concrete, reflect higher levels of UVR than coarse or varied surfaces, such as timber cladding, roof tiles or bring paving

Table 2: Ultraviolet Radiation Reflectance for School Grounds Surfaces

<table>
<thead>
<tr>
<th>Surface</th>
<th>UV Radiation Reflectance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass</td>
<td>1%- 4%</td>
</tr>
<tr>
<td>Still Water</td>
<td>3% - 8%</td>
</tr>
<tr>
<td>Soil</td>
<td>4% - 6%</td>
</tr>
<tr>
<td>Asphalt</td>
<td>4% - 9%</td>
</tr>
<tr>
<td>Concrete</td>
<td>7%-12%</td>
</tr>
<tr>
<td>Choppy Water</td>
<td>8% - 13%</td>
</tr>
<tr>
<td>Dry Sand</td>
<td>15%-18%</td>
</tr>
<tr>
<td>Fresh Snow</td>
<td>85%-88%</td>
</tr>
</tbody>
</table>
**Natural Shade**

Both deciduous trees (trees that lose their leaves every year) and coniferous trees (trees that maintain their leaves throughout the year) provide shade. The effectiveness of natural shade depends upon the density of the foliage (leaves).

Factors to consider when choosing to plant a tree for shade:

- Consider the size and shape of the tree at maturity.
  - A tall deciduous tree with a wide canopy of dense leaves will give you maximum shade in the summer while allowing the warming rays of the sun to come through in the winter.
  - Avoid trees with invasive roots and those that will grow too large for the area.
- Plant deciduous trees to the south and southwest of where you require shade.
- Assess the environment. Is it the correct climate and soil for the tree to thrive? Does the tree type match the current and future climate of the area.
- Review the planting guidelines – when and where to plant, how to prepare the site and tree for planting.
- Plan for regular tree care and maintenance – watering, fertilizing, pruning.

See Appendix C for further information on trees.

**Built Shade Structures**

Built shade areas can be portable or permanent. There are a variety of structures that can be used to provide shade. Portable or temporary structures can include umbrellas, awnings and tent-like structures. These structures can usually be bought off the shelf and are usually cost-effective. As they are portable they can be brought to events and activities that take place off school grounds (i.e. field trips, sports events). Some of the portable shade structures are small and therefore only provide shade for a small area. Permanent structures such as pavilions or gazebos are generally more expensive but are usually sturdy, can cover a large area and provide a permanent shade solution.

A well-constructed shade structure will result in shade that:

- Falls in the right places at the right times of day throughout the year
- Creates an outdoor space that is comfortable to use in all seasons
- Minimizes the impact of indirect ultraviolet radiation on the space
- Is attractive, practical and environmentally friendly

Other suggestions include:

- Choosing materials that will reduce reflectivity
- Ensuring shade structures are of adequate size
- Using barriers for side and overhead protection
- Extending overhead barriers past actual use area
- Optimizing use of existing shade (relocate picnic tables to shade, etc.)
- Taking into account water runoff from roofed structures to avoid water-related problems later
Safety Considerations

To ensure that structures are safe, make sure all structures conform to the current building codes. Be sure support systems, such as posts and guide ropes, are visible and do not create a trip hazard. Structures should be constructed of non-toxic materials.

Other factors to consider when selecting materials are:

- Maintenance requirements
- Waterproofing qualities
- Environmental consequences (extreme heat)
- Wind resistance
- Ease of placement
- Relative cost
- Ultraviolet protection factor of the material
- Durability and ability to withstand winter weather conditions.

Built Shade Materials

When choosing materials for built shade structures, it is important to be aware of the ultraviolet protection factor (UPF) of the materials. The UPF is a measure of the UVR protection provided by the material. The UPF measures the ability of the material to block UVR from passing through and reaching the skin. For example, a UPF of 50 allows only 1/50 or 2% of the UV radiation to pass through and make contact with the skin. Sun protection devices should have a UPF of 15-50+. It is important to note that as fabrics age and fade, the UPF will decrease. When purchasing shade products, find out the minimum UPF of the material, as many manufacturers will claim a material provides “up to” a certain UPF Level.

UPF 15-24 = GOOD    UPF 25-39 = VERY GOOD    UPF 40-50+ = EXCELLENT

Although many materials block the sun’s UVR, not all of them block enough to be classified as sun protection. Two factors that can affect UPF of the fabric are weave and colour of the material. Fabrics that have a tighter weave will block more UVR. Also, darker colours absorb more UVR and therefore provide better sun protection.
### Table 3: Factors to Consider with Built Shade Materials

<table>
<thead>
<tr>
<th></th>
<th>Glass</th>
<th>Polycarbonate and fibreglass sheeting</th>
<th>Canvas or other tightly woven cloth</th>
<th>Knitted polythene or woven PVC shade cloth</th>
<th>Timber</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitability</strong></td>
<td>Good windbreak where visibility and light is required</td>
<td>Roofing, walls, awnings, skylights, canopies</td>
<td>Good for small low budget projects</td>
<td>Canopies, awnings and tents</td>
<td>Pergolas, trellis, screens</td>
</tr>
<tr>
<td><strong>UVR Protection</strong></td>
<td>Depends on thickness. Window glass is typically not highly protective</td>
<td>Very high</td>
<td>Very high when new</td>
<td>Shade cloth rating of 90% give only medium UPF. Double knits may give higher protection</td>
<td>Direct barrier to UVR</td>
</tr>
<tr>
<td><strong>Waterproof</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, watertight up to a certain point</td>
<td>Porous – lacks rain protection</td>
<td>Depends on detailing and use</td>
</tr>
<tr>
<td><strong>Light Transmission</strong></td>
<td>High, depending on tint</td>
<td>High. Differs according to thickness, profile and colour</td>
<td>Light colours allow more light</td>
<td>Lighter colour allow more light to reflect and scatter more UVR</td>
<td>Depends on detailing</td>
</tr>
<tr>
<td><strong>Solar Heat Gain</strong></td>
<td>Less heat gain if tinted</td>
<td>High</td>
<td>Dark colours are warmer</td>
<td>Darker colours are warmer but reflect less UVR</td>
<td>Does conduct heat</td>
</tr>
<tr>
<td><strong>Lifespan</strong></td>
<td>Long, if it doesn’t sustain impact</td>
<td>About 10 years. Discolouration may occur sooner</td>
<td>Limited. Susceptible to breakdown due to UVR exposure</td>
<td>5-10 years</td>
<td>Long life if well maintained</td>
</tr>
<tr>
<td><strong>Maintenance requirements</strong></td>
<td>Needs regular cleaning</td>
<td>Low maintenance. Impact resistant</td>
<td>Is not mould resistant</td>
<td>Susceptible to mould growth and dirt pick up</td>
<td>Guard against termites. Maintenance painting needed</td>
</tr>
</tbody>
</table>
Funding

To implement a shade plan funding will likely be required. Costs can be reduced by securing in-kind donations of supplies and materials as well as volunteer labour. Other sources of funding may include:

- Sponsorships from local businesses or community service organizations
- Provincial Grants
- Fundraisers
- Support from environmental or community organizations
- In-kind advice from professionals (architects, horticulturalists etc.)

The following are grant opportunities that focus on environmental and greening initiatives, community projects or children and may be applicable to a shade project.

**TD – Friends of the Environment Foundation**
Contact your local TD Branch and ask for your Friends of the Environment Foundation representative. [www.fef.ca](http://www.fef.ca)

**Shell Canada – Shell in the Community**
Shell provides support in a variety of forms including funding to not for profit and local community organizations, donations to charitable organizations and grants to employees, retirees and retailer/agents giving back to their communities. [Shell.ca](http://Shell.ca)

**Tree Canada – Greening Canada’s School Grounds**
Tree Canada and its partners offer grants and technical and logistical support to encourage development of "green infrastructure". Over 600 schools have been greened since 2008 [treecanada.ca](http://treecanada.ca)

**Ontario Trillium Foundation**
The Ontario Trillium Foundation (OTF) is an agency of the Government of Ontario, and one of Canada’s leading granting foundations. OTF awards grants to projects that build healthy and vibrant communities in Ontario. [Otf.ca](http://Otf.ca)

**Canada Post Community Foundation**
Applications from registered charities, school programs or community organizations are invited for funding of projects consistent with the Foundation’s objective to provide support for initiatives that benefit children. [Canadapost.ca](http://Canadapost.ca)
SunSense Guidelines

While shade is an essential element of sun safety, it is important to combine it with other personal protection strategies that reduce exposure to UV radiation and reduce the risk of skin cancer.

There are five important sun safety behaviours to promote and build into school routines.

- **SEEK!** Seek shade or create your own where it is not available.
- **SLIP!** Wear loose clothes to cover your arms and legs.
- **SLAP!** A wide brim protects your ears, neck and face.
- **SLOP!** SPF 30 or higher to protect your skin.
- **SLIDE!** Protect your eyes.
Additional Resources

Canadian Cancer Society
www.cancer.ca
1-888-939-3333

Canadian Dermatology Association
www.dermatology.ca

Evergreen Foundation
www.evergreen.ca
1-888-426-3138

Ontario Horticultural Association
www.gardenontario.org

Ontario Ecoschools
www.ontarioecoschools.org

Environment Canada
www.weather.gc.ca

Health Canada
Appendix A: Shade Audit Tool

This shade audit tool has been adapted from Shade Audit Information Guide and Tool, A Guide for Creating Shade Outdoors, produced by the Waterloo Region Working Group.

**Step 1: Preparing for the shade audit**

The best time to conduct a shade audit is around noon on a clear, sunny day from the late spring through to the fall. It is helpful if the person conducting the shade audit is familiar with the site and its various daily uses.

**Instructions:**

- Print out a top-view site plan/map or sketch the site as your base map. A good way to get a base map is to visit Google Maps or Google Earth. These sources provide a free satellite image of the site which can be printed out.
- Mark where North is on the site plan.

**Step 2: Consider the Site Context**

**Instructions:**

- Consider the questions below to get to know the site’s context (people’s opinions which may include the general public or staff, site requirements etc.)
- This can be done without visiting the site and does not rely on observations.

**Context Questions:**

1. What are the opinions on the adequacy of existing shade and the need for new shade?
2. Are there long-term development plans for the site?
3. Are there any site design requirements (examples: berms, wind protections, setbacks)
4. Are there other considerations or concerns relating to shade?

<table>
<thead>
<tr>
<th>Consideration/Concern</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential vandalism</td>
<td></td>
</tr>
<tr>
<td>Liability</td>
<td></td>
</tr>
<tr>
<td>Durability</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
</tr>
<tr>
<td>Building restrictions</td>
<td></td>
</tr>
</tbody>
</table>
**Step 3: Observe and Evaluate the Site**

Complete the *Outdoor Space Summary Table* on page 22. This table will help to summarize the information you collect regarding the school grounds. Review the sections below to get an idea of what to put into the first three columns of the table.

**Observe how the site is used**
It is important to understand how the school grounds are used – what are the activities taking place, where do they take place and at what time? This information will help when prioritizing which activity zone to shade.

**Instructions:**

- Divide the site into activity zones based on all of the activities that take place from spring to fall (i.e. play equipment, sports fields, spectator stands, sitting areas, picnic areas, learning areas)
- On the site plan, label the different activity zones you have identified
- Record the activity zone on the Outdoor Space Summary Table – include details such as the type of user, what activity, time of day etc.
- Indicate in the table when the shade is required for the activity zone (morning, mid-day, afternoon or evening) based on when the zone is being used.

**Assessment of Shade**
Shade components include natural shade from woody vegetation such as trees and shrubs, human built shade structures and incidental shade from adjacent buildings or structures.

**Natural Shade**
When observing natural shade, note that only trees higher than 1.5m will provide effective UVR protection. Short shrubs don’t generate much shade but can help reduce indirect UVR.
Instructions:

- Draw on your site plan each tree or group of trees that are present on the site
- Record in the Outdoor Space Summary Table:
  - Type of tree - is it coniferous (evergreen) or deciduous (leafy)?
  - The time of day the tree provides shade over the activity zone
  - Status of the tree – will it grow much larger?
  - Is it healthy or will it need to be replaced?
  - Shade density – look at the shade on the ground. Does it provide full shade coverage or is there still a lot of light on the ground.

Built Shade

Examples of built shade include trellises, pergolas, overhangs, awnings, canvas shade structures or any human built structure that provides shade.

Instructions:

Add any labels and drawings on to your site plan to correspond with built shade structures that are present.

For all built shade structures, record in the Outdoor Space Summary Table:

- Whether the shade materials block out UVR
- The condition of the shade structure, including any visible signs of damage
- If it can be climbed onto easily and any other potential safety hazards.
- Any barriers to use

Reflective surfaces

UV radiation can reflect off surfaces and reach the skin from all directions. Smooth, shiny and light- coloured surfaces such as snow, water bodies, metal and concrete reflect the most amount of UVR. Although someone may be standing in the shade of a tree or structure, they may still be receiving dangerous amount of UVR.

Instructions:

- In the Outdoor Space Summary Table, record what is used for the ground surface and any other reflective surfaces in that activity zone.
**Step 4: Envision a Solution**

Now that you have a good idea of the activities that take place on the site and the amount of shade present, you can plan to improve the amount of UVR protection.

**Prioritizing the activity zone**
It is important to decide before envisioning a shade solution(s) whether or not this activity zone is a priority for your site.

**Instructions:**
- Using the considerations below, rank the activity zone priority level (high, medium, low).
- Record this the Outdoor Space Summary Table and include a rationale for the priority level.

**Some considerations when prioritizing activity zones include:**
- Is the activity zone being used?
- Who is using the space? Are they a vulnerable population with increased risk for skin damage (i.e. children)
- How many people are typically using the zone?
- The time the activity occurs – are they during peak UV times?
- Is there enough shade for all the people participating in the activity?
- Is the shade adequate, does it provide enough protection?

**Shade solution ideas**
Your shade solution ideas can use existing shade or create new shade. Refer to your site plan to see whether your shade solution is possible.

**Instructions:**
- Using the Outdoor Space Summary Table, fill out your shade solution ideas for each activity zone – circle solutions that you feel are feasible or can provide the biggest impact for this activity zone.
- Draw any solution (natural shade or built structure) on your site plan (it may be helpful to use a different colour to identify is as a future solution)

**Step 5: Plan for Shade**

Now that you have come up with your potential shade solutions and determined which are most feasible and impactful, it is time to determine your next steps to make your shade solutions a reality.

Fill out the following table and consider that questions below to help you. The first row is completed as an example.
<table>
<thead>
<tr>
<th>Shade Solution</th>
<th>Cost</th>
<th>Funding Source</th>
<th>Buy-in required? By Whom? Approvals?</th>
<th>Maintenance Plan</th>
<th>Target date for completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant 2 deciduous trees to south side of play structure</td>
<td>$1000</td>
<td>Apply to community environment fund</td>
<td>School</td>
<td>Tender landscape company to maintain for 2 years Apply protective tree wrapping</td>
<td>Trees planted by May 2019</td>
</tr>
</tbody>
</table>
Questions to assist you in creating your shade plan:

**Shade Solution**
Which shade solutions are you going to select?
Are these shade solutions in line with existing policies, guidelines or criteria set by your school or school board?

**Cost/Funding**
How will you get funds? Who are the funders?
What are the timeline implications from funders? Are they reasonable?

**Buy-in Required?**
Who needs to agree to this/whose buy-in do you need?
How will you make the case for this shade solution?
Who are your potential partners?
Do you require approvals from any specific group or authority? (i.e. building or planning department)

**Maintenance Plan**
How will you maintain these trees or built structures?
Who will be responsible for maintenance?
How will maintenance costs be funded?
**Outdoor Space Summary Table**

Use this table to complete the steps listed in the Shade Audit Tool. The first row has been completed as an example.

<table>
<thead>
<tr>
<th>Activity Zones (play structure, picnic area etc.)</th>
<th>Assessment of Shade (current status)</th>
<th>Reflective surfaces nearby</th>
<th>Priority for shade and shade solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone: play structure</td>
<td>Natural Shade</td>
<td>Ground Surface</td>
<td>Priority</td>
</tr>
<tr>
<td>Users: children, caregivers</td>
<td>Provides shade over activity zone</td>
<td>Grass, sand</td>
<td>High</td>
</tr>
<tr>
<td>When is this area used?</td>
<td>Status of Tree</td>
<td>Other:</td>
<td>Medium</td>
</tr>
<tr>
<td>✓ Morning</td>
<td>✓ New</td>
<td>Plastic play equipment, low shrubs (east side)</td>
<td>Low</td>
</tr>
<tr>
<td>✓ Mid-day</td>
<td>✓ Morning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Afternoon</td>
<td>✓ Mid-day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Evening</td>
<td>✓ Afternoon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shade Density</td>
<td>No trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Morning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mid-day</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Afternoon</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Healthy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not healthy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built Shade</td>
<td>Heavy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Priority**

- ✓ High
- □ Medium
- □ Low

**Why?** Most used space on school yard during UV peak times – vulnerable users

**Is shade adequate?**

- □ Yes
- ✓ No

**Will tree growth provide enough shade in 10+ years?**

- □ Yes
- ✓ No

**Shade Solution ideas**

*Plant deciduous trees south & west of structure. Break play structure into separate smaller zones, plant trees between. Move benches to southwest end.*
<table>
<thead>
<tr>
<th>Zone: Users:</th>
<th>Natural Shade</th>
<th>Ground Surfaces</th>
<th>Priority</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>When is this area used?</td>
<td>No trees</td>
<td>Provides shade over activity zone</td>
<td>High</td>
<td>Is shade adequate?</td>
</tr>
<tr>
<td>✓ Morning</td>
<td>Trees</td>
<td>Morning</td>
<td>Medium</td>
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</tr>
<tr>
<td>✓ Mid-day</td>
<td></td>
<td>Mid-day</td>
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<td>No</td>
</tr>
<tr>
<td>✓ Afternoon</td>
<td></td>
<td>Afternoon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Evening</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Healthy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not healthy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shade Density</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium</td>
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<tr>
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<td>Light</td>
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</tr>
<tr>
<td></td>
<td>N/A</td>
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<td></td>
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</tr>
<tr>
<td>Built Shade</td>
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</tbody>
</table>

Is shade adequate?
- Yes
- No

Will tree growth provide enough shade in 10+ years?
- Yes
- No

Shade Solution ideas
<table>
<thead>
<tr>
<th>Zone: Users: When is this area used?</th>
<th>Natural Shade</th>
<th>Ground Surfaces</th>
<th>Priority</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Morning ✓ Mid-day ✓ Afternoon ✓ Evening</td>
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</tr>
<tr>
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<td>Is shade adequate?</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>□ Yes □ No</td>
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<td>Natural Shade</td>
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<td>Priority</td>
<td>Why?</td>
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<td>Trees</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
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<td>Mid-day</td>
<td>Afternoon</td>
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<td>No</td>
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<td>✓ Evening</td>
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<tr>
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<td>Healthy</td>
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<td>✓ Established</td>
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<td>Yes</td>
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<td>Not healthy</td>
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</tr>
<tr>
<td>Shade Density</td>
<td>Heavy</td>
<td>Medium</td>
<td>Light</td>
<td>Shade Solution ideas</td>
</tr>
<tr>
<td>✓ Heavy</td>
<td>✓ Medium</td>
<td>Light</td>
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<td>Ground Surfaces</td>
<td>Priority</td>
<td>Why?</td>
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<td>---</td>
<td>---</td>
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<td>---</td>
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</tr>
<tr>
<td>When is this area used?</td>
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<td>Other:</td>
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<td>□ Yes □ No</td>
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<tr>
<td></td>
<td>□ Heavy □ Medium □ Light □ N/A</td>
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Appendix B: Concept Plan
(source: Shade for Kids Fact Sheet 5: Designing for shade on your school grounds. Toyota/Evergreen.)
# Shade Tree List
A Supplement to the Shade Audit Guide + Tool

<table>
<thead>
<tr>
<th>Shade Density</th>
<th>Tree Name</th>
<th>Height</th>
<th>Maturity Spread</th>
<th>Root Spread</th>
<th>Heat tolerant</th>
<th>Drought tolerant</th>
<th>Tolerates air pollution</th>
<th>Tolerates poor soil</th>
<th>Suitable for urban settings</th>
<th>Tolerates disease and pests</th>
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</thead>
<tbody>
<tr>
<td>HEAVY SHADE</td>
<td>Red Oak</td>
<td>25</td>
<td>20 to 25 metres</td>
<td>15 to 25 metres</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Sugar Maple</td>
<td>20</td>
<td>15 to 25 metres</td>
<td>10 to 20 metres</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td></td>
<td>White Oak</td>
<td>15</td>
<td>10 to 20 metres</td>
<td>10 to 20 metres</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>MEDIUM SHADE</td>
<td>Acer saccharinum</td>
<td>12</td>
<td>10 to 20 metres</td>
<td>10 to 20 metres</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Bur Oak</td>
<td>10</td>
<td>8 to 10 metres</td>
<td>8 to 10 metres</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

These trees have been selected for the shade they can provide, their large stems, their ability to adapt to climate change, and their resistance to disease and pests. This list is not intended to be comprehensive.
References

1 Cancer.ca
2 NSW Health – Public Health Bulletin, March 2001
3 Shade Audit and Tool, Region of Waterloo Public Health
4 Shade Planning for America’s Schools, Centre for Disease Control, USA
5 Under Cover: Guidelines for Shade Planning and Design
6 Shade Planning for America’s Schools – Centre for Disease Control, USA