

Project Name: Discovery Play, Wrapping Education in Nature University of Guelph Group 1 Submission

PROJECT NARRATIVE

Design Proposal

This design is focusing on Nature as the theme to inspire the plan for Archbishop O'Sullivan School grounds. The site has an amazing mature forest in the back of the school, where children have use of existing play equipment and can interact with the forest environment. There are areas in the school yard, suggested by teachers and staff that require attention, such as the kindergarten area which needs shade and some separation from the noise and impact of the arterial road. The children gave excellent feedback, explaining what works and what doesn't work in their school grounds. They have a simple list of asks: more play elements, seating, outdoor panels for music and art, opportunities for climbing, pollinator gardens and habitat for wildlife. The forest is an area encouraging wildlife habitat and children to interact with nature. The portable is surrounded by asphalt and some planting would make the space more inviting.

This design addresses the entire site, working with the existing features and natural areas. We have listened to the ideas expressed by the students, teachers, staff and school board members. Here are some of the things that we heard....

- Climbing, swinging play elements
- Panels for music and art
- Quiet Areas
- Seating, Picnic Tables
- Pollinator Plants
- Habitat for wildlife
- Accessibility
- Shelter and Shade
- Improved sports arrangement
- Improve site drainage

With this project we are using the theme of Nature as our inspiration, drawing the students and teachers to interact with the natural environment, appealing to the five senses and encouraging habitat for birds, pollinators and small mammals. The plan

incorporates native, drought resistant planting which will be used throughout the site providing unity and incorporating all the senses. Some of the play elements proposed are climbing teepees for varied ages, live domes for quiet play, nature and shelter. These have been used throughout the school grounds, which also provides unity and a way to incorporate nature with play. By using simple materials and cost effective approaches, the plan has addressed some of the areas of concern and provided varied play and educational opportunities.

Kindergarten Area:

This will be Phase One, which uses budget friendly methods to rejuvenate the kindergarten play area. The plan incorporates berms and planting to provide separation from the busy street outside the fence, while creating an intriguing play circuit with bridges for connectivity. The design uses natural upright logs, and half sawn log benches, which can be used for play and seating. The logs circle an outdoor classroom, with compacted granitic sand. This surface will be accessible for students with limited mobility.

Some of the new play elements in this area include musical panels, art boards, and a small climbing teepee. The fence will be moved to the corner of the portable building and the soccer posts will be removed. The play elements and planting appeal to sight, sound with musical panels, touch with soft planting, scent, and taste through edible saskatoon berries. The planting uses colour, size, texture, interesting seed heads, shape and touch to appeal to children, while supporting wildlife.

Forest Area:

The forested area at the back of the school will be Phase Two. This area is already a natural habitat for insects, birds and small mammals; by incorporating 'habitat logs', bird houses and student planting areas, interaction with nature will be encouraged. The ground under the trees is compacted, with many exposed roots, creating trip hazards. Using bark mulch under the trees is a cost-effective method to provide an organic, moisture retentive, spongy surface for running and walking. Planting under the trees and at the back of the fence with drought resistant native shrubs, perennials, ferns and grasses will provide flowers, berries and seeds for birds, native insects, larval hosts, and small mammals. There are opportunities for class programming by

studying the habitat logs, building and painting bird and bug houses, and learning about the varied wildlife and food web.

A circuit through the trees has been designed to protect the trees and provide connection to the play zones and an outdoor classroom area. The outdoor classroom uses flat topped boulders, upright logs and log benches for play and seating. In the future this existing sand area can be surfaced with compacted granitic sand for accessibility. An accessible play area has been added, which is close to two exits on either side of the school. A compacted granitic sand path can be added in future phases to add accessibility to the southeast area of the yard.

The practical concern in this area was to address drainage coming from the sports fields and asphalt basketball court. The design has incorporated rain garden style planting pockets to collect, filter and slow water to a grassed swale directing water to another bioswale towards back of forest. Simple wooden bridges will allow students to walk between areas and provide an interesting circuit. The existing boulder wall directs drainage away from adjacent properties, additional planting at the back of the fence will absorb water. A portion of asphalt path with culvert will be removed and a bridge added, improving the flow of debris and spring water. The bridge will provide an opportunity for students to observe the flow of water.

Rain gardens will use native plants that are able to withstand inundation and drying out. The planting is practical, but is also beautiful, attracting butterflies, native bees and birds.

Sports Area:

We heard a lot of feedback from the students about this area. They wanted some of the limestone surfacing to be removed, new soccer nets, the basketball rearranged so it doesn't compete with the foursquare play area and improved drainage. By removing the hard limestone screenings more turf area can be added for soccer, which allows more planting in the northeast corner. The design has incorporated live domes with vines for quiet play and shelter. Plantings in this area will encourage birds and native pollinators.

This area also has opportunities for winter activities. A berm has been added to create a small sledding hill. The berm will have a focal evergreen tree which can be decorated for the holidays. Evergreen trees will also be added to the fence line to provide separation from the neighbouring townhouse complex and help stop potential soccer balls from going over the fence.

The Portable Area:

Currently the area is barren and separated from the surrounding school site. The plan has integrated the existing play structure within a garden with trees for shade and cover. The garden is inspired by Japanese Zen Garden style and will provide a meditative and sheltering space with sand, and areas of ground cover of creeping thyme and chamomile. Linden trees will be planted to provide scent, attract pollinators and provide shade. The tough perennial ground covers are able to withstand foot traffic and are also edible and release scent when stepped on. A winding path will be added leading to the back of the portable through the garden area. There will be an opportunity to respond and interact with nature with plants used in other areas of the school yard, designed to attract birds, pollinators, butterflies and small mammals.

Design Criteria:

- Interactivity
 - How do we attract interaction with Nature
 - Five Senses:
 - Smell: Flowers, Evergreens, Ground Covers, Herbs
 - Sight: Colorful Bird houses (Children Painted), Noticing wildlife through attracting wildlife, bees, butterflies and observing changes in Habitat logs,
 - Touch: Soft & Prickly Plants, Water, Rocks, interactive panels
 - Hearing: Musical Panels, Birds
 - Taste: Edible Plants Berries, Herbal Plants, Picnic Tables for lunch
 - Wildlife Interaction: Habitat Logs, Bird Houses, Bird Feeders, Bug Houses, Tree Name Signs, Rain Garden
 - Attract Wildlife: through native plants designed to attract a variety of birds, butterflies, native bees, small mammals
 - Accessibility: Kindergarten outdoor class, Forest Play Area, outdoor class, paths
- Participatory Design
 - School community
 - Children
 - Teachers

- Board
 - Maintenance
- Wildlife Habitat
 - Native wildlife: planting
 - Provides educational opportunities within habitat
 - Beautiful, creative
 - Educational Programming
- Water Use
 - Management of water: rain garden, grass swale, bioswale
 - Interaction, Educational Opportunities: Habitat Logs, Wildlife and plant interaction food web, teaching about bioswales, how they work
 - Habitat
 - Plants
 - Interaction by noticing increased birds, butterflies, small mammals
 - Bridge over the bioswale, and path
 - Play
- Budget includes cost estimate
 - Practical grasp of materials
 - Ways to save money: cost effective materials
 - Berms, logs, sand, bark mulch, planting
 - Phase one Kindergarten, rearrange basketball and foursquare
 - Phase two Forest
 - Key Elements:
 - Phase three: Sports Area, removing limestone screenings, repairing turf, potential running track
 - Phase four: Portable Area, cutting asphalt, repairing asphalt surface, extra paths: portable, forest accessible path, extend path in front of school to drive lane, permeable paving areas
 - Phase five: Planting for front of school

Appendix One - Cost Estimate

Appendix Two - Planting Lists per area

Archbishop O'Sullivan Catholic School
Come Alive Outside - Eco-Education Design

University of Guelph - Team 1

Date: 30-Nov-19



ITEM NO.	DESCRIPTION OF WORK	UNIT	QUANTITY	PRICE	AMOUNT
ZONE 1 - KINDERGARTEN					
1.0	Site Preparation				
1.1	Relocation of Fence	m2	1	\$2,000.00	\$2,000.00
1.2	Topsoil for Planting Beds - supply and install (450mm depth)	m2	150	\$14.00	\$2,100.00
1.3	Topsoil for Trees - supply and install (1000mm depth)	m2	5	\$32.00	\$160.00
1.4	Soil for Berm - supply and install	m3	35	\$14.00	\$490.00
1.5	Compacted Granitic Sand - supply and install	m2	80	\$38.00	\$3,040.00
2.0	Softscape				
2.1	Turf (Seed) - allowance - to be used in bare spots - supply and install	m2	100	\$2.50	\$250.00
2.2	Tree - 50mm Cal. Or 2.5m Ht.	ea.	5	\$500.00	\$2,500.00
2.3	Planting Bed - Assorted planting in beds based on recommended plant list	m2	150	\$45.00	\$6,750.00
2.4	Bark Mulch for Planting Beds - supply and install 100mm depth	m2	150	\$14.00	\$2,100.00
3.0	Amenities and Site Furnishings				
3.1	Wooden Bridge - supply and install	ea.	2	\$500.00	\$1,000.00
3.2	Stump Seating at Assorted Heights - supply and install	ls.	1	\$500.00	\$500.00
3.3	Log Seating - supply and install	ea.	5	\$50.00	\$250.00
3.4	Outdoor Chalk Boards - supply and install	ea.	2	\$400.00	\$800.00
3.5	Sound Equipment - supply and install	ea.	1	\$1,500.00	\$1,500.00
3.6	Climbing Teepee - supply and install	ea.	1	\$1,500.00	\$1,500.00
3.7	Live Dome - supply and install	ea.	1	\$1,500.00	\$1,500.00
3.8	Outdoor Storage - supply and install	ea.	1	\$1,500.00	\$1,500.00
ZONE 1 - KINDERGARTEN TOTAL:					\$27,940.00
PHASE 2 - TREE STAND - GRADES 1 - 8					
4.0	Site Preparation				
4.1	Compacted Granitic Sand - supply and install in accessible play area	m2	60	\$38.00	\$2,280.00
5.0	Softscape				
5.1	Planting Bed - Assorted planting in beds based on recommended plant list	m2	200	\$45.00	\$9,000.00
5.2	Bark Mulch for Planting Beds - supply and install 100mm depth	m2	400	\$14.00	\$5,600.00
6.0	Amenities and Site Furnishings				
6.1	Wooden Bridge - supply and install	ea.	2	\$500.00	\$1,000.00
6.2	Armor Stone - supply and install in outdoor classroom	ea.	6	\$500.00	\$3,000.00
6.3	Log Seating - supply and install	ea.	10	\$50.00	\$500.00
6.4	Accessible Play Panels - supply and install	ea.	2	\$1,500.00	\$3,000.00
6.5	Climbing Teepee - supply and install	ea.	2	\$1,500.00	\$3,000.00
6.6	Live Dome - supply and install	ea.	2	\$1,500.00	\$3,000.00
6.7	Bird Houses - supply and install	ea.	5	\$100.00	\$500.00
PHASE 2 - TREE STAND - GRADES 1 - 8:					\$30,880.00

ITEM NO.	DESCRIPTION OF WORK	UNIT	QUANTITY	PRICE	AMOUNT
PHASE 3 - SPORTS FIELD & ASPHALT PAD					
7.0	Site Preparation				
7.1	Relocation of Soccer Goal Posts	ea.	2	\$2,000.00	\$4,000.00
7.2	Relocation of Basketball Hoops	m2	2	\$2,000.00	\$4,000.00
7.3	Asphalt Paint	m2	1	\$2,000.00	\$2,000.00
7.4	Soil for Berm - supply and install	m3	110	\$14.00	\$1,540.00
7.5	Topsoil for Seed - soccer field rehabilitation - supply and install (150mm depth)	m2	750	\$5.50	\$4,125.00
7.6	Topsoil for Trees - supply and install (1000mm depth)	m2	1	\$32.00	\$32.00
8.0	Softscape				
8.1	Turf (Seed) - soccer field rehabilitation - supply and install	m2	750	\$2.50	\$1,875.00
8.2	Tree - supply and install 50mm Cal. Or 2.5m Ht.	ea.	1	\$500.00	\$500.00
8.3	Bark Mulch - Tree Wells- supply and install 100mm depth in wells	m2	1	\$14.00	\$14.00
9.0	Amenities and Site Furnishings				
9.1	Picnic Table - supply and install	ea.	2	\$1,000.00	\$2,000.00
PHASE 3 - SPORTS FIELD & ASPHALT PAD:					\$20,086.00
PHASE 4 - PORTABLE					
10.0	Site Preparation				
10.1	Removals - Asphalt Removal	ls.	1	\$5,000.00	\$5,000.00
10.2	Topsoil for Planting Beds - supply and install (450mm depth)	m2	130	\$14.00	\$1,820.00
10.3	Topsoil for Tree Wells - supply and install (1000mm depth)	m2	5	\$32.00	\$160.00
10.4	Zen Garden Sand - supply and install in accessible play area	m2	40	\$38.00	\$1,520.00
11.0	Softscape				
11.1	Tree - 50mm Cal. Or 2.5m Ht.	ea.	5	\$500.00	\$2,500.00
11.2	Planting Bed - Assorted planting in beds based on recommended plant list	m2	130	\$45.00	\$5,850.00
11.3	Bark Mulch for Planting Beds - supply and install 100mm depth	m2	130	\$14.00	\$1,820.00
12.0	Amenities and Site Furnishings				
12.1	Stump Seating at Assorted Heights - supply and install	ls.	1	\$500.00	\$500.00
PHASE 4 - PORTABLE TOTAL					\$19,170.00
PHASE 1 TOTAL:					\$27,940.00
PHASE 2 TOTAL:					\$30,880.00
PHASE 3 TOTAL:					\$20,086.00
PHASE 4 TOTAL:					\$19,170.00
ARCHBISHOP O'SULLIVAN CATHOLIC SCHOOL TOTAL:					\$98,076.00

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
Kindergarten Area:	Native, Sunny, drought tolerant planting		
<i>Deciduous Trees</i>			
Acer rubrm	Red Maple	sight	
Sorbus americana	American Mountain Ash		FL Bees, Berries: Birds
Tilia americana	Basswood	scent	Bees nicknamed the Bee tree
<i>Shrubs</i>			
Amelanchier alnifolia	Saskatoon	taste	berries, bees
Ceanothus americanus	New Jersey Tea		bees, larval host, nitrogen fixing
Corylus avellana 'Contorta'	Corkscrew Hazlenut	soft	unusual shape, birds, small animals
Juniperus communis 'Repanda'	Repanda Juniper	scent, prickly	blue berries
Physocarpus opulifolius	Ninebark		bees, birds, larval host
<i>Perennials & Grasses</i>			
Allium cernuum	Nodding Onion	scent pungent	bees
Antenaria neglecta	Pussytoes	touch, fuzzy	butterflies
Asclepias tuberosa	Butterfly Milkweed		butterflies
Aster laevis	Aster		
Echinacea purpurea	Coneflower		butterflies, bees
Fragaria virginiana	Wild Strawberry	taste	berries
Heliopsis helianthoides	False Sunflower	sight	very tall, bright
Lunaria annua	Money Plant	touch	interesting seed heads, self seeds
Monarda fistulosa	Beebalm	scent	bees, butterflies
Penstemon hirsutus	Hairy Beardtongue		hummingbirds, native bees
Stachys lanata	Lamb's Ears	touch, soft	butterflies
Verbena stricta	Vervain		
Pennisetum alopecuroides	Dwarf Fountain Grass	touch, soft	
Schizachyrium scoparium	Little Bluestem	touch	
Sorghastrum nutans	Indian Grass		

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
Forest Area:	Native, Part Sun/Shade, drought tolerant		
Deciduous Trees			
Acer pensylvanicum	Striped Maple		understory tree
Shrubs			
Cornus stolonifera	Red Osier Dogwood		birds
Corylus americana	American Hazelnut	taste edible nuts	birds, sm. Mammals
Thuja occidentalis, cultivars	White Cedar	scent	
Viburnum carlesii	Korean Spicebush	very fragrant	butterflies, early flowering
Viburnum dentatum, dwarf variety	Arrowwood		birds
Viburnum lentago	Nannyberry		birds
Perennials & Ferns			
Allium cernuum	Nodding Onion	scent pungent	bees
Aster laevis	Aster		
Campanula americana	Tall Bellflower		
Heliopsis helianthoides	False Sunflower	sight	very tall, bright
Hosta spp	Hosta		
Maianthemum stellatum	Starry False Solomon's Seal		
Monarda fistulosa	Beebalm	scent	bees, butterflies
Penstemon digitalis	Foxglove Beardtongue		hummingbirds, native bees
Tradescantia ohioensis	Ohio Spiderwort		native bees
Pteridium aquilinum	Western Brackenfern		
Forest Area:	Native, Shade, drought tolerant		
Shrubs			

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
Cornus alternifolia	Pagoda Dogwood		larval host, native bees
Cornus stolonifera	Red Osier Dogwood		birds
Hammemalis virginiana	Witch Hazel	scent, sweet	moths, insects
Ribes americanum	Black Currant	edible	berries, birds
Rubus odoratus	Flowering Raspberry	edible, sweet	berries, birds
Perennials & Ferns			
Anemone Canadensis	Canada Anemone		
Asarum canadense	Wild Ginger	scent	unusual flower
Aster macrophyllus	Large Leaf Aster		butterflies, larval host
Aquilegia canadensis	Canadian Columbine		hummingbirds
Frageria virginiana	Wild Strawberry	edible	berry
Geranium maculatum	Wild Geranium	scent	native bees, larval host
Hosta spp	Hosta		
Polygonatum biflorum	Solomon's Seal		
Phlox divarcata	Wild Blue Phlox		butterflies, sm. Mammals
Solidago flexicaulis	Zig Zag Goldenrod		butterflies, birds, native bees
Adiantum pedatum	Northern Maidenhair Fern		
Polystichum acrostichoides	Christmas Fern		Insects
Elymus hystrix	Bottlebrush Grass		birds
Rain Garden	Part sun/Part shade		
Allium cernuum	Nodding Onion		bees
Asclepias incarnata	Red Milkweed		butterflies
Aster novae-angliae	New England Aster		
Baptisia lactea	White False Indigo		
Eupatorium maculatum	Joe Pye Weed		bees
Carex pendula	Drooping Sedge		birds
Carex vulpinoidea	Fox Sedge		
Iris siberica	Siberian Iris		
Iris versicolor	Blue Flag Iris		

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
<i>Liatris pycnostachya</i>	Prairie Blazing Star		bees, butterflies
<i>Penstemon digitalis</i>	Foxglove Beardtongue		hummingbirds, native bees
<i>Ratibida pinnata</i>	Yellow Coneflower		butterflies
<i>Salix repens</i> var. <i>argentea</i>	Creeping Willow	soft	
<i>Solidago</i> spp	Goldenrod		bees, butterflies
<i>Veronica missurica</i>	Ironweed		
Rain Garden	Shade		
<i>Aquilegia canadensis</i>	Canadian Columbine		hummingbirds
<i>Chelone glabra</i>	White turtlehead		butterflies
<i>Hosta</i> spp	Hosta		
<i>Mertensia virginica</i>	Virginia Bluebells		
<i>Osmunda cinnamomea</i>	Cinnamon Fern		
<i>Polemonium reptans</i>	Jacobs Ladder		
<i>Polygonatum</i> sp.	Solomon's Seal		
<i>Polystichum acrostichoides</i>	Christmas Fern		
	Ferns various		
Sports Area	Native, Sunny, drought tolerant planting		
<i>Coniferous Trees</i>			
<i>Abies balsamea</i>	Balsam Fir	scent, soft	planted in berm
<i>Juniperus virginiana</i>	Eastern Red Cedar	scent	
<i>Picea glauca</i>	White Spruce	scent, prickly	
<i>Pinus strobus</i>	White Pine	scent, soft	
<i>Deciduous Trees</i>			
<i>Acer rubrum</i>	Red Maple	sight	birds, sm. Mammals
<i>Sorbus americana</i>	American Mountain Ash		FL Bees, Berries: Birds
<i>Tilia americana</i>	Basswood	scent	Bees nicknamed the Bee tree

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
<i>Shrubs</i>			
Amelanchier alnifolia	Saskatoon	taste	berries, bees
Ceanothus americanus	New Jersey Tea		butterflies, bees, larval host, nitrogen fixin
Corylus avellana 'Contorta'	Corkscrew Hazlenut	soft	unusual shape, birds, small animals
Juniperus communis 'Repanda'	Repanda Juniper	scent, prickly	blue berries
Physocarpus opulifolius	Ninebark		bees, birds, larval host
Viburnum carlesii	Korean Spicebush	very fragrant	butterflies, early flowering
Portable Area:	Native, Sunny, drought tolerant planting		
<i>Deciduous Trees</i>			
Acer rubrum	Red Maple	sight	birds, sm. Mammals
Sorbus americana	American Mountain Ash		FL Bees, Berries: Birds
Tilia cordata	Little Leaf Linden	scent	Bees nicknamed the Bee tree
<i>Coniferous Trees</i>			
Juniperus virginiana	Eastern Red Cedar		
<i>Shrubs</i>			
Amelanchier alnifolia	Saskatoon	taste	berries, bees
Ceanothus americanus	New Jersey Tea		butterflies, bees, larval host, nitrogen fixin
Corylus avellana 'Contorta'	Corkscrew Hazlenut	soft	unusual shape, birds, small animals
Juniperus communis 'Repanda'	Repanda Juniper	scent, prickly	blue berries
Physocarpus opulifolius	Ninebark		bees, birds, larval host
Viburnum carlesii	Korean Spicebush	very fragrant	butterflies, early flowering
<i>Perennials & Grasses</i>			
Allium cernuum	Nodding Onion	scent pungent	bees
Antennaria neglecta	Pussytoes	touch, fuzzy	butterflies
Asclepias tuberosa	Butterfly Milkweed		butterflies
Aster laevis	Aster		
Echinacea purpurea	Coneflower		butterflies, bees

PLANTING SUGGESTIONS BY AREA:

University of Guelph, Group 1

LATIN NAME	COMMON NAME	SENSE	WILDLIFE VALUE
Erigeron karvinskianus	Fleabane		
Fragaria virginiana	Wild Strawberry	taste, sweet	berries
Lunaria annua	Money Plant	touch	interesting seed heads, self seeds
Monarda fistulosa	Beebalm	scent	bees, butterflies
Penstemon hirsutus	Hairy Beardtongue		hummingbirds, native bees
Stachys lanata	Lamb's Ears	touch, soft	butterflies
Verbena stricta	Vervain		
Pennisetum alopecuroides	Dwarf Fountain Grass	touch, soft	
Herbs			
Thymus praecox	Creeping Thyme	scent, edible	lawn substitute
Chamaemelum nobile 'Treneague'	Roman Chamomile	scent, edible	lawn substitute
Origanum 'Amethyst Falls'	Ornamental Oregano	scent	
Origanum vulgare	Italian Oregano	scent, edible	
Live Domes:			
Vines	Full Sun/Pt. Shade, drought resistant		
Celastrus scandens	American Bittersweet		birds, sm. Mammals
Clematis virginiana	Virgin's Bower		native bees, birds
Lonicera sempervirens	Coral Honeysuckle		hummingbirds, butterflies
	Shade, drought resistant		
Parthenocissus quinquefolia	Virginia Creeper		birds
Aristolochia durior	Dutchman's Pipe		larval host