

A GROWING

And
CONNECTED FUTURE:

EXPOSING YOUTH TO NATURE THROUGH
EDUCATION

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“What can be said truthfully is that some knowledge is increasing while other kinds of knowledge are being lost.”

– David W. Orr, p. 9

• ABSTRACT

Our Human connection to the Earth and its living species has become withdrawn from our daily lifestyles and has been taken for granted over the passing years with ever-increasing technological advancements. This so-called technological advancement has provided conveniences, which have pulled people indoors and drawn them to the computer resulting in an unhealthy lifestyle. Christopher Brandlin (2011) discussed the variety of ways human health has been affected by technology. A few of the effects noted by Brandlin were obesity, lack of Vitamin D, high blood pressure, and heart disease. Through activity, outdoor interaction, and the development of an understanding of our critical relationship to other living species, physical and psychological health can be improved. Many of today's youth have lacked a physically active and outdoor interactive lifestyle due to the technological gadgets they have at their fingertips.

A Growing and Connected Future: Exposing Youth to Nature Through Education is a design practicum that poses the following question: *Using an open space network, how can the community, specifically High School youth, be integrated into a healthy lifestyle, and enrich Dryden High School's outdoor programs?* To address this question,

this document has included an overview of the Biophilia Hypothesis and the health benefits that arise from the practice of this concept. Learning styles have been broken down to specific gender needs that influenced aspects of the proposed design. Dryden High School's outdoor programs have been addressed and proposals were made to expand this area of the curriculum. Lastly, examples of successful active transportation routes were examined and incorporated into Dryden's existing trail system. The addressed information influenced design decisions that will increase exposure to the outdoors through activity and knowledge resulting in Biophilia values that increase physical and psychological health.



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• PREFACE

As the world has populated and more buildings were built, more computers take over jobs and become a central educational tool, and conveniences were given to the world, the most important aspect to life has been forgotten, Earth. Our landscapes are very unnatural with human-made concrete, metals, plastics and wires. The raw materials that sustain life are being used up and not forming a noticeable part of our daily lifestyles. As I have watched younger generations grow up, I have seen a lack of respect and interest to nature from a large percent of the youth population. The youth, in High School grades 9-12, only seem to care about the newest video game, “needing” a cell phone to make it through the day, and not realizing when they toss their garbage on the street that they are showing lack of respect and connection for others and for the Earth. These actions emphasize that youth have been disconnected from the value of Earth and its living growing species. Gregory Bateson (1979) stated the population has no idea that lifestyles are changing slowly for the worse:

It is a nontrivial matter that we are almost always unaware of trends in our changes of state. There is a quasi-scientific fable that if you can get a frog to sit quietly in a saucepan of cold water, and if you then raise the

temperature of the water very slowly and smoothly so that there is no moment marked to be the moment at which the frog should jump, he will never jump. He will get boiled. Is the human species changing its own environment with slowly increasing pollution and rotting its mind with slowly deteriorating religion and education in such a saucepan? (p. 109)

I have targeted the youth of Dryden in this practicum because their cognitive development is established enough for them to realize and to understand the importance of the Earth and human well-being. They are at an age where continued physical activity and submersion into nature will be crucial for them to learn many things about life, growing cycles, and health. John Fuller (1954) stated, “...it is because development is a continuous transaction between the organism and its surroundings” (p. 5). Therefore it is essential to expose youth in high school to their natural surroundings and not the human-made aspects that are enveloping daily lifestyle.

“It makes far better sense to reshape ourselves to fit a finite planet than to attempt to reshape the planet to fit our infinite wants.”

– David W. Orr, p. 9

• CHAPTER ONE: Introduction

• Introduction

Over the span of many generations, humans have slowly populated Gaia, Mother Earth, our home and essential habitat for survival. We have cloaked Earth with human production and technological knowledge, which has hidden the critical habitat that has nourished humans mentally and physically. In the past, humans relied heavily on what they could harvest from the plants they grew, what they could forage from the ground, and food from animals they raised. This was the way of life, a lifestyle that was physically demanding and that did not allow for a holiday. For those who could not harvest everything they needed, friends were a way to fulfill that need. The social network of friends, or community, made life a little easier. The small communities that were formed raised a sense of togetherness. These types of communities remained small, but strong

in relationships and reliance on each other for survival. For example, in a small community in Roseto, Pennsylvania people relied heavily on working their land for food and raising small livestock (particularly hogs). With lower rates of heart attacks and other sicknesses, this community proved to live a healthier lifestyle than surrounding larger communities (Jackson, 2012). These people also had mutual respect for each other and would always give help or exchange commodities when another member of the community was in need.

In the present time, small communities are rarely desired places to live because of the perceived lack of economic opportunity. UN-HABITAT is an organization that recognizes this, and their mission has been to encourage socially and environmentally sustainable towns and cities, in addition to making sure that everyone has some form of housing. UN-HABITAT (2008) stated that the demographic growth of the world in the next thirty years will largely live in urban areas. As well, they noted that this is quite a different pattern than occurred between 1950 and 1975, which was a balance between urban and rural areas (p. 5). Cities thrive with business, productivity, and entertainment. With these features, comes technology. Conveniences and efficiency to obtain what people want has exploded technological design in things like cell phones. The younger generations presently live as if they ‘need’ their cell phones to maintain a social network, and keep up with the latest fad. The cell phone acts as a part of them and they are lost without one. Edward O. Wilson (1993) stated, “Many humans are more fascinated with complex artifacts such as cellular telephones, for example, than with simple ones such as megaphones. One might hypothesize that complexity is correlated with power, an eternal preoccupation of the male of our species” (p. 447). This sense of need is faulty; a cell phone is not a need to human health and well-being, but a want and a luxury of life. People have been fooled into thinking about what they want and not what is essential to life. David Orr (2004) wrote:

... we must equip our youths to compete in the world economy. The great fear is that we will not be able to produce as many automobiles, VCRs, digital TVs, or supercomputers as the Japanese or Europeans. In contrast, I worry that we will compete all too effectively on an earth already seriously overstressed by the production of things economists count and too little production of things that are not easily countable such as well-loved children, good cities, healthy forests, stable climate, healthy rural communities, sustainable family farms, and diversity of all sorts. (p. 16)

What the younger generations have been experiencing now is a disconnected world. Gary Paul Nabhan and Sara St. Antoine (as cited in Wilson & Kellert, 1993) revealed results from a survey taken from children and their relationship with nature, "...the vast majority appear to be gaining most of their experience with other creatures vicariously. Some ... children responded that they had seen more wildlife on television or in the movies than in the wild" (p. 240). This has led to a world where children and youth do not understand where their food comes from, or what consequences and effects there have been to the earth they live on because of a technological lifestyle remote from natural cycles.

Our world has become over-populated and overbuilt. Orr (2004) said that we cannot know everything that there is to know about this world, and when new knowledge is formed more ignorance is created. So how do we educate people out of ignorance? This is literally impossible. What we can do (and this is the purpose of this document) is to educate youth by exposing them to nature, showing them what earth provides for humans, and that human activity connected to nature is beneficial to healthy living. When youth have a better appreciation, connection and understanding that their true home, Earth, provides for them and that it is important to interact and take care of Earth, then this lack of knowledge might be reduced.

• Question at Hand

In a world where there is so much to know, so much to discover, and where so much has been forgotten, how can the balance of a healthy lifestyle be provided, taught, and lived? The earth and living species have been cloaked with human technology falsifying the reality of our human habitat. Bateson (1979) wrote, "Official education was telling people almost nothing of the nature of all those things on the seashores and in the redwood forests, in the deserts and the plains" (p. 3). The human connection with earth has been forgotten about and has become a stranger in our every day lifestyles. Building on Bateson's argument, Orr, in 2004, still stressed "...there are better reasons to reform education, which have to do with the rapid decline in the habitability of the earth. The kind of discipline-centric education that enabled us to industrialize the earth will not necessarily help us heal the damage caused by industrialization" (p. 2). When a young child interacts with nature, their coherence of the relationships of individual species, plant or animal, is not fully formed. A child's interaction with nature is in the form of playtime, discovery and analysis. This, in turn, according to Dennis McCarthy & Priscilla Rodgers (2008), progresses a child's cognition in spatial relationships and working memory (p. 77). The problem is that at a young age, children are just discovering the world and growing, so they do not understand what the relationships are between nature, themselves, and technology. When the elderly people interact with nature they may understand the relationship between nature, themselves, and technology, but the benefits of exposure is stressed when they are under medical care, like in retirement homes, or hospices. David and Sandra Canter's (1979) writings collaborated many researchers' knowledge to cover, what they have claimed as a wide range of therapeutic environments that dealt with adult and child settings (p. 1-2). High School youth are an arguably ignored generation and an important connection to further environmental understanding. Their brains are formed enough to understand choice and critical thinking, and

it is not too late in life for exposure to nature to be used solely as therapy. Michael Gurian and Kathy Stevens (2011) explained, “Although it’s true that the High School student is mostly formed, it is also true that he or she is not at all finished. High School is a time of refinement for all students, in both brain and gender development” (p. 267). So, the question at hand for this Practicum has been:

Using an open space network, how can the community, specifically High School youth, be integrated into a healthy lifestyle, and enrich Dryden High School’s outdoor programs?

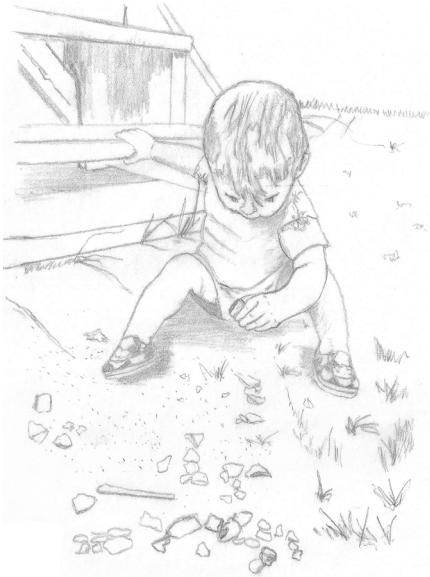


Figure 1.0: Hand drawing of child analyzing ground, age: 9 months, 2012

• Nature

During my Landscape Topics course with Professor Alan Tate in 2011, I did research into psychology, therapy and nature. In this case I was required to define what the term ‘nature’ is, as it can be defined a

number of ways. One way to explain the definition of nature is all that is living and part of the earth, and another is the way of behavior. The New Oxford American Dictionary (2010) defines nature as:

1. the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations
2. the innate or essential qualities or character of a person or animal

The first part of this definition of nature (which I have referred to for most of this document) has slowly become something humans can control with the increased use of technology. Humans have tried to adapt foreign plants to alien environments by way of, for example, grafting. An obsession with control has overturned the way that “nature” performs, and “human nature” has become overbearing. In this regard, part two of the Oxford definition should be something that humans can change as well. The innate quality of humans living by technology is definitely something learned and not natural. Fuller (1954) argued “heredity is the capacity to utilize an environment in a particular way” (p. 5). Humans have molded their environments through what they have learned from the generations before. This becomes an important issue to consider when passing on information to youth. A parent, in addition to the education system, needs to expose children and youth to nature and the way nature is meant to perform without human control. People need to be more connected to the Earth and what it gives them. This is a huge feat to undertake in teaching an extraordinary mass of people, that the way we live has diminished the quality of the earth. Terry Eagleton (2000) has considered the relationship between human nature (part two of the Oxford definition) and culture. Eagleton’s opinion is that human nature is that of culture. Humans cannot go without indulgence and being overzealous because it is part of our culture that has formed our nature. But, it is argued here, that his form of human nature was not in existence

at some point in our past. Eagleton has made a firm point that our culture does shape who we are as people and that it is human nature is to live in excess of ourselves. He wrote:

... it belongs to human nature to generate a certain surplus. It would be unnatural for human beings not to be in excess of themselves, enjoying a superfluity beyond strict material need. Human nature is naturally unnatural, overflowing the measure simply by virtue of what it is. ... it is just part of the way we are constructed that demand should outstrip need, that culture should be of our nature. (p. 101)

That is what our culture has come to; excess. If people can learn at an early stage in life that excess is not the best route to a healthy lifestyle, then culture can slowly shift back to living by what is needed and not wanted in surplus. We can educate people to form a healthy connected future to change this type of excess nature. A future culture could engage people into the outdoors daily, be educated to produce some of their own food, and could learn what 'need' is rather than exercising excessive 'want'.

Technology has enabled humans to perform many feats in terms of buildings, computers, and tools. With these inanimate objects sometimes comes personification. We name our cars or toys, and we sometimes pretend that inanimate things have some kind of spirit. There is a part of humans that wants to be connected to things. The Biophilia Hypothesis stated that humans have a need to connect with other living things. When most things that humans interact with on a daily basis are not living, there is a tendency to pretend the nonliving is living. Christophe Girot (2007) wrote, "there has been a breach, not to mention a rift, between this symbolic understanding of nature and daily reality" (p. 30). Humans personify things because for many, there is inner spirituality that is looking for a connection. This connection is present with living growing

things, which in turn effects the psychology of humans. Wilson (1984) and his hypothesis on Biophilia, directly relates to this idea of personifying objects. Biophilia has been a term used to describe the relationship between all living things, plant and animal. As humans, we need to feel connected to things, and it is easiest when things are living and growing. When a lifestyle presents mainly objects that are not living, there is a loss of connection to who one's self is, a debit of value, and a deficit in understanding of what mass society has done to the earth.

• Human Lifestyles

Today's generation of youth have a potential average lifespan that far exceeds that of their parents and grandparents. The Conference Board of Canada (2013) noted that in the beginning of the 1900s the average lifespan was approximately 50 years of age; now the life expectancy is approximately 80 years of age. National Post (2013) noted that although human lifespan now is longer than in the past, physical and psychological health are not as good as they used to be. Today's generation of youth's grandparents, and, even farther back to the great grand parents, had lifestyles that were in constant physical motion. Currently, lifestyles are very sedentary. People have turned to technology for health resolution, for convenience, for efficiency, and for entertainment. All this takes away from human imagination, human cognition, human health, and human interaction with other living species. Humans have replaced outdoor interaction and activity with visual technological entertainment, and nature with concrete and metals. Leanne Rivlin and Maxine Wolfe (as cited in Canter & Canter, 1979) wrote, "... while there are groups of people who become defined and stigmatized as requiring specific types of therapy, all of us need environmental support to enable us to meet the requirements of our daily lives and to grow and change over time" (p. 30).

Many generations have passed since the introduction of the

phone, radio, and television. Ever since these remarkable inventions, our world booms with technology, which is very unnatural. And our knowledge has been shifted from “how do I feed myself today?” to “what is the latest fashion trend, or computer?” What has the necessity become? The balance of knowledge between current modes to excel in life and the experience of hands-on exposure to nature has been lacking in most school systems. Charles Saylan and Daniel Blumstein (2011) noted, “This collective inability to act is brought about in part by educational institutions that generally do not provide the tools necessary for critical thinking and for understanding the modern world” (p. 1-2). Obesity because of convenience, poverty because of population, and pollution because of mass production, these have been large problems that stem from the fact that humans are lacking a connection with Earth and nature; this nature is one that human kind has not touched, tampered with, or controlled. Since this kind of nature rarely exists where people inhabit space, the exposure to vegetation and the outdoors must be emphasized, and people must be kept motivated to consistently interact with nature on a daily basis. Fuller (1954) noted, “Motivation is essential to learning, and anything which impairs motivation would hamper the development of intelligence” (p. 16).

A study by Dr. Stewart Wolf in Roseto, PA concluded that a small community where the people were largely involved in togetherness and producing their own food had lower rates of heart attacks and other sicknesses (Jackson, 2012). The older generations of Roseto were documented recounting the lifestyle of the small community. Everyone was treated on a fair economic basis. No one flaunted “toys” or financial standing, which heightened respect, a sense of calm, and belonging. Most people had their own hogs, gardens, and rendered their own lard. Physical work was felt as hard work that sustained a healthy lifestyle. As the years passed by, the younger generation grew and technology came into the community. The influence of modern technology brought an atmosphere of competition. Gardens became smaller, hogs and rendering

lard became a rare thing to have or do. Social cohesion was lost. Disease and sickness became more common, and as stated in the documentary “Urban blight” set in.

Kristin Canty’s (2011) documentary gave an overview of how small farmers were providing food to their own communities, but because they were not part of the mass production system of certification, these small farms were shut down for unsanitary food production and distribution. This small scale type of farming produces food so that the consumers know what and where their food is coming from. Purchasing or even trading from these small farms established better community cohesion and supported the local economy. The small community farm has been dismantled, and healthy independent living has become attacked. How has this become justified? This example has led to more issues than encouraging a healthy lifestyle that is active and engaging in nature. In this practicum, it has been argued that technology and mass production have controlled human lives in a detrimental way. A Virginia farmer from Canty’s (2011) documentary, Joel Salatin, writer of a number of books addressing this issue, stated in the documentary, “energy doesn’t win, the farmer doesn’t win, the birds don’t win, the eater doesn’t win, nobody wins in that system”. The system he was referring to was the Confinement Animal Factory Operations (CAFO), where the animals, in particular chickens, would be stuffed into a large area, living in their own feces that gives off gases they inhale, therefore they are given antibiotics to aid the unhealthy reaction they have to their own living conditions. Salatin raises chickens on his farm in individual chicken coops that he circulates over his land every day, providing his chickens with fresh grass and a fresh area that is clean of feces. As well, his system regenerates itself. No energy consumption, except for humans to move the coop (which is next to no effort), no over confinement, no antibiotics, and no unhealthy environment. Salatin (as cited in Canty, 2011) further exclaimed, “good food production should be aesthetically and aromatically sensually romantic”.

“The image of shifting baselines is a compelling one: a little change here, a little change there, and it all starts to seem normal. Thus, people do not see the potential for catastrophe unless something dramatic and immediate occurs.”

– Charles Saylan and Daniel T. Blumstein, p. 9

• OBJECTIVE

The objective of this practicum has been that knowledge about Earth, its living species, and the connection that people have to Earth are being lost. This concern has been directed to education and High School youth a one way to help remedy the lack of knowledge and connection to Earth. To reiterate the question being asked: *Using an open space network, how can the community, specifically High School youth, be integrated into a healthy lifestyle, and enrich Dryden High School's outdoor programs?*

This design proposal has consisted of two strategies that will expose the community and High School youth to nature. They are as follows:

1. To encourage active living through an open space network promoting activity, education, and interaction with nature. The network's routes will be designed to expose pedestrians and cyclists to nature at proposed and existing sites.
2. To provide spaces for Dryden High School and the community that increases interaction with the outdoors benefitting people physically and psychologically, and offers opportunities for research and analysis.

• Target Area

The City of Dryden (*Figure 1.2 & 1.3*) is located in north western Ontario halfway between Thunder Bay, Ontario, and Winnipeg, Manitoba. Dryden is surrounded by boreal forest and is situated on Wabigoon Lake and Wabigoon River. This location provides the opportunity for a lifestyle balanced with exposure to open space, forest, and water areas. Vegetation of the boreal forest consists predominantly of jack pine, trembling aspen, birch, white and black spruce, balsam fir, white pine, and tamarack. The landforms are full of rock outcrops, and uplands and lowlands. Much of the vegetation within the city has been removed for construction of housing, the northern side of the city is grasslands, the southern side is bordered by water and the west is abundantly treed. A large economic strength of Dryden has been the forestry industry. The lifestyle of most of the citizens includes hunting and fishing, and these are reflected in some of the courses, like Outdoor Education, at the High School.

Dryden Development Corporation put together a Community Profile based on 2011 statistics that noted:

- Dryden is a small city of approximately 8,000 people in a total city serviceable area of approximately 65 square kilometres.
- The economic base for the city is tourism, forestry, and mining.
- Dryden is a transportation hub that is connected by the Trans Canada Trail, CP Rail, and Dryden Regional Airport.
- The largest population cohort is between the ages of 45-54, which is higher than the provincial average percentage. The cohort between 15 and 19 is also higher than the provincial average. The age census for Dryden indicates that once the youth have finished High School, they move out of the city, leading to a smaller cohort of ages 20-44.

The Dryden area heightens the possibilities of proposed facilities in closer proximity to the High School. As it currently stands, the school takes students to different areas outside the city to engage

them in outdoor programs dealing with nature. The potential areas for environmental education throughout Dryden are in high supply, so concentrating opportunities for nature exposure within city limits has a high potential. This practicum intended to provide the city with more nature within the city that could enrich the community's public spaces and lead to increased tourism. Bringing in tourists raises demand for facilities and in turn raises the income for the city. This might also help diversify the population composition of the community with the increase of facilities and visitors.

• Methodology

Through a literature review covering Edward O. Wilson, Sonja Linden and Jenny Grut, Charles Saylan and Daniel Blumstein, and David Orr, the subjects biophilia, psychotherapy, and education have been discussed. Exploring the Biophilia Hypothesis and the physical and psychological benefits that exposure to nature has on health conditions has strengthened the proposal to supplement nature-exposure activities within the education system. Further research into present learning processes within Dryden High School and particular gendered approaches that should be practised have informed the types of spaces or activities that could be beneficial to include in the proposed design.

The literary information gathered for this investigation reviewed the physical and psychological health of people, and education. Through a case study analysis of Winnipeg, Manitoba, and Nanaimo, British Columbia, successful active transportation design elements have been used as a basis for a proposed active transportation network. Dryden's Official City Plan and Enhanced Trail Proposal have been analyzed for opportunity areas, trail re-routes and enhancements that focus on Dryden High School as a central hub.



Figure 1.2: Dryden Ontario with context (Google Maps snapshot and author rendering), 2013



Figure 1.3: Dryden Ontario City (Google Maps snapshot and author rendering), 2013

- Biophilia

“The idea of biophilia asserts that the achievement of our fullest potential will depend on a matrix of complex and subtle emotional, intellectual, and physical interactions with a rich and diverse biota.”
 – E. O. Wilson and S. R. Kellert, p. 457

CHAPTER TWO: Literature Review – Biophilia: The Physical and Psychological Value of Outdoor and Natural Spaces

Research from fields such as biology, psychology, anthropology, and environmental studies have been examined in order to provide a defensible background for this practicum. Wilson (1984) and Wilson & Kellert’s (1993) writing on Biophilia have been the focused in terms of its support for the physical and psychological need that humans have to interact with other living species for their health benefit. Sonja Linden and Jenny Grut (2002) have spent their careers providing facilities to aid in psychotherapy through nature exposure. Their processes supported the argument for stronger engagement with nature. Stephen and Rachel Kaplan’s (1998) writing in the field of environmental psychology have been used to develop guidelines of the proposed design for this practicum. Richard Louv (2008 & 2011) and David Orr’s (2004) research pertaining to the environment, health, and education has been referenced to support how knowledge and interaction with nature has been slowly pushed out of the education field.

Psychoanalyst Erich Fromm proposed the term “biophilia” in the 1960s (Merriam-Webster, 2013). He formed the word from “bio-,” meaning “life,” and “-philia,” meaning “friendly feeling toward”. Wilson continued Fromm’s work in the 1970s. He extended the meaning of biophilia to “the rich, natural pleasure that comes from being surrounded by living organisms.”

Wilson & Kellert (1993) focused on numerous different species on earth and argued that each interaction that happens amongst each species provides different reactions. Studies have been pursued to identify the cognitive reactions humans have to certain stimuli, mainly in preadolescent ages. Wilson described how the environment a child is raised in and exposed to can determine how much biophilia will be communicated to that child. The understanding and discovery of the inhabitants of the environment are far from where human understanding should be. Wilson (1984) stated, “A few of the species were locked together in forms of symbiosis so intricate that to pull out one would bring others spiraling to extinction. Such is the consequence of adaptation by coevolution, the reciprocal genetic change of species that interact with each other through many life cycles” (p. 8). He questioned how the value of life is placed on other living species according to our desire for what material humans can obtain from that species.

Kellert (as cited in Wilson & Kellert, 1993) outlined nine types of values that describe the ways humans interact with nature (p. 59). These nine types of values are utilitarian, naturalistic, ecologicistic-scientific, aesthetic, symbolic, humanistic, moralistic, dominionistic, and negativistic (see *Table 2.1*). Further he expressed his concern about how the human species can be fulfilled psychologically, spiritually, and materially if the earth is in an impoverished condition (p.457).

Term	Definition	Function
<i>Utilitarian</i>	Practical and material exploitation of nature	Physical sustenance / security
<i>Naturalistic</i>	Satisfaction from direct experience / contact with nature	Curiosity, outdoor skills, mental / physical development
<i>Ecologistic-Scientific</i>	Systematic study of structure, function, and relationship in nature	Knowledge, understanding, observational skills
<i>Aesthetic</i>	Physical appeal and beauty of nature	Inspiration, harmony, peace, security
<i>Symbolic</i>	Use of nature for metaphorical expression, language, expressive thought	Communication, mental development
<i>Humanistic</i>	Strong affection, emotional attachment, "love" for nature	Group bonding, sharing, cooperation, companionship
<i>Moralistic</i>	Strong affinity, spiritual reverence, ethical concern for nature	Order and meaning in life, kinship and affiliation ties
<i>Dominionistic</i>	Mastery, physical control, dominance of nature	Mechanical skills, physical prowess, ability to subdue
<i>Negativistic</i>	Fear, aversion, alienation from nature	Security, protection, safety

Table 2.1: A Typology of Biophilia Values (Wilson & Kellert, 1993, p. 59)

• Nature and Health

Since technology has increasingly become part of our every day lives over the last 50-60 years, in the forms of cell phones, video games, iPods, and laptops, Louv (2008) noted that physical health has decreased and problems like high blood pressure, obesity, heart conditions, and sleep deprivation have increased (p.47). Boulevard Transportation Group Ltd. (2009) further noted,

Physical inactivity is a leading contributor to a number of health implications. Inactivity is directly linked to obesity, a problem that has more than doubled over the past twenty years. The list of serious health conditions associated with inactivity include heart disease, hypertension, strokes, diabetes, osteoporosis, depression, and certain forms of cancer. Inactivity is also known to affect personal mood, self-esteem, energy levels, and sleep patterns. (p. 6)

There are many negative effects that come with a sedentary lifestyle, as noted earlier in Chapter Two. Life expectancy may have increased, but health problems have also increased. Obesity in children is the leading factor that many have to deal with. There are so many convenient foods available that require no effort to prepare. So by choice, it has become preferable to consume prepared food. Daniel Desmond (2004) stated in his research that he found children that learn about fruit and vegetables in an educational setting were more likely to choose the healthier foods they learned about than the foods that are ready-made off-the-shelf. This perception can be applied to active lifestyles and interaction with nature. The more knowledge the young have and are exposed to about nature and activity, the more respect and appreciation they have toward them.

Psychological health has been pursued with therapy through nature. Linden & Grut (2002) discussed the projects they have been a part of to supply facilities to help patients through engagement with nature. Their therapeutic results indicated a strong supportive argument that nature helps the mind. They take the client outdoors because, "For many, the outdoors can be more conducive than the closed room ..." (p. 12).

Linden and Grut not only have helped people through tough times in their lives, but have also expanded understanding in environmental psychology. They have concentrated more on nature as gardening, and on exposing their patients to the cycles of life that can happen in a garden. Linden & Grut (2002) noted strong characteristics within their clients:

Environmental psychology has developed as a field that is concerned with understanding people's responses to both natural and built environments, where 'natural' can be broadly interpreted as describing presence of vegetation. Studies show that people ascribe a sense of permanence to the natural order and that this gives city-dwellers and people subject to high levels of change a feeling of continuity and dependability. (p. 25)

Environmental psychology has slowly grown over the years and has become a leading method of therapy. It exists in hospitals, hospices, subtly in schools, and many smaller horticultural therapy practices and a majority of the time has been aimed at the elderly and disabled. Linden & Grut (2002) noted that in the 1960s successful gardening was looked at as creative and expressive in therapy rather than occupational and productive as a work aspect (p. 26). This has become an important transition in this field, the difference between gardening for production and gardening for pleasure.

Through their research Linden & Grut (2002) asserted that “...the solace of working wordlessly in a natural environment, the awareness of how grounding it is in our urbanized cultures to maintain close links with the natural order and an awareness of sensitivity to the natural world” (p. 29). This assertion falls into many of the biophilia values that Wilson & Kellert (1993) outline.

Equally Kaplan & Kaplan are well known for their psychological input about cognition and environment. And, in my Landscape Topics course (2011) I noted that the Kaplan’s developed a guideline to designing with information and patterns for human understanding of the environment. The course examined Kaplan & Kaplan’s (1998) proposed four primary frameworks and forty-five patterns within those frameworks regarding the responses of humans to a landscape. The frameworks identified were coherence, legibility, complexity, and mystery. A few of the patterns named were visual access, enhancing familiarity, human sign, mystery, and openings. The Kaplan’s guidelines have been used to develop a design that people are encouraged to be in.

• Nature and Education

Saylan & Blumstein’s (2011) research on environmental education pointed out problems in education as well as possible solutions. The

problems they pointed out are not just about the failing of environmental education, but the education system as well. They noted that parents, teachers, students, and policy-makers must all be responsible for educating each other and themselves. The correction to the problem, a lack of exposure to nature, is in part that environmental education should be “one that stimulates community engagement, fosters an understanding of moral systems, and reinforces the appreciation of aesthetics” (p. 3). As well, they stated that it has to be understood why education is not fully equipped with what needs to be taught for people to apply critical thinking in terms of the environment. They divulged much information about global warming, carbon dioxide emissions, methane, the melting Arctic and Antarctic, deforestation, and many more environmental issues that are touched upon in High Schools, but not fully connected in every subject in curriculum. Many of these issues stemmed from the amount of material production that humans demand and supply. Saylan & Blumstein (2011) questioned, “Population growth is very likely the root of many of our problems. How can our species, dependent as it is on our environment, continue to grow and flourish if the resources we all depend on do not keep pace with population growth?” (p. 14).

A few solutions to the problems Saylan & Blumstein (2011) posed, identify what can be put into action to help the public understand the issues previously presented. Simply to begin, they proclaimed, “If environmental education is to effect behavioral change, one of the things it must accomplish is to cultivate appreciation of nature, a fundamental element of responsible citizenry” (p.73). To accomplish responsible citizenry they suggested that communication is the key, and in schools, the communication will come from teaching how one gets from A to C through B in a nonlinear fashion (p. 81). What they mean is that there are always external factors. To get from A to C may seem simple, but when you consider all the factors that B provides, it may be a longer more complicated process.

Orr (2004) presented several facts about the health of humans

and the Earth. His first fact was about male sperm counts falling since 1938, but proclaimed no one knew why (p. 1). Leonard Sax (2007) stated that plasticizers, called phthalates, act like the female hormone. These phthalates leach into the liquid contained by any plastic bottled beverage, in turn boys and girls drink it and receive a dose of female hormone. Girls are maturing faster and boys are becoming more feminine, hence low sperm counts (p. 99-101). This case has become one of the many examples of the unconnected understanding of our environment and the unnaturalness of it. Orr (2004) promoted this idea of the unconnected by stating, "it is a failure to educate people to think broadly, to perceive systems and patterns, and to live as whole persons. Much of the current debate about educational standards and reforms, however, is driven by the belief that we must prepare the young only to compete effectively in the global economy" (p. 2). Orr asserted that there needs to be a diversity of each subject that pertains to the whole system on earth rather than what it takes to make immediate progress in that subject. He said, "The study of the region would ground education in the particularities of a specific place and would also integrate various disciplines around the "regional survey", which includes surveys of soils, climate, vegetation, history, economy, and society" (p. 148).

• Conclusion

Saylan & Blumstein (2011) emphasized the major environmental issues; Orr (2004) articulated the importance of transitioning the education system; Wilson & Kellert (1993) expressed the need to understand organisms in the environment; Linden & Grut (2002) expressed the psychological health benefits from interaction with natural elements, and Kaplan & Kaplan (1998) provided a guideline for psychological ease of engaging with the designed outdoors. Each view is tied together by the micro and macro systems of the Earth and of nature, both human

and collective physical world. It is important to connect these views in education. When biophilia values are exposed, the appreciation to protect the environment will arise, as well as the awareness of the impacts and effects of environmentalism. The slightest understanding as Wilson (1984) expressed, "Human beings live in a world of sight and sound, but social insects exist primarily by smell and taste. In a word, we are audiovisual where they are chemical" (p. 31), could help humans broaden their sense of awareness if we try and mimic other ways of perceiving or experiencing something.

“Learning has been reduced to what they do in school. Living is what they do in the real world.”

– David W. Jardine, p.93

CHAPTER THREE: Gender Specific Learning Styles and Curriculum

In this chapter the focus has been on gender, how each gender learns differently, and on applying nature as a mode of stimulating these learning differences. For the proposed design (Chapter Five), some ideas for spaces and activities for each gender have been touched on in this chapter. Three authors referenced in this practicum, Michael Gurian with Kathy Stevens, and Leonard Sax, wrote about gender learning differences. Gender has revealed a lot about stimulating the needs of youths mentally and physically. Each gender must be approached differently in order to motivate and stimulate how they learn and understand life, life processes and environment. Orr (as cited in Wilson and Kellert, 1993) stated, “we should worry a good bit less about whether our progeny will be able to compete as a “world-class work force” and a great deal more about whether they will know how to live sustainably on the earth” (p. 433).

What this practicum has sought out was to target exactly that notion, to teach the youth about the importance of knowing their earth and being connected to it so they can live a healthy lifestyle.

Sax (2007) mentioned two German terms that described the different meanings of ‘to know’; these terms are *Kenntnis*: to know by experience, and *Wissenschaft*: to know about something, like knowledge from a book (p. 28). Personally I have learned better through *Kenntnis*, which, has been a personal argument and can support the Biophilia Hypothesis. Hands-on interaction between species is valuable to healthy living. Research of species from a book may help with understanding other species, but when there is hands-on interaction, learning about and connection to other species is heightened. People are drawn to all other living species, and with the *Kenntnis* approach, knowledge can be gained about themselves and their surroundings, as benefitting physical and psychological health.

• Gender Learning Differences

Gurian & Stevens (2011) detailed how the brain develops differently in the womb and during puberty, and detailed the differences in gender learning. They then discussed each stage of school from Elementary to High School. For the purposes of this practicum, the gender learning differences Gurian & Stevens mentioned have been summarized in *Table 3.1*, and the needs of High School students are referenced. Sax (2007 & 2010) separated and compared each gender through a few factors. Two of these factors have been discussed; the first factor is education, and the second factor is technology (specifically video games and “cyber bubble”).

Gurian & Stevens (2011) discussed genders together and noted that during the growing stages of children and youth, hormones begin and work in overdrive at two different stages, in the womb and during

Learning Style	Boys	Girls
<i>Deductive / Inductive</i>	Deductive - quick reasoning process	Inductive - begin with concrete examples and build on those
<i>Abstract / Concrete</i>	Abstract - non-physical, no need to have contact	Concrete - use of physical objects, desire to touch
<i>Use of Language</i>	Work silently, attention seekers or dominant male speak more, coded language	Use words as they learn, group parity when speaking, concrete details
<i>Logic / Evidence</i>	Requires supporting evidence for logic	Handles much information and accepts meandering instructions
<i>Boredom</i>	Require more and varying stimulants	Self-manages boredom
<i>Use of Space</i>	Use more physical space to learn, need more room in group setting	Do not need as much space, can have equal space in group setting
<i>Movement</i>	Helps stimulate and relieve impulsive behavior	Manages staying still
<i>Sensitivity and Group Dynamics</i>	Cares about pecking order in small or large group (ex: chess club president or prom king and queen) - need to be seen or heard	Easy to learn cooperatively
<i>Use of Symbolism</i>	Like coded quality (symbolic texts, diagrams, graphs), rely on pictures for learning (right hemisphere stimulation)	Like written texts, ponder emotional workings in literature
<i>Use of Learning Teams</i>	Structured teams quickly, focus on goal right away	Loose organizations, much time spent on managing team process

Table 3.1: Summary of Learning Styles of Boys and Girls (Gurian, 2011, p. 44-49)

puberty. In the womb, the hormone of the predominant gender takes control and the gender is established. During puberty, which some youth experience during Middle School and some during High School, hormones begin an aggressive cycle and begin changes physically and psychologically for youth. Each gender will begin experiencing strong emotions, stress, attitudes, and sexual feelings, amongst other things. The increase of hormones has different effects on each gender. In girls, Gurian & Stevens (2011) noted, “the increased level of estrogen at puberty causes sudden growth of the hippocampus, the part of the brain that focuses on memory” (p. 41). Gurian & Stevens pointed out more characteristics in boys versus girls, these characteristics have been summarized in *Table 3.1*.

The summarized information presented by Gurian & Stevens (2011) in *Table 3.1*, revealed that the use of learning teams has been effective for both genders and is the only similar learning characteristic. Gurian & Stevens (2011) expanded on this by stating that peer bonding has great effects on brain development (p. 268). At a stage where youth are not children anymore, but not quite independent adults, the peers of a youth are rather influential. This being known, assembling youth into teams to perform school tasks could be quite beneficial. Though it should also be noted that in teams, girls have been slow at assembling team positions and therefore teams should be formed with both genders. As well, it has been noted that girls tend to listen to direction whereas boys want to take the lead, and there should be a balance in approach noted here as well. Outside of class teams Gurian & Stevens (2011) noted, “peer-leadership programs help students support each other so as to diminish education-numbing stresses that lead to high-risk behavior, violence, and dropping out of school” (p. 268).

Since youth are going through the physical and psychological changes and stresses of growing up, they are not on the same schedule as the younger or older generations. At the High School age, youth establish their own timetable, and this has been reflected in their sleep patterns. Most youth tend to be tired in early morning classes. Gurian & Stevens (2011) talked about Time and Time-of-Day Innovations, they mentioned what classes should be taught at what time of day according to hormones. Classes like band and art should be in the early morning because it stimulates mind and body to wake up (p. 285). So physical movement and calming thought should be emphasized in the morning.

Gurian & Stevens (2011) took in the opinion of High School students and what they would like to see in the classroom. They noted five main suggestions: smaller class sizes, technology, AP and honors classes, focus on the arts, and more field trips (p.287). They found that one of the most important features of education to the students are field trips, “both adolescent boys and girls were adamant in wanting more

field trips, especially for science learning. Planetariums, zoos, doctors' offices, government agencies - whatever the lesson, the students want to experience it in the world" (p. 287).

An overview of how hormones dictate gender characteristics and their learning styles, and ways to aid youth in successful learning has been established. Looking at each gender individually, differing factors have been presented as follows.

Sax addressed a few different factors for each gender. Two factors that overlapped were education and technology (video games/cyber bubble). Sax (2007) noted that boys have become less likely to read, and the change in the motivation to read has been a result of gender-blind changes in education (p. 39). Boys are lacking motivation because there has been a lack of what they, as boys, need in the classroom. The male gender, for the most part, is competitive. Sax (2007) reviewed scenarios where High Schools make tests part of team competitions that motivate boys to partake in events. "I've seen team competition engage many boys who otherwise don't care much about school. Individual competition is seldom as successful and is almost guaranteed to disengage many boys" (p. 46). Team competition has been a way to bring boys together and teach them social skills. It gives them drive instead of lack of self-confidence, which in turn has enabled the males to care more about their performance at school. The issue that Sax (2007) mentioned was that competition, especially in physical education courses, has begun to be eliminated from programs so that some boys do not feel alienated (p. 43). As Gurian & Stevens (2011) outlined that (see *Table 3.1*) boys need movement and they care about pecking order. It is understandable to eliminate a problem, but eliminating a problem for some, creates a problem for others. Here it is more a matter of finding what works best for everyone, not coddling the weak. And here I do not mean weak as negative. Everyone has their different strengths and weaknesses; so to take away an aspect in one course because there are some boys who prevail in, let's say, science better than sports, does not help the boys

who do prevail at sports. Motivation and competition must be kept as well rounded to support all types of boys.

The second factor with boys being less motivated is video games. Video games has provided an escape from reality, for the most part. Sax discussed how boys need to be in control of their environment. An outlet for this has been through video games. Sax (2007) noted, "Video games have displaced a major activity in the lives of teenage boys, but that activity isn't reading; it's playing outdoors" (p. 38). The sad part about this is that a boy can lose out on developing a strong skill set. Sax (2007) stated:

Thirty years ago, and even more so fifty years ago, it was more common for boys and men to go hunting and fishing together. Boys who go fishing with an experienced fisherman soon learn that a good fisherman has to be able to wait patiently. That sort of patience might serve a young father well. But video games do not teach that kind of patience. (p. 67)

There is much lost in a teenage boy's life if he dedicates his spare time to only playing video games. His social life with people diminishes, which affects how youth can learn from a variety of different sources. Depending on the video game type, a violent video game can have effects on a youth's temperament. Sax (2007) specified "the linkage between a violent game and the boy's antisocial behavior is unequivocally cause-and-effect..." (p. 67). He further explained that the violent video games are an aiding factor that shifts where a youth's motivation should be. A boy no longer cares about his homework or his grades, but rather cares about launching some grenade at another virtual player. In reality a boy cannot throw a grenade at someone, but they like the fantasy world in which they can throw the grenade. Sax (2007) stated, "The destructive effects of video games are not on a boys cognitive ability or their reaction times, but on their motivation and their connectedness with the real world" (p. 68). In the Introduction I discussed the definitions of nature, and that of human

nature and human behavior. People need to have a sense of control of their environment, and male youth have found a perfect outlet to control it, although it is not real. Sax (2007) mentioned two scenarios where children have a chance to control their environments. One is where two babies are placed in different cribs, each having a mobile overhead. One baby can control the mobile while the other cannot. The baby that could not control the mobile seemed bored and not engaged. Another scenario is when you tell a male child to sit, they will stand until they are ready to sit and feel they have the control of their actions and environment.

Sax (2010) wrote about the female gender and discussed two factors that are similar to male youth, education and a “cyber bubble”, that is an addiction to technology. In comparison to males, female youth are not so driven by competition, but by an emotional urge to satisfy. Females tend to want to satisfy the teacher by doing what they are asked. Just as Gurian stated (summarized in *Table 3.1*) girls tend to follow meandering direction without question. Sax (2010) noted, “In 2006, researchers at the University of Pennsylvania reported that girls’ greater self-discipline and self-control – perhaps deriving from their greater motivation to please the teacher – appears to be a key distinguishing factor that has enabled girls to survive and thrive in the accelerated world of twenty-first century education” (p. 26). This again correlates with what Gurian outlined. In cases where female and male youth are very different, it would be appropriate to have single gender class.

The second factor for girls is parallel to males playing their video games, but for females it is the computer and cell phones. Female youth have become quite involved in the social network online, this is where they can post gossip and share many of their daily thoughts, actions, and pictures. Female youth have become de-socialized with the real world. The female youth think they are well connected socially, but it is not real, it is through and on a computer where they feel that it is easier to have undisclosed conversations and acts that parents may not approve of.

A face-to-face social circle helps a female clarify who she is, especially when she is a youth. She will learn and appreciate things more if she has different social circles. This is an important aspect in a female’s life. It will help ground her. Sax (2010) further noted, “a girl can be connected to other girls her age almost every waking moment, via cell phone, texting, instant messaging, and so on. This technology can put girls at risk, because it deprives the girls of any break, any breather, any alternate perspective ... as these girls become hyperconnected to their peers, they are disconnecting from themselves” (p. 47). Integration, like the peer leadership would benefit females, as would a place to reflect and be disconnected from online socializing.

Unlike male youth with video games, female youth have not become lazy with the increase of technology in their daily lives. They have, however, become victims of cyber-bullying, depression, anxiety, and lacking the knowledge of who they really are. Sax pointed out one story about a young female arguing with her mom about Facebook versus a diary. The teen had made a good point that confused Sax, and after thinking about it, he realized what the problem was. Sax (2010) concluded, “One danger of online blogs and social networking sites is that your daughter may not be expressing what she really feels. She may instead be writing what she thinks will entertain or impress her peers who read it” (p. 38). The cyber bubble that consumes female youth has de-socialized the girl from a variety of outlets, creating a character that she is not, and downgrading her writing skills.

• Ontario Curriculum

The Ontario Ministry of Education (2009) put a policy framework guide together for environmental education. The Ontario School’s policy framework, *Acting Today, Shaping Tomorrow* outlined three approaches through; 1. Teaching and learning, 2. Student engagement and community

connections, and 3. Environmental leadership. The overall aspect that the Ontario Ministry of Education has tried to achieve is environmental awareness. This included knowledge about environmental issues, environmental literacy, sustainable environmental practices, community involvement, and environmental leadership programs. The goal for teaching and learning is that environmental education will bring students, by the end of grade twelve, closer to each other, the world, and other living things (p.11). The proposals for this Practicum have matched this first goal, as well as the second goal to achieve community connections between high schools and communities. David Jardine, Patricia Clifford and Sharon Friesen (2003) said that, “Curriculum integration has to do with keeping things in place, nested in the deep communities of relations that make them whole, healthy, and sane” (p. 198). The teachers at High Schools have a choice how to implement this learning, which seldom consists of engagement within nature, but around and for nature. For example, art class use recycled art as a teaching technique to make the students conscious of recycling, re-using, and reducing. This approach leans more toward awareness and conservation rather than interaction and understanding the components of nature. Sax (2007) mentioned that a teacher had their children smelling trees and some even tasting the trees bark. This interaction was thought to be highly valuable to High School youth. Engaging all senses is vital for a connection to nature’s elements. Youth should exercise their senses, as Yi-Fu Tuan (1974) stated, “Unlike the toddler, the older child is not tied to proximate objects and surroundings; he is capable of conceptualizing space in its different dimensions; he appreciates subtleties in color and recognizes harmonies of line and volume” (p. 56).

The third goal in the policy of Environmental Leadership by the Ontario Ministry of Education (2009) stated that schools should promote active living through cycling and walking to school through safe and active transportation routes (p.18). Looking at Dryden, the pedestrian and cyclist routes appeared plain and do not encourage use. The routes

have not incorporated Dryden’s High School as a center point of active transportation routes. Therefore, it has been proposed to have the High School as a center point for the AT network. Safe and designated routes have been enhanced and proposed to allow easy and direct access to the High School. To encourage community connection and environmental education, student participation of the development and enhancement of routes has been suggested in the design proposal.

- Dryden High School

Information was collected about the current curriculum during a visit to Dryden High School in Winter 2013. Outdoor Education and similar courses have provided interesting choices for the students’ optional classes. First as compulsory credits, the students must each put in 40 volunteer hours with the community in order to graduate. There is a large list of participating organizations that the students can volunteer at. The jobs are small but expose the youth to social situations, outdoor exposure, light physical labor, organization, and helping with children. This credit system has been effective in getting the youth connected into the community, as well as exposing the youth to outdoors and physical activeness. Other options that the school has for youth to connect to community and outdoors have been primarily through the Outdoor Education course. This has offered activities like dogsledding, rice picking, trapping, snowshoeing, tree planting, trip preparation and survival techniques, and a few other activities. The downside has been that the students must pay a fee of \$200 to enter the course. It is regrettable that a course with physical activity and outdoor connectedness has to cost the students extra when it should be an essential inclusion in the curriculum. Amazingly the students that enter the outdoor education course have not actually had much exposure to camping and similar activities. Dryden is a small city of approximately 8,000 people surrounded by forest and water,

yet youth have lacked exposure to outdoor activities.

The Environmental Science department has courses that overlap the class content of the Outdoor Education courses. An instructor in the Environmental Science department has been advocating to construct a green house on school property so that analysis of plants can be a hands-on experience for the students. Unfortunately, the school property has very little space to construct an adequate sized green house. This issue has helped stress the proposed design to expand facilities into the community that the High School can use.

Schooling has a large impact on human lifestyle and exposure. For there always to be a dichotomy between an environment of technology and an environment of nature may be a reason why youth have become so distant from nature itself. To integrate nature into the curriculum through certain classes of the culinary, physical education, and biology would certainly help youth to understand and appreciate nature more and become connected to it instead of detached from it.

Dryden High School and a Kenora elementary school have recently incorporated individual iPads to help students concentrate and participate in the class. Using technology constantly in every kind of class or course takes away from a hands-on learning experience, and full functioning of the brain. I remember in my own High School years, in my mathematics class we were not allowed to use calculators all the time so we did not become dependent on them. If technology is used for every purpose of teaching and learning, people will progress further away from nature and being active.

• Conclusion

In this chapter I have discussed gender learning differences and curriculum. The importance of understanding how each gender learns can help bring back motivation to those students who are struggling

with interest. Technology has been a huge part of society and is hard to escape. But a balance and collaboration between the use of technology and exposure to nature must be practised, and using the gender learning differences it is intended to develop a reconnecting interest in nature and activity. Jardine, Clifford & Friesen (2003) stated, “Far too little of what most students do in school engages their imagination, fuels their passion to learn, connects them deeply with the world, or wins their hearts and minds” (p. 93).

The design proposed (Chapter Five) for this practicum has incorporated outdoor spaces that will encourage learning by providing spaces and facilities that allow youth to interact with nature. In terms of boys, the facility locations and purposes of use have incorporated the learning styles of boredom, use of space, movement, and learning teams (see *Table 3.1*). Boredom has been avoided through provided stimulants within the facilities proposed. Boys have required more space to learn, so it has been suggested to have spaces that do not require boys to sit at a small desk or crowded table. Movement has been emphasized through location change and active physical involvement with nature. The use of learning teams has been left to the teacher and assignment, but the provision of the spaces and facilities will allow for teamwork. In terms of girls, the learning styles incorporated are concrete, use of language, and group dynamics (see *Table 3.1*). The concrete learning style required physical contact with objects; the proposed design has emphasized hands-on experience with nature and activity. The use of language and group dynamics has been heightened through the activity practised at the provided spaces. Jardine, Clifford & Friesen (2003) explained that, “In a living system, health and wholeness and the cultivation of good relations are never simply givens, because the young are always still arriving again, ready to call what we have taken as given to account in their own lives. The Earth, too, is beginning to have its say about our character and our conduct and our ignoring of its ways” (p. 198-199).

“Physical inactivity is a leading contributor to a number of health implications. Inactivity is directly linked to obesity, a problem that has more than doubled over the past twenty years.”
 – Boulevard Transportation Group Ltd., p. 6

CHAPTER FOUR: Active Transportation Networks

Chapter Four has examined active transportation networks of Winnipeg, Manitoba, Nanaimo, BC, and Dryden, Ontario. The first two networks have been used as examples to enhance proposals for Dryden’s network. A critique of Dryden’s network has also exposed the downfalls of the existing network and revealed opportunities for enhancement.

- Winnipeg, Manitoba

In the last few years, Winnipeg has undergone extensive additions to enhance the active transportation network. Winnipeg’s plan was to incorporate better and more diverse active transportation routes of multi-use pathways, bike paths, cycle track, bike lanes (sharrows), diamond lanes, and bicycle boulevards. The following images and definitions have outlined The City of Winnipeg (2011) routes:

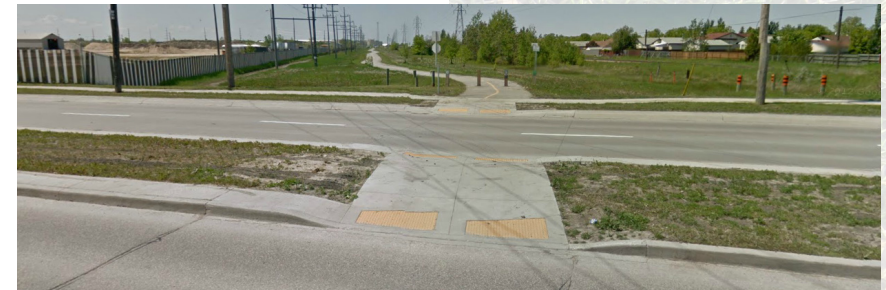


Figure 4.1: Google snapshot of Winnipeg multi-use pathway, 2013

Multi-use pathways: a physically separated path that is shared between cyclists and pedestrians.



Figure 4.2: Google snapshot of Winnipeg bike path, 2013

Bike paths: a sidewalk-level, two-way bike path that is completely separated from motorized traffic and sidewalk traffic by a physical barrier such as a boulevard.



Figure 4.3: Google snapshot of Winnipeg cycle track, 2013

Cycle track: a bike lane that is physically separated by a curb or a median from traffic lanes and sidewalks.



Figure 4.4: Google snapshot of Winnipeg bike lane, 2013

Bike lane: dedicated road space for cyclists that are separated from vehicular traffic by signs and pavement markings.

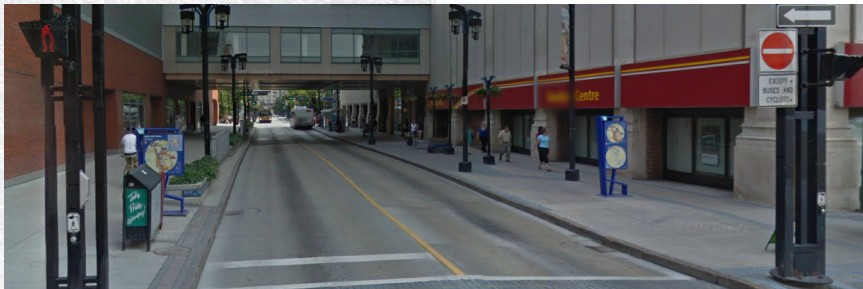


Figure 4.5: Google snapshot of Winnipeg diamond lane, 2013

Diamond lane: reserved lanes that are shared between buses and cyclists.



Figure 4.6: Google snapshot of Winnipeg bicycle boulevard, 2013

Bicycle boulevard: a shared roadway that has been optimized for bike traffic.

These route types are intended to create safe paths for pedestrians and cyclists. In areas with heavy traffic these paths direct pedestrians and cyclists to take certain routes to and from their destinations, as well as encouraging them to use the modes of transportation with the provision of such paths.

The City of Winnipeg (2012), as part of their transportation master plan, adopted the following strategies for cycling and walking:

- to explore use of rail, hydro and other available corridors
- to work with local school divisions and schools to promote active travel to and from schools
- to prioritize pedestrian amenities (trees, street furniture)
- to maintain the walking and cycling network for year-round use

These strategies are just a few noted and summarized from the more specific lists dealing with overall active transportation, walking and cycling that Winnipeg has. These adopted strategies are highly pertinent to this practicum.

Furthermore, The City of Winnipeg has put in place programs to encourage people to participate in active transportation. Some of these programs are international trails day, bike to work day, and ciclovía, which has been declared a day where the city closes off specific roads to motorized vehicles promoting active transportation. In addition to these programs to integrate the public as much as possible and encourage an active lifestyle, Winnipeg also put in place active and safe routes to school, and a program to promote green action. Coincidentally, the following example from Nanaimo, British Columbia, according to Boulevard Transportation Group Ltd. (2009) has named Winnipeg as a successful story of active transportation (p. 8).

• Nanaimo, British Columbia

Boulevard Transportation Group Ltd. provided Nanaimo with the 2009 Community Active Transportation Plan that outlines some of the existing conditions of the area. They noted that the major roads have narrow shoulders or none at all; there were 10 community parks that were undeveloped; and the Trans Canada Trail was lacking in space. This information was gathered through many public interactions and investigations.

Boulevard Transportation Group's active transportation plan for Nanaimo (2009) included nine objectives:

Establish Compatible Land Use Framework: land density and land diversity helps reduce distances people have to travel

Improve Roadside Conditions: include a multi-use trail on one side of roads or construct a separate trail where road right-of-way does not have room, or enlarge shoulders to 1.5m

Support Continuing Development of Regional Trails: develop trails and connections ensuring safety and consideration for environmental conditions

Make Full Use of Existing Public Lands for Trails: improve identification with signage for optimal use by public to areas of undeveloped road allowances ending at water

Prepare for Future Trail Corridor Acquisition: informal public access authorization

Formalize "Blueway" Network: water-borne travel and recreation

Provide trip-end facilities: such as bicycle or car facilities provided when transferring modes of transportation

Improve Community Signage: trail signage to improve comfort and orientation

Undertake Community-based Social Marketing: connects community members, removes social barriers, and influences social change in the community

Boulevard Transportation Group's active transportation plan incorporated many details that has been applied to Dryden. Particularly improving roadside conditions and signage. For a few spaces in Dryden, the proposed to prepare for future trail corridor acquisitions could potentially take pedestrians and cyclists off roadways and onto a trail.

Although Dryden is a much smaller city than Winnipeg or Nanaimo, the function of the active transportation routes is the same. The density and congestion of automobile traffic does not have to be completely avoided, as the main roadways are not overly busy most of the time. The roadways lack, in some areas, space for active transportation users and this is one of the features that has been intended in the proposals of this Practicum.

• Dryden's Official Plan and Trail Enhancement and Development

An investigation of Dryden's active transportation networks including shared road ways, walking paths, designated bicycle routes, and available land reclamation (like vacant commercial, residential, and open space areas) has been pursued in this section to identify opportunity spaces and routes for the proposed facilities and active transportation network enhancements. These elements have been used in conjunction with gender specific learning, and Dryden High School's current curriculum to propose a design incorporating all ages, specifically High School youth, in an open space network.

In Dryden's Official City Plan from 2002, seven objectives are stated:

- to direct new residential development primarily to the urban serviced area of the City
- to limit development in the unserved area in size and number, except where the development consists of a resource-based industry that requires a large land area and is compatible with uses of that

area

- to ensure there are sufficient lands designated to provide for the expansion of existing industrial development and encourage compatible new industries that will diversify the City's economy
- to develop the City as a focus for industry, trade, commerce and services throughout the District and Northwestern Ontario
- to improve to quality of life for the existing and future residents by improving parkland and recreational facilities, encouraging a high standard of property and building maintenance and providing opportunities for a wide range of employment
- to protect important natural resources such as wildlife habitat areas, wetlands and aggregates and to ensure the preservation of agricultural activities where they presently exist
- to provide a range of housing opportunities that will meet the physical and financial needs of an aging population and be able to respond to quickly changing needs associated with a resource-based economy

Dryden has not had any other proposals for city enhancement since the 2002 /2003 proposal from Earth Tech Canada (Official City Plan). Comparing the city plan to the work that has actually been done to the city revealed that Dryden has not followed through with many of the objectives. The high standard of property and building maintenance is distinctly lacking. Improvement of the parkland and recreational facilities have been poorly executed. Within city limits, Pronger Park and Laura Howe Marsh have remained the two main parks that have received enhancements. Pathways have been refurbished to an extent and signage has been posted. Many of the parks are small and are suitable for child's play, but not all are user-friendly. The wetlands have been highly protected; credit has to be given to the City for the emphasis on preservation. Dryden has an emphasis on future growth, but research suggested that population has not grown as anticipated. Tourism and

more provision of goods and services should be focused on before the expansion of the city. It has been proposed for Dryden High School to have a variety of facilities to provide for learning, hands-on experience, and community involvement in enhancing the appearance of the city. This being suggested has established the City's objective of development in serviced areas, compatibility of land uses, diversifying the economy, and improving quality of life.

Wener Schwar Landscape Architects in Thunder Bay, Ontario drew up a Trail Enhancement and Development Plan for Dryden (2003). The improvements proposed by Wener Schwar have not been followed through to completion. The largest reason for this is the economic downturn in Dryden. Since Dryden has been in an economic fall and have been having difficulty following the city plans, there has been an opportunity noted to get the community and the High School involved. The High School becoming involved in trail enhancements as a learning tool would provide the community with an improved appearance and provide the High School with better tools to teach students about nature and involvement within the community. Also having the students participate in the city's enhancement will provide more opportunities for the High School's construction technology course that the school recently expanded, and opportunities to complete the compulsory community volunteer hours.

The trail enhancement proposal from Wener Schwar has resulted in a few markers in some areas for where the trails exist, and little construction of the Laura Howe Marsh trail. Many of the interpretive displays for learning and rest areas do not exist. The trail enhancement proposal was to take place from 2003 to 2013, but very little has been carried out. WenerSchwar suggested a list of possible funding opportunities for the enhancements, which have apparently not been attempted. It has been suggested to promote the High School to participate in the growth of trees and other plants, which could enhance the city's trails and open areas through hands-on learning processes within the High School.

Figures 4.7 and 4.8 show the current active transportation networks. Figure 4.7 illustrates the three main inner city trails, Urban trail, Signature trail, and Nature in the City trail. The connections between these trails have been well laid out, but pedestrian connection north to south has existed on the two main vehicular routes and one sky tube. The way-finding has been found difficult unless you are familiar with Dryden and the trail system already. The signage should be more frequent, there should be more options for pedestrian overpasses north to south, and the pathways should be more defined and distinct for each trail type. A few critiques of how the pedestrian trails currently exist are as follows:

- The Urban trail has minimal signage and distinction. The enhancement plan proposed that there would be a historical walk, and cycling paths, neither of which is clearly marked.
- The Signature trail is directed toward tourism. Walking this trail, there are no identifiers why it is “signature” to Dryden. The Trail Enhancement and Development Plan (2003) proposed interpretive and experiential opportunities for hands-on, intriguing and interpretive encounters. As the trail exists today, there are no hands-on features. Walking the trail is fairly plain, however enjoyable as the walk is beside the water, but there are no displays except for a few historical plaques.
- The Nature in the City trail is very segmented. The continuity of this trail should be improved. This trail will be of particular focus for enhancement in this Practicum.

Figure 4.8 illustrates the Ontario Federation of Snowmobile Club (OFSC) trail within City limits. It has been proposed as a multi-use trail as an extension of the existing Nature in the City trail. As well, the Trans Canada Trail (TCT) is also shown. It takes the same route as the Signature Trail, but has no signage as such. The Trans Canada Trail website also shows that the trail runs straight through the Dryden Mill buildings. Re-routes, enhancements to, and awareness of the TCT have been proposed.

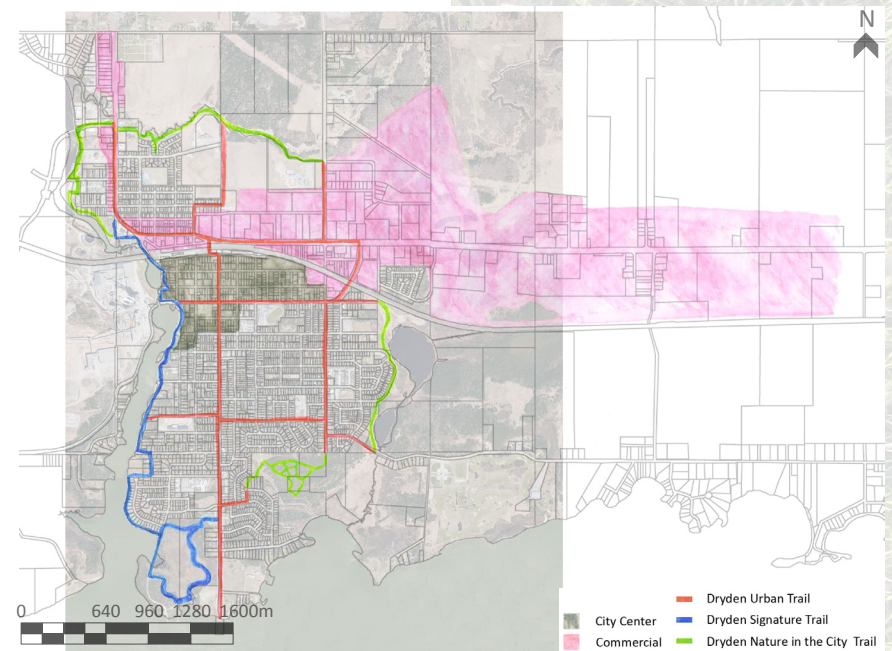


Figure 4.7: Dryden Existing Trails

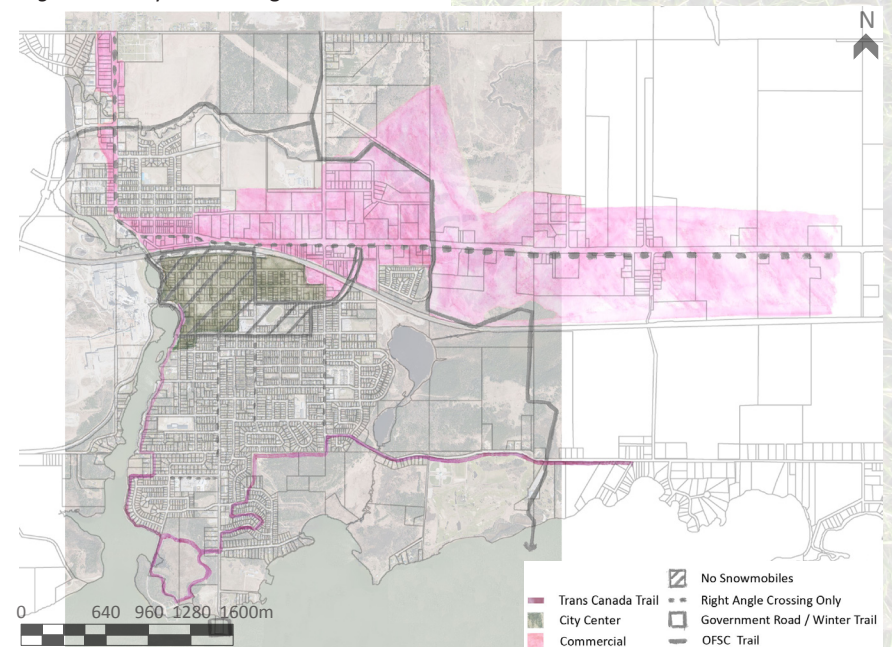


Figure 4.8: Dryden Trans Canada Trail and OFSC Trail

- Conclusion

Winnipeg's trail types were used as examples for the proposed multi-use trails, and a similar version of cycle tracks for Dryden trails. The enabling strategies adopted in Winnipeg will help the downtown area to become more welcoming to pedestrians. Dryden has an adequate amount of sidewalks throughout the city, but it is the appearance and pedestrian friendliness that needs work. To improve pedestrian friendliness in Dryden, working with schools to promote active transport, supplying pedestrian amenities like trees and benches, and maintaining year-round use of the trails have been the principles drawn from Winnipeg's active transportation strategy.

Nanaimo's 2009 Community Active Transportation Plan indicated an objective of preparing for future trail corridor acquisition, which requires informal public access authorization. Dryden's trails end up following a few roads, some of which do not have sidewalks or signs. An alternative route through private property would be a possible solution to keep pedestrians safe and provide proper trails, so the option of informal public access authorization, a suggestion from Nanaimo active transportation plan, has been adopted in this Practicum. Informal public access authorization is to help gain access to private lands for public use.

“The study of the region would ground education in the particularities of a specific place and would also integrate various disciplines around the “regional survey”, which includes surveys of soils, climate, vegetation, history, economy, and society.”
 – David W. Orr, p. 148

CHAPTER FIVE: Site Selection and Design

Chapter Five has integrated the information assembled in the previous chapters and has concluded in a design proposal for Dryden community and that has provided opportunities for Dryden High School. The proposals have incorporated the Biophilia values, opportunity spaces for engagement with, and education about nature, and an enhanced active transportation network that has been organized around the High School. The design proposal has provided areas and networks that encourage all ages, especially High School youth, to be physically active in the community through nature and education.

The following reiterates the design strategies influenced by the previous information:

- Chapter Two: emphasize Biophilia values of naturalistic, ecologic-

scientific, aesthetic, humanistic, and moralistic (*Table 2.1*); establish activities for physical and psychological health; and bring nature into education

- Chapter Three: apply gender learning differences (*Table 3.1*); expand on Ontario’s environmental education curriculum; and expand on Dryden High School’s Outdoor Education program
- Chapter Four: apply Winnipeg, Manitoba’s exemplary pedestrian and cyclist routes for safety and clarity of AT network; and apply some of Nanaimo, British Columbia’s nine objectives for active transportation, particularly signage, safety, and authorization for access to private property

• Introduction

Dryden is surrounded by Boreal forest, but it seems the inner city does not reflect its location. By supplying the Dryden community and Dryden High School with a Botanical Garden and Greenhouse, a small Tree Nursery, and a BBQ Pavilion, it has been hoped that the school will integrate and use the available areas for curriculum purposes, give back to the community, and heighten features for tourism. The High School youth can participate in growing and nurturing plants and transplant these back into the community to enrich the inner city natural areas. The plantings that these youth helped provide to the community landscape will become a part of their history and learning. As Bateson (1979) stated, “This viewing is called transference and is a general phenomenon in human relations. It is a universal characteristic of all interaction between persons because, after all, the shape of what happened between you and me yesterday carries over to shape how we respond to each other today. And that shaping is, in principle, a transference from past learning” (p. 15-16). In addition to creating a history and knowledge base for youth and the community, these spaces will broaden the chances for different types of

Biophilia value exposure (see *Table: 2.1*). Dryden's environment touches on a few of the Biophilia values, but the achievements of the city do not appear to be very extensive. Looking at Dryden's current Official City Plan, and Enhanced Trail Proposal, there is lack of the aesthetic Biophilia value in both residential and downtown areas, and underdevelopment of the City Plan and trail proposal in terms of clear way-finding, and safe paths. Wilson & Kellert (1993) stated, "Any conditions which reduce such intimate experience create a cycle of disaffection, apathy, and irresponsibility toward natural habitats" (p. 239). Many opportunity areas exist in Dryden for small parks, large-scale development, and community gathering spaces. Using these opportunity spaces, it has been intended to heighten and expand the following Biophilia values in the: ecological-scientific, aesthetic, humanistic and moralistic categories. Providing these opportunity areas will engage all ages, specifically youth, into active living for physical and psychological health. This would be achieved through education about natural elements using the High School's curriculum as a means to emphasize and broaden an active living lifestyle.

Research from my Landscape Topics course (2011) revealed that most gardening has been used as a social, therapeutic, or commercial activity. This practicum has intended to use the characteristics of these three activities into the education system. It is timely to start to balance between a daily exposure to activity and nature, and the current constant exposure to technology and the sedentary lifestyle. As Wilson & Kellert (1993) stated, "Nature's diversity and healthy functioning are worthy of maintenance because they represent the best chance for people to experience a satisfying and meaningful existence" (p. 60).

- Land and Zone Characteristics

The following four figures (5.1.0 to 5.1.3) illustrate Dryden's surrounding character. Each figure has been accompanied with a brief

description of analysis that influenced design decisions of this Practicum.

Figure 5.1.0 has illustrated the water bodies, tree masses, and CP railway that Dryden is bounded by. The tree masses are part of the Boreal forest and consist of predominantly trembling aspen, balsam fir, jack pine, tamarack, and birches. As the residential and downtown areas continue to be developed, the tree masses are being lost and not replaced. Touring the city, the landscape would benefit from plantings like gardens and trees. This became an opportunity to engage youth and the community to enhance the appearance of Dryden and reflect the characteristic of the Boreal forest within the city. This figure also shows that a large percent of the city is bordered by water. Integrating water education into the design proposal will be another aspect for youth to understand Dryden's surrounding environment.

Figure 5.1.1 has illustrated the open spaces, which include parks, golf courses, and treeless open areas, and marshland. The two largest areas of treeless open space are to the north, the Fairfields, and to the southeast, the baseball fields and golf course. The Milanese's Lakes and Laura Howe Marsh are the areas primarily surrounded by marshland. These areas are considered Natural Heritage and Environmental Protection areas. The locations of these areas have been taken into consideration in terms of proposing a balance of parklands and facilities for the community. Cooper Park and the Fairfields are where the main community events are held. Pronger Park and Laura Howe Marsh are the epitome of park spaces the emphasize Biophilia values, and will be used as inspiration for this Practicum's design proposal.

Figure 5.1.2 has illustrated the soil types and drainage value. Most of the city's soil is silty loam that drains well. These soil sites influenced the selection of proposed sites for this design. There are many soil and drainage types throughout the area of Dryden that should be recognized. Soil is also an element of nature that is taken for granted since most of its strata are not seen. A design element is incorporated into a Key Site to emphasize the "unseen underground".

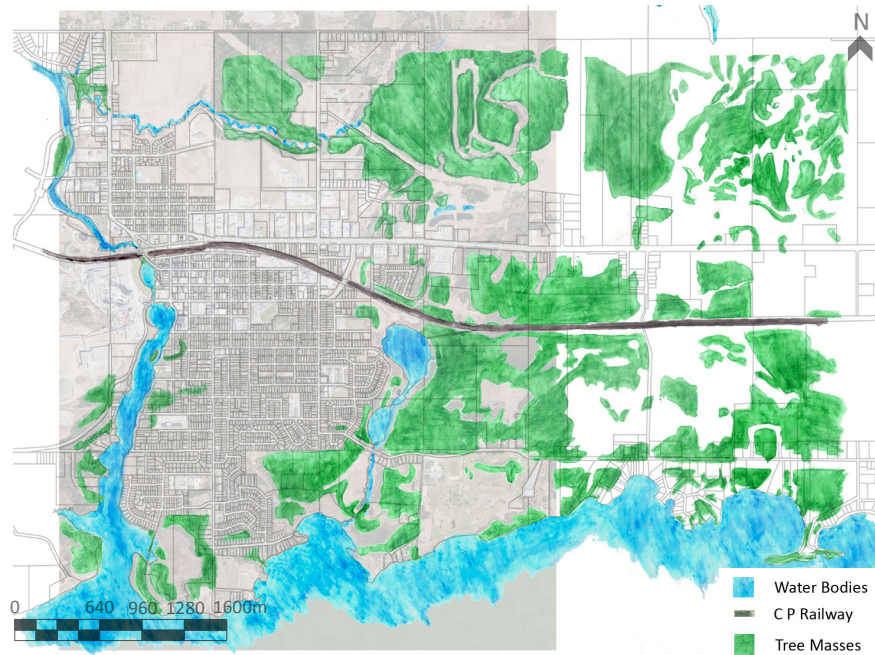


Figure 5.1.0: Water Bodies, Trees Masses, and CP Railway, Dryden

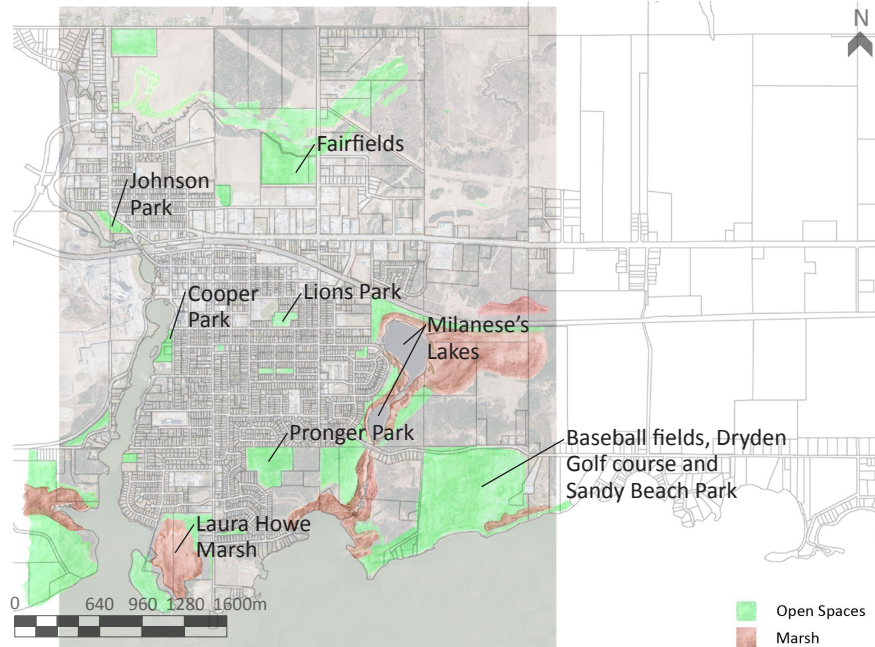


Figure 5.1.1: Open Spaces and Marshes, Dryden

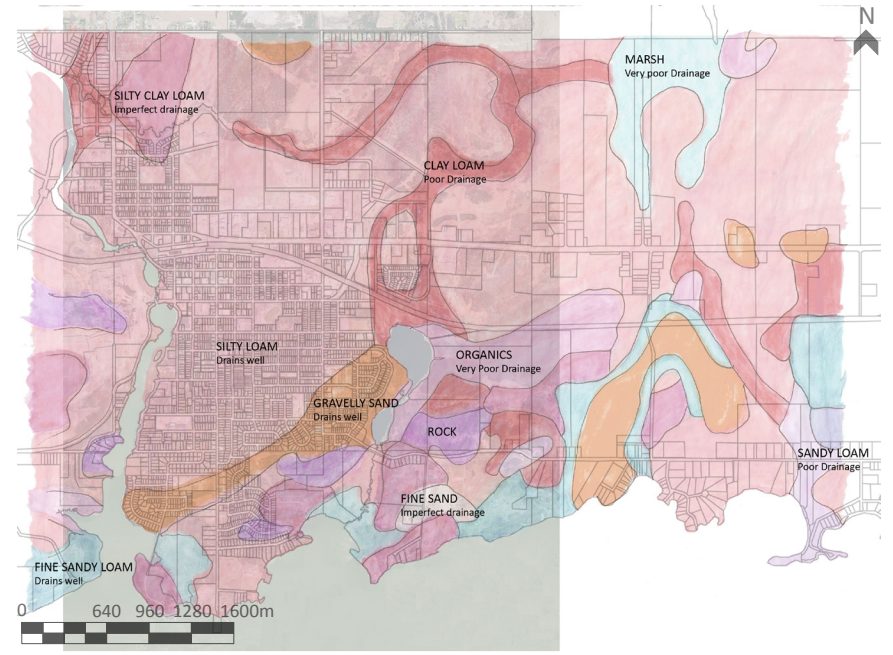


Figure 5.1.2: Soil Types and Drainage Value, Dryden

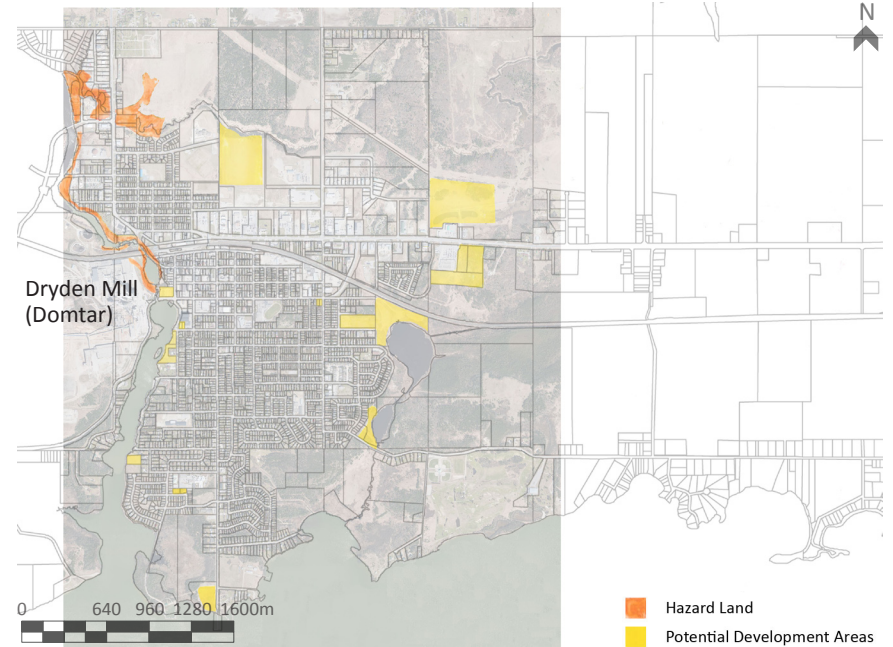


Figure 5.1.3: Hazard Areas and Potential Development Areas, Dryden

Figure 5.1.3 has illustrated hazard lands that exist mostly in the northwest area of the city. These zones are designated areas that are prone to flooding, shoreline erosion, or slope instability. Most of the hazard areas following the Wabigoon River also follow the Nature in the City and Signature Trails. It will be proposed that some of these hazard areas, particularly the areas on Domtar property, be a part of the potential areas for the High School youth to participate in developing. Also illustrated in this figure are the potential development areas. These areas are classified as such by the City of Dryden. A few of these areas will be considered for development as Featured and Key sites in this proposal.

Chapter Four Figures 4.7 and 4.8 (Existing Trails, and Trans Canada Trail and OFSC Trail) and Chapter Five Figures 5.1.0 to 5.1.3 (Land and Zone Characteristics), have been referred to suggesting a design proposal incorporating trail re-routes and enhancements, and site programming (see Figure 5.2.0). The design decisions for the locations of the proposed open spaces and trail enhancements have been based on the idea that Dryden High School has been made the central hub. The proposed enhancements to the existing trails emphasize safety, easy access, way finding, and youth participation in planting to enhance Biophilia values to the community and youth experience.

Figure 5.2.0 and Figure 5.2.1 have illustrated the overall plan for the design of this Practicum. Figure 5.2.0 has combined Dryden’s existing trails, as well as the trails that have been proposed for enhancements, trail re-routes, Featured Sites, and Key Sites. Figure 5.2.1 has illustrated solely the overall proposal.

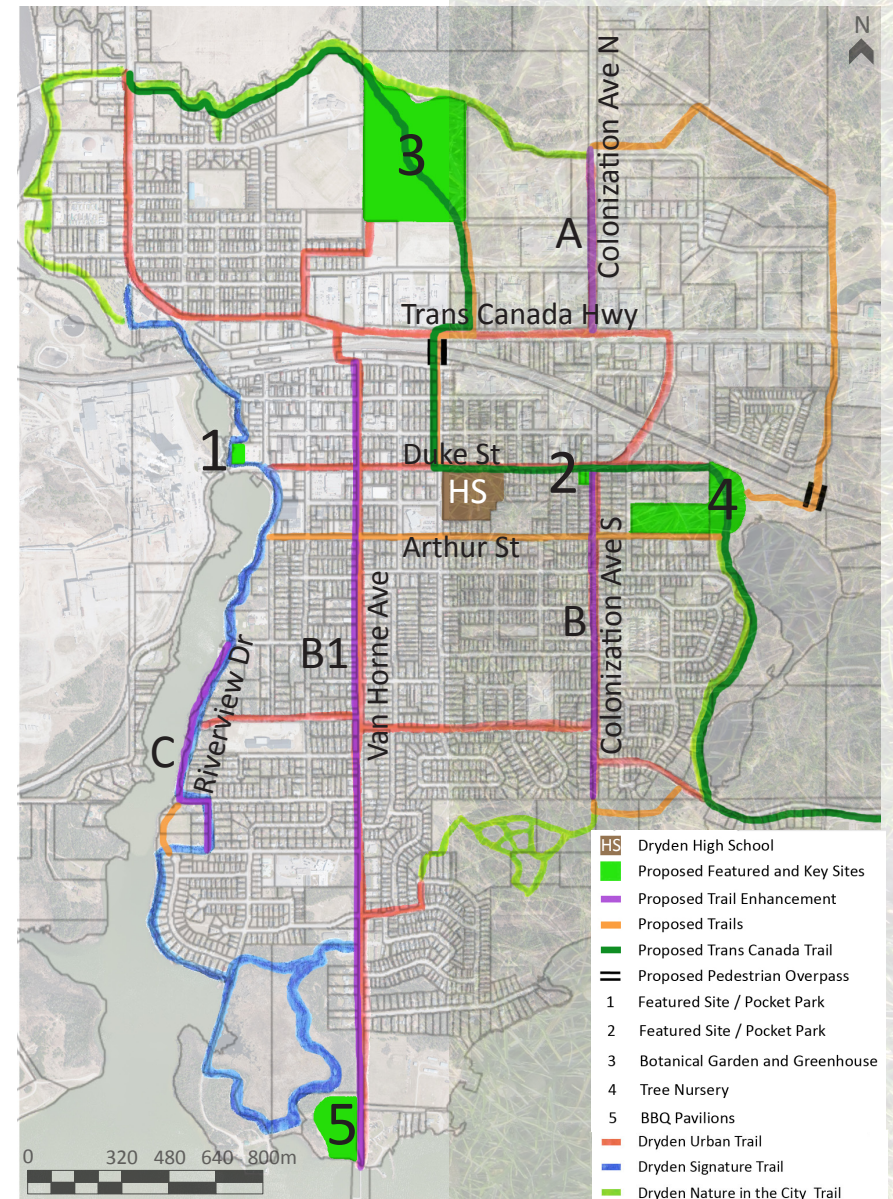


Figure 5.2.0: Dryden’s Existing Trails overlapped by Proposed Trail Enhancements, Trail Re-routes, Trans Canada Trail, Feature and Key Sites

• Featured Sites

Featured sites in this proposal, numbered as 1 and 2 on *Figure 5.2.0 and Figure 5.2.1*, have been defined as small pocket parks that have been designated to the High School students to explore their creativity. Dryden High School has recently expanded their communications technology and construction technology courses so that the students have an opportunity to have a good start in the available job areas in the community. The Featured Sites proposed in this design are to aid in the creativity and development of these courses. It is proposed that the student can, individually or in teams, design, construct installations, and plant vegetation. This will enhance the community through Biophilia values of ecologicistic-scientific, aesthetic, and humanistic (see *Table 2.1*). The chosen locations for the Featured Sites have been designated as such because they are adjacent to the current trail system. Maintaining these Featured Sites on the trails will enhance the experience by contributing more visual features like vegetation and installations.

Featured Site 1 has been part of Dryden's Mill parking lot, owned by Domtar. The City has classified this land as a potential development site. There is preparatory work to change this site to a pocket park, but it would add a great deal visually to a main street and route in the city. The users and the community would experience Biophilia values of utilitarian, aesthetic, and humanistic (see *Table 2.1*). The location of the site is adjacent to the Wabigoon River dam gate. This gate allows a constant rush of water that muffles the sounds of vehicles and any other "city" sounds. When walking on the existing trail the sound of rushing water gives a chance for inner thought. This is an area where reflection can happen. This site provides the perfect place for female youth to be exposed to as they are lacking time alone because of their cyber bubble obsession. Art classes, writing classes, construction classes, and the outdoors classes can potentially use this site, which will psychologically benefit youth. For male youth, the production of a design for the area can be used for

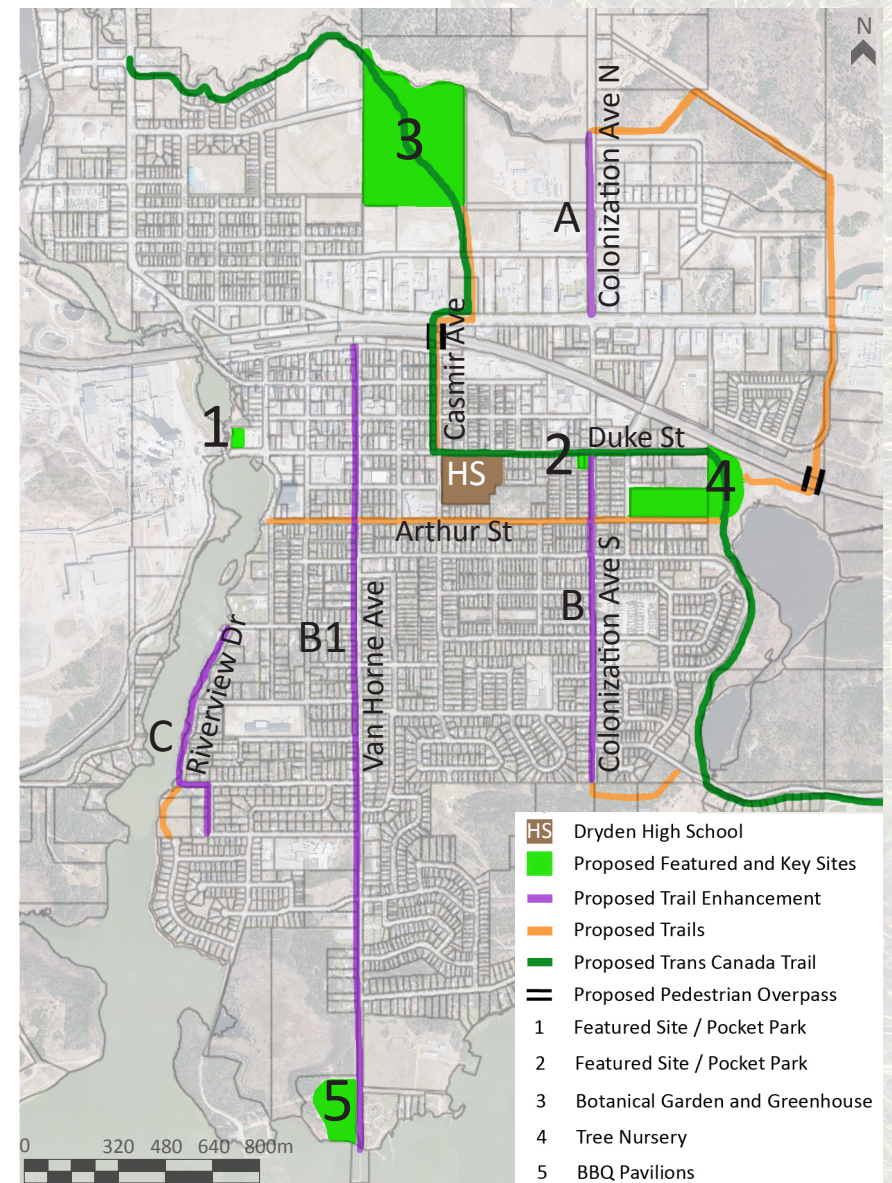


Figure 5.2.1: Overall Plan - Proposed Trail Enhancements, Trail Re-routes, Trans Canada Trail, and Featured and Key Sites

competition in classroom teams, or the labour of creating the park can be used as an energy outlet.

The same ideas have been applied to Featured Site 2. This area is at the end of the Duke Street overpass, one of the two main routes over the CP Rail to the north side of the city. This site can be considered as a transition area, a meeting spot, and a provision for the neighbourhood. Again, this proposal leaves it as a blank slate to allow for High School youth to participate in competition, and teamwork, which will promote a connection to the community. Installations by the students will offer hands-on learning, keep male youth moving, and provide group dynamics and concrete objects for female youth. The idea of installations for these two featured sites will keep the site appealing and make it an area that will be visited frequently to view the changes. The additions to the community and trail network will add diversity to the community, which in turn will heighten a tourist's experience of the city.

• Key Sites

Key Sites in this proposal have been defined as major developments such as the Botanical Gardens and Greenhouse, Tree Nursery, and BBQ Pavilion, numbered as 3, 4, and 5 on *Figure 5.2.0* and *Figure 5.2.1*. These areas are to provide Dryden High School with proper facilities to enrich the ways of learning (Chapter Three) through *Kenntnis*: to know by experience, and *Wissenschaft*: to know about something, like knowledge from a book (Sax, 2007, p.28). The main objective with these proposed Key Sites is to provide research and analysis facilities for the High School through hands-on experience with nature. As well, the Key Sites provide the community with an enriched trail network with more destinations along routes, and a tourist attraction.

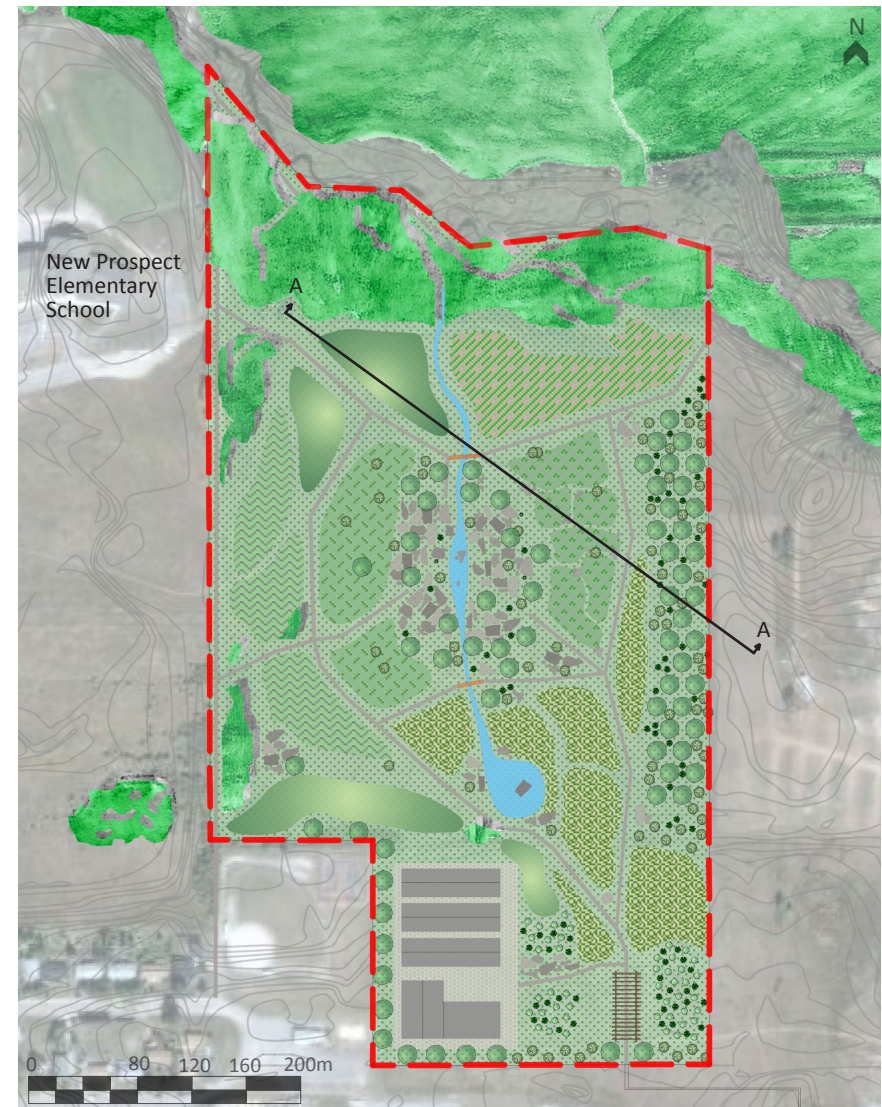
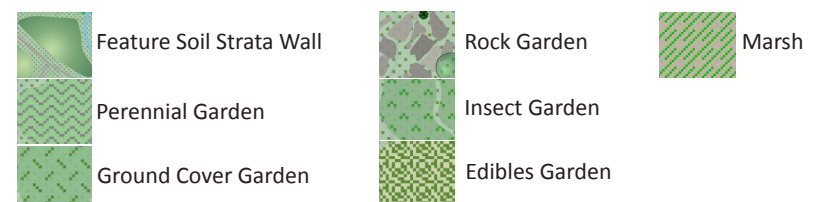


Figure 5.3.0: Botanical Garden and Greenhouse Plan



Botanical Garden and Greenhouse

Dryden has two main parks located in the more populated areas of the city, Pronger Park and Laura Howe Marsh (see *Figure 5.1.1*). These two parks are in the south side of the city. A Botanical Garden and Greenhouse space has been proposed in the north side of the city to provide balance to the city's open spaces. This Key Site, numbered 3 on *Figure 5.2.0* and *Figure 5.2.1*, will emphasize elements of the Boreal Forest, have a feature wall displaying soil strata, and, of course, a variety of gardens and a greenhouse. The feature wall of soil strata will reveal the unseen that is taken for granted. The garden types proposed are perennial, ground cover, rock, insect, and edibles. McCarthy & Rodgers (2008) state that, "This delightful bombardment of the senses from sources that have been a part of our natural environment since we walked on Earth, can be summed up with the words *simultaneous perception*. As creatures, it is the kind of experience we both crave and need. And it can only be found out of doors" (p. 80). The use of the Greenhouse is proposed to be primarily by students. This is intended to encourage and provide an



Figure 5.3.1: Botanical Garden and Greenhouse Section A:A in Figure 5.3.0

area for year-round learning. As Gurian & Stevens (2011) state, "The more time the brain spends in learning and practicing its knowledge, the greater chance of learning success" (p. 286), which is the reason this year-round hands-on environment is proposed for the students. The greenhouse will have a passive solar system in order for it to function in the winter. Because school runs most of its year in the winter, it is highly important to have a winterized greenhouse. One of the main intentions of the Winter Greenhouse is to allow the production of food for the High School. From the production of food by the students, the school cafeteria, and the cooking class will be able to utilize the food, and the prospect of participation in the farmers' markets will be presented. As well, since there is the summer season of growing, a club can be made that students volunteer to participate in. This is another characteristic to help in female and male learning, the provision of group dynamics and leadership.

Watching plants grow, seeing the environments plants thrive in, seeing cycles of life happen, and having a responsibility to participate in nurturing something will teach youth about themselves, others, dedication, team work, and some characteristics about the location



Figure 5.3.2: Botanical Garden and Greenhouse Perspective - feature soil strata wall

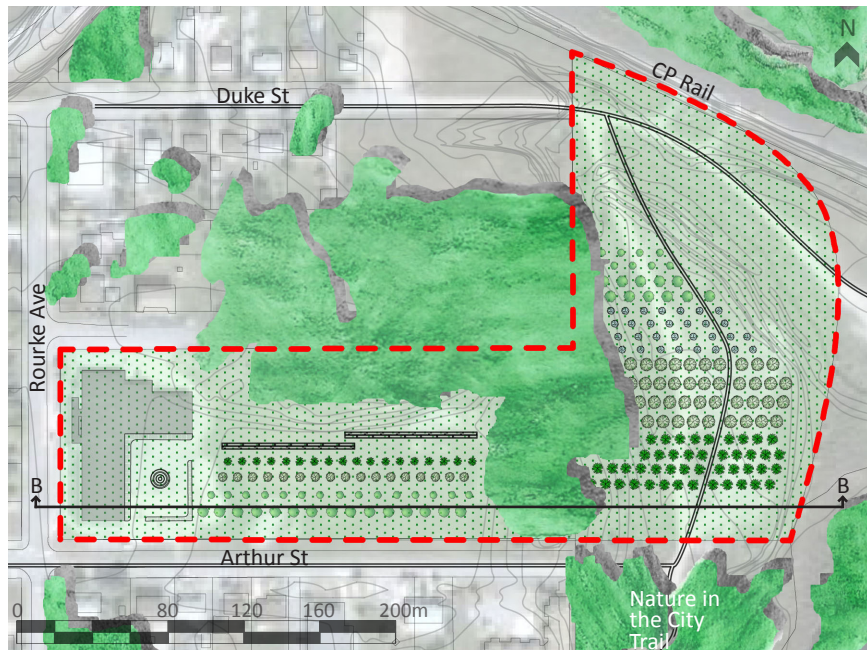


Figure 5.4.0: Tree Nursery Plan



Figure 5.4.1: Tree Nursery Right Isometric

they live in, the Boreal Forest. The most emphasized Biophilia values are ecologicistic-scientific and humanistic. Dealing with plants on a regular basis will provide youth a way to study the plant systems, functions, and relationships in nature. Youth will gain affection for nature because they will be nurturing plants. As well, cooperation will be heightened because there will be a large amount of responsibility. These aspects of affection and cooperation are healthy for youth, especially for females as these are characteristics that heighten female learning. There will be a prolonged engagement with this site and its production that youth and the community will benefit from physically and psychologically. Youth will be engaged and learn from the aspects of movement, leadership, competition, teamwork, and concrete objects. Dryden High School believes strongly in balancing classroom work and hands-on work. The school has slowly been developing trade areas that students can begin life-like experience in the technologies department, especially that of construction. So the opportunity to suggest an expansion of greenhouse experience for classes, like outdoor programs, horticulture, and sciences, can be a valid proposal for this school.

Tree Nursery

Being surrounded by the Boreal Forest, trees are a huge part of the local vegetation. This Tree Nursery, numbered 4 on *Figure 5.2.0* and *Figure 5.2.1*, consisting of container, tunnel, and in-ground planting types is on approximately 14 acres (5.7 ha). This provides a facility for students to care for, learn about, and provide the community with a diversity of trees. Dryden's landscape could use more vegetation planted throughout the community. As Diana Beresford-Kroeger (2003) states, "Trees add to the art form of a garden. Like mountains and the sea, they change contours with the seasons. They enrich the eye, which feeds the mind and settles the soul to perceive the joy in a garden's change" (p. 3). Planting city properties will enhance the diversity of vegetation and the appearance of



Figure 5.4.2 Tree Nursery Perspective - Arboretum on East side of site



Figure 5.4.3: Tree Nursery Section B:B in Figure 5.4.0

the city, and provide naturalistic and aesthetic Biophilia values.

The provision of this tree nursery is intended to expose students to the succession of growth from seedlings to a minimum of three-year-old trees and shrubs. The students can then take these small trees and plant them within the community, or use them during the outdoor education course and plant them for the pulp and paper mill tree planting session. As the trees grow throughout the school terms, an ongoing project for students could be to record and graph the growth patterns of the trees. Another suggestion is to incorporate planting five trees throughout each student's High School career. This idea can be used as a competitive challenge with other schools that participate in tree planting. This also gives the opportunity for leadership for the boys, and cooperative learning for girls.

The condemned school building on this site is proposed to be renovated to suit classroom needs such as pressing, indoor propagation, and storage. These renovations will heighten the Biophilia value of ecologicistic- scientific. The southeast corner of the lot is currently where the Nature in City Trail route ends. The trail is currently undeveloped to the north, and is a beaten down trail that runs from the south. It is proposed to have the Nature in the City Trail continue north, join a path going west on Duke Street as well as developing a trail east to a pedestrian overpass. The south-adjoining road, Arthur Street, is proposed as one of the main trail routes from the High School. This route will connect the existing Nature in the City Trail on the east side of the site to the Urban Trail. The Arthur Street trail will connect to the Signature Trail, that runs along Wabigoon River, and provides direct east-west access through the city.

The entire east side of the site is currently used to dump snow in the winter. This leaves the site looking dirty and unfriendly to pedestrians. The site also borders the Milanese's Lakes that are surrounded by marshland. The utilization of this part of the site as a tree nursery will provide safety, a pedestrian friendly route, an educational path, and

an enhanced appearance for the trail. This part of the tree nursery becomes an arboretum for the community to experience and recognize the differences between the trees that contribute to the character of the Boreal Forest.

BBQ Pavilions

This site, numbered 5 on *Figure 5.2.0* and *Figure 5.2.1*, is approximately 10 acres (4 ha) and is proposed to provide for summer and winter gatherings for the community as well as an outdoor classroom for the High School. The inspiration for this site is primarily activity. The Government Dock, in the winter, is extended into an ice road across Wabigoon Lake joining to Parker Point. A small community of ice fishing huts is assembled along this ice road. The provision of the BBQ Pavilions is to make this outdoor community stronger, welcoming those who do not have fishing huts. There is a future proposal to develop an RV campground, restaurant, and single housing units on the east side of Van Horne Avenue. With the development of tourist and residential areas, the BBQ Pavilions will strengthen the experience of Dryden's culture. Eagleton (2000) states, "We are not born as cultural beings, nor as self-sufficient natural ones, but as creatures whose helpless physical nature is such that culture is a necessity if we are to survive. Culture is the 'supplement' which plugs a gap at the heart of our nature, and our material needs are then reinflected in its terms" (p. 99). Laura Howe Marsh, one of Dryden's prided wetland habitats, is on the west side of this site. The Signature trail connects these two sites, and is proposed to extend through the site to Van Horne Avenue, which is the Urban Trail (see *Figure 4.7*). Parking is also provided for boaters to park a truck and trailer. A large central field is left as an open space for leisure recreation. To help in the planting of this site, the students can integrate the plants and trees they grew from the Greenhouse and Tree Nursery.

The High School can use this area for integrating some of their

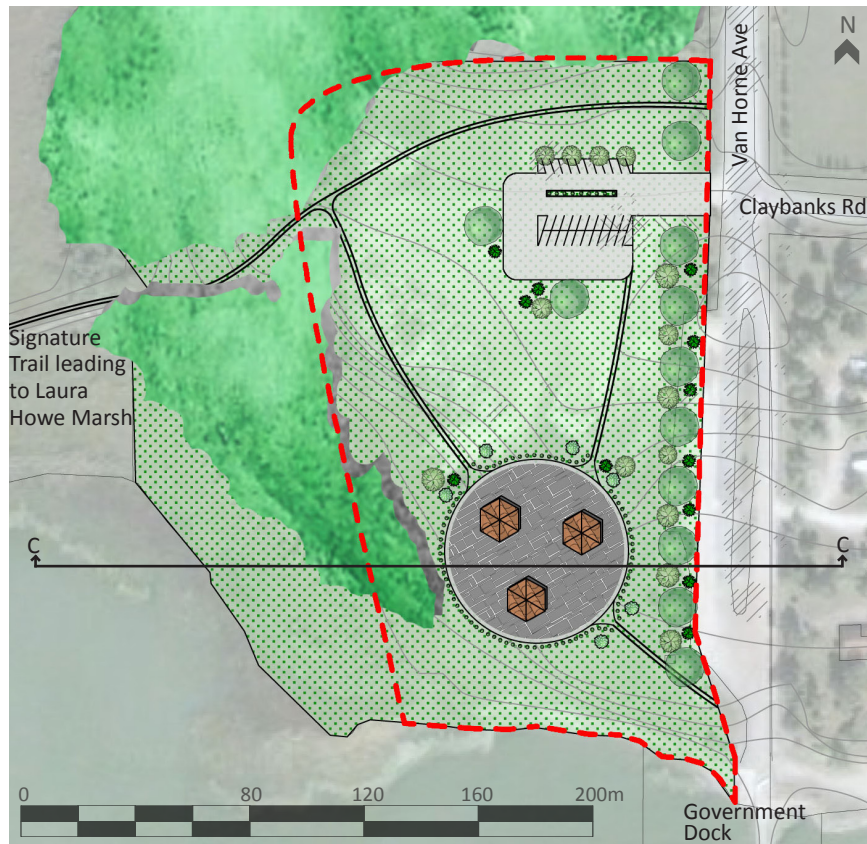


Figure 5.5.0: BBQ Pavilion Plan



Figure 5.5.1: BBQ Pavilion Right Isometric

outdoor education topics such as fire-building, trapping, and outdoor travel preparation. Since winter is a long season in this area, this site provides perfect opportunity to analyze freezing water and thawing ice. Tuan (1974) states, “Aivilik Eskimos have at least twelve different terms for the various winds, and vocabulary for the different conditions of snow is equally rich. A city dweller, by way of extreme contrast, has a very limited vocabulary, not only in regard to snow and ice but also to aspects of nature that affect him daily such as weather and relief” (p. 77). It is not only important to expose youth to vegetation and land characteristics, but water attributes as well. A little more on the scientific side of curriculum, ice and water analysis can incorporate technological uses, but keep youth interactive with the outdoors.



Figure 5.5.2: BBQ Pavilion Perspective

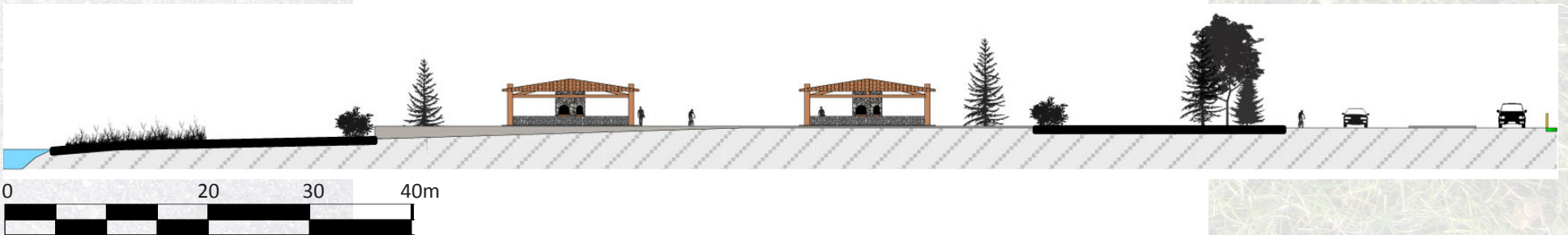


Figure 5.5.3: BBQ Pavilion Section C:C in Figure 5.5.0

• Trail Enhancements

Dryden's trails have not been fully developed or connected in accordance with the 2003 Trail Enhancement and Development Plan. The existing Dryden trail classifications will remain in this proposal, as Dryden Signature Trail, Nature in the City, and Urban Trail. Some trails will be re-routed and some will be enhanced to allow for a more pedestrian / cyclist friendly route. Signage and way-finding will be enhanced, as there is a lack of it even after the installation of few signs resulting from the 2003 proposals.

On *Figure 5.2.0* and *Figure 5.2.1* trails labeled A, B, B1, and C are proposed trail enhancements. These trails are part of the existing Urban Trail and Signature Trail. There are no characteristics that set these trails apart from an ordinary sidewalk anywhere in the downtown and residential areas. To make these trail routes more defined and identifiable, vegetation, signage and safety are proposed as enhancements.

The Urban Trail enhancements are trails A, B, and B1. *Figure 5.6.0* is a photograph of the current conditions of the Urban Trail on Colonization Avenue N; a gravel walkway along side a road in a very open area. The proposal is to widen the walkway and asphalt its surface to create a multi-use trail, like that of Winnipeg's network examples from Chapter 4 (see *Figure 4.1*). Also, it is proposed that vegetation enhancements are added by the students. The participation of beautifying their community will create appreciation and respect. *Figure 5.6.1*, illustrates the proposed enhancements. Over time, different years of students will have planted the vegetation, which will allow a visual understanding of the growing stages of vegetation and an historical aspect of the additions to the active transportation network in Dryden. Not only would there be hands-on experience, and community involvement, but the use of technology can balance this planting experience to suit the society to which youth



Figure 5.6.0: Existing Trail A on *Figure 5.2.1* - Existing Trail to be enhanced as Multi-use Trail with vegetation

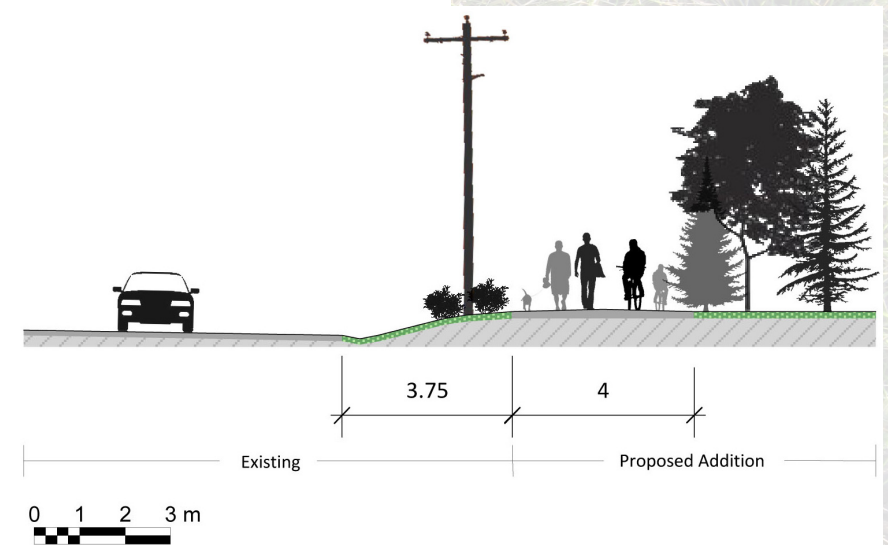


Figure 5.6.1: Multi-use Trail Enhancement Section (for trails marked A on *Figure 5.2.1*)

have come accustomed. Similar to geocaching, a teacher may plan out what area along the trail the students are to plant and, using GPS, the students set out on the trail network to find the area they are to plant. This idea can be applied to all the trail enhancements and proposals. Over the students' High School career, they can develop a database for sharing their particular trees planted.



Figure 5.7.0: Existing Trail B on Figure 5.2.1



Figure 5.7.1: Existing Trail B1 (north end) on Figure 5.2.1



Figure 5.7.2: Existing Trail B1 (south end) on Figure 5.2.1

Figure 5.7.0, Figure 5.7.1, and Figure 5.7.2 are the existing Urban Trails of Colonization Avenue S and Van Horne Avenue, two of the main north-south roads. Improvements of these roadside conditions for safety and identity as the Urban Trail would heighten the pedestrian experience.

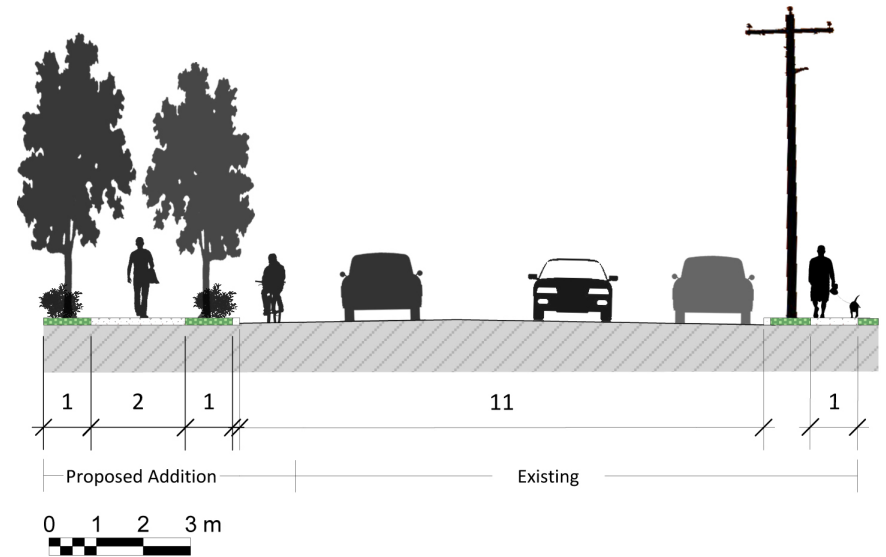


Figure 5.7.3: Trail Enhancement Section Facing North (for trails marked B & B1 on Figure 5.2.1)

Also, adding vegetation would add to the community landscape and planting diversity, and reflect the locations' character. These two main routes connect many facilities throughout the city so enhancing coverage and safety of these trails is important. Figure 5.7.0 shows the very south end of Colonization Avenue S where it connects to pathways in Pronger Park. This area is very unidentifiable as a route as the road turns into a dead end with a hill that has a property for sale sign. Identity and signage that extends up to a resting area is proposed. Figures 5.7.1 and 5.7.2 illustrate north and south sides of Van Horne Avenue, the longest north-south road of the city. Van Horne Avenue leads to the Government Dock site, which is proposed as Key Site 5, the BBQ Pavilions. Pedestrian trails disappear along the route creating an unsafe environment for pedestrians. The proposal, shown in section in Figure 5.7.3 illustrates the widening of one sidewalk, addition of a bike lane, and of vegetation. The two opposing sidewalks are differentiated from each other, and the proposed enhancements provide safety, shade/enclosure, and a nature enhanced experience.



Figure 5.8.0: Existing Trail marked C on Figure 5.2.1

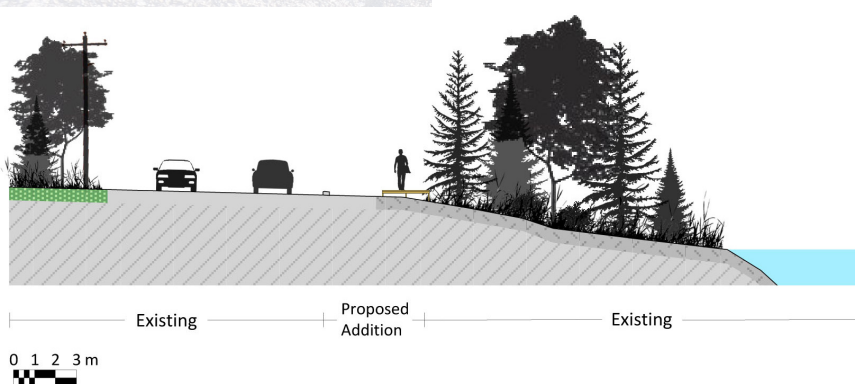


Figure 5.8.1: Boardwalk and Cycle Track Trail Enhancement Section (for trails marked C on Figure 5.2.1)

Figure 5.8.0 is a photograph of Riverview Drive, the Signature Trail that follows the Wabigoon River. There is a small bend leading to a larger bend in the road that creates a blind spot (see Figure 5.2.1). A large percent of this trail does not have a designated pedestrian path, but does reflect the character of the location of Dryden. On Figure 5.2.0 and Figure 5.2.1 is Enhancement Trail C. The shoreline is narrow and steep in some areas preventing expansion of the road for a sidewalk. Without disturbing much of the existing habitat, it is proposed (illustrated in Figure 5.8.1) to construct an elevated pedestrian boardwalk and to install a curb that will designate a cycle track for the safety of the pedestrians. Much of this trail does not require additional planting. It is a serene walk as it follows the

river (personally one of my favourite trails). With the addition of this safer route, a re-route of the trail is to continue along the river rather than looping into the residential area. This will require a future trail corridor acquisition, of the type shown in Nanaimo's active transportation network plan (see Chapter Four). Further north on the Signature Trail is one of the proposed Featured Sites. This is another area for improvement and safety along this trail.

The remaining trail re-routing and connections shown on Figures 5.2.0 and 5.2.1 will follow the OFSC trail (see Figure 4.8), make connections to the Nature in the City Trail, and provide two alternate pedestrian overpasses of the CP Railway. These will close gaps creating a full active transportation network and provide safer, more efficient routes for pedestrians and cyclists.

Considering the Trans Canada Trail (TCT) has no signage in the city, this will be a leading priority. Currently the TCT follows the Signature Trail. It is proposed (see Figure 5.2.1) that the TCT follows the Nature in the City Trail into the city, but then diverges south into the Botanical Garden and Greenhouse space, south over a proposed pedestrian overpass, east past the High School on Duke Street, south through the Tree Nursery arboretum, south on the existing Nature in the City Trail, and then east down Sandy Beach Road. Having the TCT become part of the proposed trails and open spaces, users will be exposed to the elements of nature that emphasize the locations' character. It also strengthens the proposal to have these open spaces and new trails. Integrating these aspects of trail re-routes and open spaces to the TCT route will add to the tourism features; High School educational facilities, community involvement, and interaction with nature.

CONCLUSION AND IMPLICATIONS

• Conclusion

The information gathered about Biophilia, health, education, and an active transportation network supports the argument that it is critically important to stay active and engaged in the outdoors for physical and psychological stability and strength. Sitting at the computer compiling this information and looking out of the window on sunny days, and even cloudy ones, generated a longing for movement. For the smell of fresh air, the feeling of sun on my face, the motion of my feet on the ground, the sight of branching trees, and the empowerment to my mind and body as these features gave me an experience. Some days I would be mentally drained and emotionally unstable. This type of negative reaction to a stagnant lifestyle is exactly why this Practicum was pursued. Appreciation of and discovery of nature and the millions of living species that inhabit the earth (the vegetation, the wildlife, and the geographic features) will only happen with engagement and knowledge.

Dryden, Ontario is a small city surrounded by an abundance of non-designed nature, a perfect setting to get out and be active, to engage in nature and to benefit physical and psychological health. The problem is that this nature is outside the city. The inner city limits provide only small children's parks, and two larger city parks (Pronger Park and Laura Howe

Marsh), and between these spaces are trails that lack planting, safety, signage, and destination points. The existing experience with nature in the city is of the naturalistic type of Biophilia. Dryden lacks a cohesive landscape and direct contact with nature that provides experience of the ecological-scientific, aesthetics, humanistic and moralistic Biophilia values. The proposals in this Practicum are targeted to emphasize interaction with nature and its elements, and really submerges youth into learning about nature and connecting with their community.

The following were the strategies employed in this Practicum and a description of how this Practicum's design proposal recommended integrating these strategies:

From Chapter Two: emphasize Biophilia values of naturalistic, ecologicistic-scientific, aesthetic, humanistic, and moralistic (*Table 2.1*); establish activities for physical and psychological health; and bring nature into education. The recommendations to fulfill these strategies were to incorporate facilities, such as the Botanical Garden and Green House, Tree Nursery, and BBQ Pavilions, into the community for Dryden High School. The usage of these facilities enhances and enriches interaction with nature and physical activity. The students grow and analyze plants, as well as plant the plants they grew into the community enriching nature within the city.

From Chapter Three: apply gender learning differences (*Table 3.1*); expand on Ontario's environmental education curriculum; and expand on Dryden High School's Outdoor Education program. The recommendations for these strategies were to have sites in different locations throughout the city, and sites and trails that the youth develop through labour and activity. The sites allow for different learning needs and expand on Ontario and Dryden curriculum through social interaction, team work, competition, technology, community involvement, and nature interaction.

From Chapter Four: apply Winnipeg, Manitoba's exemplary pedestrian and cyclist routes for safety and clarity of network; and

apply some of Nanaimo, British Columbia's nine objectives for active transportation, particularly signage, safety, and authorization for access to private property. The implementation of these strategies have been through the enhancement of existing trails. The enhancements were to provide and expand pedestrian and cyclist walkways for safety, installation of more signage for clarity of routes, and plantings to enrich the experience of the trails. Proposed trails were to expand north-south access for pedestrians and cyclists, reduce trails that existed on roads that lacked sidewalks, and to make Dryden High School a central hub of the Active Transportation Network.

It is hoped that the proposals in this Practicum can close the gaps in the current active transportation network and revive the character of the inner city. It is also hoped that education programs will continue their efforts to maintain a lifestyle balance between technology and nature. As Beresford-Kroeger (2003) put it, "Now, to survive as a species ourselves, we must put nature back together, we must hold hands, one with the other, and enact the bioplan" (p. 2). Nature is our essence, our resource, and our home.

To help implement these strategies financially, it is recommended that the High School and the City become a part of grant programs. It is realized that this Practicum's proposals are large developments and funding them can be a difficult task. Dryden is currently experiencing financial hardship and will need to apply for Grants that support education, environment, and healthy living. Grants can be applied for by the High School as well as the City of Dryden. Additional financial aid can be sought out through forming non-profit volunteer groups. A few Grant programs that the High School and City can apply for are suggested below.

Blue School Program: <http://www.cwf-fcf.org/>

Canada Health Physical Activity Unit: <http://www.hc-sc.gc.ca/hppb/fitness/>

CanAdapt Program: <http://www.adaptcouncil.org/programs/index.cfm?FuseAction=Drilldown&itemid=9>

Community Environmental Fund: <http://www.earthday.ca/envirofund/faq.aspx>

Dominion Group Foundation: http://www.ec.gc.ca/ecoaction/pdf/National_Guide_e.pdf

EcoAction Community Funding: <http://www.ec.gc.ca/ecoaction/>

Evergreen: <http://www.evergreen.ca/en/funding/overview.sn>

Green Streets Canada: <http://www.treecanada.ca/programs/greenstreets/index.htm>

Habitat 2000: <http://www.cwf-fcf.org/>

Irving Oil Foundation: <http://www.irvingoil.com/community/>

Learning Grounds Grants and Awards of Excellence: <http://www.evergreen.ca/>

Mark's Work Warehouse Ltd.: <http://www.workwear.com/>

TD Friends of the Environment Fund: http://www.fef.td.com/?cm_sp=cFEF000-180

Trees Ontario: <http://www.treesontario.ca/programs/#AP>

Union Gas Ltd.: <http://www.uniongas.com/community/charitable/charitable.asp>

- Implications

A partial solution suggested in this Practicum was to have High School students participate in beautifying the city as part of their education. This would provide the students with a sense of caring and respect for their city, because they would be part of the reason the city bloomed and became connected. Of course the implication of having the students perform city enhancement duties could be complicated. But having the students integrated into the community as proposed in this Practicum, will instill a valuable work ethic; appreciation for the city; understanding of the Boreal Forest characteristics; and more in terms of physical and psychological health benefits.


The process of revising the Dryden High School curriculum would take a significant amount of time. It takes two years for meetings, proposals and paperwork for changing curriculum. In two years rapid changes can happen, so initiating new curriculum that was proposed two years ago may not be sufficient. Predicting how technology may expand prior to initiating changes would be recommended when revising curriculum.

Re-routing and enhancing some of the existing trails along Wabigoon River would be a demanding exercise. The shorelines have specific construction and protection rules addressed in Dryden's Official Plan. It would, however, be perfectly feasible to have tests performed to ensure there are no long-term environmental impacts from such work.



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