Report No. 03-16-2792

TORONTO DISTRICT SCHOOL BOARD

ENVIRONMENT REPORT

TO Program and School Services Committee 18 January 2017
Day Month 2007

RECOMMENDATION **IT IS RECOMMENDED that the report be received.**

STRATEGIC DIRECTION Build environmentally sustainable schools that inspire teaching and learning.

RATIONALE **Background**

At its 25 November 2015 meeting, the Board of Trustees approved the following motions:

a) The Director will present a report to Board on ways to incentivize increased participation of schools in the EcoSchools program;
b) This report will contain metrics to indicate the amount of waste being diverted from landfill on a board-wide basis at present and a plan for increasing waste diversion;
c) A further report will be presented to the Board with an update on both (a) and (b) above, including metrics for the measurement of progress; and
d) The Director will revisit the *Go Green: Climate Change Action Plan* and present a report that would outline a plan to revitalize it.

To address the motions, this report has been organized into five parts:

Part I provides an overview of the progress that has been made implementing EcoSchools, diverting waste and taking measures to address climate change.

In 2016, the TDSB's SuperCouncil prepared a report on EcoSchools that included recommendations for making improvements to the program. The report is included for reference in Appendix A

Part II addresses the role of incentives in increasing participation in EcoSchools.

Part III outlines a plan for expanding the TDSB's long-standing collaboration with the Ontario Institute for Studies in Education at the University of Toronto (OISE/UT) in Environmental and Sustainability Education (ESE), which supports teachers already

involved in EcoSchools and aims to attract more teachers to the program in the future.

Part IV details a series of additional measures that will not only bring more support to schools engaged in environmental initiatives, but will also build on what the TDSB has been doing to address climate change.

Part V outlines how system leaders, particularly Superintendents of Education and Trustees, can play an important role in EcoSchools not only by encouraging their schools to become certified, but also by recognizing the efforts of the staff, students and parents that are already engaged in the program.

Part I: How are we doing?

EcoSchools

The TDSB developed the EcoSchools program and launched it in the 2003/04 school year.

As outlined in more detail in Appendix B: EcoSchools, the program enjoyed rapid growth for the first nine years — from 13 certified schools in its first year to 426 schools by 2011/12.

Since then, the overall number of certified schools has declined, except at the platinum level, where the number of schools has been increasing steadily. Currently, the TDSB has 321 certified schools with 88 at the platinum level.

While there are fewer certified schools now compared to 2011/12, EcoSchools is still a strong program within the TDSB with very high levels of engagement and achievement in hundreds of schools.

Waste Diversion

Two data sets exist for measuring the TDSB's performance in minimizing waste.

The first data set compares the waste generated by EcoSchools and non-EcoSchools. The certified schools generated about half the waste per student per year compared to non-EcoSchools: 1.8 kilograms/student versus 3.4 kilograms/student.

The second data set provides insight into the efficacy of the waste minimization programs in 347 certified EcoSchools. Auditors rated

the schools on a scale from 0 to 4: level 4 – comprehensive; level 3 – accomplished; level 2 – credible; level 1 – emerging; and level 0 – no evidence. Eighty schools (23%) were found to have comprehensive programs; 194 schools (56%) had accomplished programs; 67 (19%) had credible programs; and 6 (2%) had emerging programs.

Climate Change

Six years ago, the Board approved the TDSB's first climate change action plan, which helped to lay the foundation for ongoing GHG reductions and the implementation of an impressive renewable energy program.

As outlined in detail in Appendix C: Building-related Greenhouse Gas Emissions, the TDSB has maintained its long-standing record of steadily reducing the energy intensity of its buildings year over year. In 2015/16, the TDSB avoided $400,000 in energy costs compared to what it would have spent if energy use had not declined.

Since 2000/01, electricity consumption has decreased by 90.3 million kWh and natural gas by 16.2 million cubic meters. Energy intensity has dropped from 1,015 MJ/m2 to 809 MJ/m2 (or 20%), and greenhouse gas emissions have declined by 58,766 metric tonnes (or 22%). Using 2000/01 as a baseline, $15.36 million in utility costs have been avoided as of 2015/16.

In addition to the energy savings listed above, approximately 34 MW of solar photovoltaic (PV) panels have been installed on more than 300 TDSB school rooftops. These solar PV installations are estimated to generate 42 million kWh of electricity a year, equivalent to about 15% of the Board's current level of electricity consumption.

Part II: The role of incentives in increasing participation in EcoSchools

Since the program's inception 14 years ago, EcoSchools staff has aimed to encourage as many schools as possible to become certified.

Over the years, three options to increase participation have been considered:

1. Providing a direct incentive, such as awarding money to certified schools;
2. Mandating the EcoSchools program so that schools are obligated to become certified; and

3. Identifying champions within schools and providing them with support in undertaking projects and opportunities for professional development.

Option 1, direct incentive, has not been used because research indicates that it does not work over the long term. Extrinsic motivation, such as paying people, is considered a superficial and short-term incentive compared to intrinsic motivation, which is seen as more effective and sustainable over the long term.

Option 2, mandating the EcoSchools program, has not been used because it would interfere with the relative autonomy of schools to determine where they would like to invest their extra time and effort. Program enhancements, whatever their focus, can be an important part of school life for students as long as they are initiated locally, not imposed from above.

Option 3, identifying and supporting champions within schools, has been the preferred approach. Self-identified champions tend to have high levels of intrinsic motivation. Successfully mobilizing and actively helping motivated staff, students and parents is the main reason EcoSchools has been as successful as it has been, not only at the TDSB but also across the province.

Part III: Collaborating with OISE/UT to provide more professional learning opportunities for teachers

The TDSB's EcoSchools program and OISE/UT have a long history of working together to provide professional learning opportunities for teachers in environmental education. For many years, staff from both organizations co-taught summer institutes for teachers focused on teaching in the outdoor classroom.

More recently, staff from both organizations co-developed and co-taught all three parts of the relatively new Additional Qualification (AQ) courses in Environmental Education. Over the last three summers, more than 100 TDSB teachers have completed AQ courses in Environmental Education. Teachers completing the courses are reimbursed $400 from the TDSB through a program funded by the Board's Environmental Legacy Fund. EcoSchools audits show that schools with teachers who have taken the AQ courses tend to have deeper and richer EcoSchools programs.

In an effort to build on this work, staff members from both institutions have co-developed a new initiative to help the TDSB broaden and strengthen its commitment to ESE. The new initiative

aims to better support professional development in ESE and inspire teachers to strengthen their commitment to leading positive environmental change in their schools.

With the initiative's year-round, integrated model of ESE programming, teachers will collaborate to enhance their knowledge about ESE, cultivate new professional networks and develop their capacity to support the learning of other EcoSchools teachers.

As part of this model, teachers and administrators will engage in collaborative inquiry, conduct action research to track the effects of this work in their classrooms and communities, and share their findings across the TDSB.

The model will also offer opportunities to build relationships with community partners and OISE's teacher candidates so that a wide range of perspectives and expertise will inform teaching and learning in K-12 classrooms.

Working closely with OISE/UT's Initial Teacher Education Programs, teachers will mentor the next generation of EcoSchools educators by modelling ESE in classrooms, facilitating community-based learning and leading school-wide Eco Teams.

As outlined in more detail in Appendix D: Components of TDSB and OISE/UT Collaboration, this initiative includes:

- Environmental Education AQ Courses Parts 1, 2 and 3;
- EcoSchools Action Research Professional Learning Community (PLC) Meetings;
- EcoSchools Conference and Eco Fair;
- EcoSchools Cohort;
- EcoSchools/AQ Alumni Meetings;
- "Pollinating Partnerships" EcoSchools Celebration;
- OISE/EcoSchools ESE Workshops; and
- Program Evaluation: EcoSchools Teachers' Professional Development.

By supporting existing schools in deepening their programs and increasing the overall number of certified schools over time, this new initiative will also help improve waste diversion at the TDSB and further support the Board's commitment to addressing climate change in a systematic and meaningful way.

Part IV: Additional measures to support schools and further address climate change

While the work being done by EcoSchools teams is a cornerstone of the TDSB's climate change strategy, central departments must build on the efforts of school staff, students and parents.

The following three promising initiatives are in various stages of development:

a) Enhanced Tree Planting and Care Program

Ten years ago, the Large Tree Program was created to provide tree cover (shade) in active play and gathering areas, increase the biodiversity of our urban forest and address the disparity in the tree canopy between school grounds across the district.

Since the program's inception, over 2,500 large native shade trees have been planted at 250 schools sites. As shown in Appendix E: The Impact of Tree Planting at Summit Heights PS, these trees grow in value and impact each year.

As global average temperatures continue to rise and the effects of the urban heat island intensify, the TDSB needs to enhance its approach to managing the 35,000 trees that comprise its urban forest. A revamped version of the Large Tree Program will include a multi-day fall program and a single-day spring program.

The fall program will continue with its new tree plantings at schools in need of shade and cooling, but it will now add a second day of maintenance for the existing trees to ensure that they are also healthy and thriving.

The spring program will involve one day of tree care for schools that already have a sufficient number of trees in their schoolyard. This work will include mulching, pruning, repairing protective tree cages and installing slow-release watering bags.

As in previous years, schools must apply to be included in the program, now called the Large Tree Planting and Care Program. To address the disparity amongst schools across the TDSB, an effort will be made to distribute the program evenly through each Learning Centre.

All selected schools will receive a site visit from central staff in the spring to co-develop a planting and stewardship plan. School communities will continue to be responsible for watering their new trees in the spring and fall, but TDSB trades staff will now water

trees planted through this program in July and August for the two years following a new planting.

The Tree Planting and Care Program will enhance our impact at each site and ensure that our initial investments become established and provide the essential environmental benefits of mature trees.

b) Energy performance retrofit pilot project

In November 2015, the TDSB issued a Request for Proposals for service providers of energy-performance retrofit projects. These projects are designed to save energy (electricity, gas and water) by implementing a variety of retrofits to facilities. These retrofits typically include new building automation systems, new lighting systems (LED) and occupancy controls and mechanical systems re-commissioning.

As the successful bidder, MCW Custom Energy Solutions Ltd. will be leading this initiative with the goal of implementing energy performance retrofits in a pilot group of up to six TDSB facilities.

A key aspect of the initiative is the option of using third-party financing to pay for a project through a "revenue neutral" financial arrangement. In this way, the TDSB pays down the project costs only after energy savings are realized and at prescribed amounts equal to the annual savings. At the conclusion of the payback period (typically 10 to 12 years), the TDSB will continue to benefit from the annual energy savings. Most importantly, the energy savings are guaranteed by the vendor so that they are responsible for making up for energy savings shortfalls, should they occur. Actual facility energy savings will be monitored throughout the project's payback period by an independent measurement and verification (M&V) professional.

Lessons learned through this pilot can be applied to future energy performance retrofit projects to help address the Board's goal of reducing building energy consumption and related GHG emissions.

c) Partnership with the Toronto and Region Conservation Authority (TRCA) to help mitigate effects of damaging rainstorms associated with climate change

Climate change models predict that rising global temperatures will increase the frequency of rainstorms, which will risk overloading the city's storm sewer system. This can cause extensive flooding and

related damage to both private and public buildings and infrastructure.

As one part of its strategy is to help address this problem, the TRCA approached the TDSB with a plan to establish a capital grant-funding program to help support school infrastructure projects related to on-site storm-water management.

While discussions are currently in progress, the idea is that the TRCA would provide the TDSB with funds received through provincial and federal grants, as well as contributions from private corporations. The plan would be to integrate available capital from the TRCA into the site-improvement priorities identified by the TDSB. In this way, both institutions would be combining resources to make site infrastructure upgrades that are much needed at schools across the district.

The goal is to collaborate on 6 to 10 school sites a year until 2022. Additionally, these projects would enhance students' awareness of water stewardship by helping to make real-world connections on their school grounds.

Part V: The role of system leaders as EcoSchools champions

System leaders, particularly Superintendents of Education and Trustees, can be EcoSchools champions in an important way.

Taking the time to recognize the efforts and achievements of staff, students and parents sends a very powerful message of encouragement to EcoSchool champions, so that they know that their efforts are genuinely valued.

With respect to the schools in their areas that are not yet certified, experience has proven that when system leaders actively encourage their schools to become EcoSchools, the impact can be powerful.

Potential champions exist in every school. Sometimes they just need to be encouraged to get involved and recognized when they take an active role.

RESOURCES

TDSB and OISE/UT Initiative: The TDSB's contribution, to be funded from the Environmental Legacy Fund, will be $81,000 annually over the next three years with an option to renew for a second three year period. These costs would be in addition to the $30,000 annually allocated to support rebates for teachers who

complete the Additional Qualification courses in Environmental Education (also funded from the Environmental Legacy Fund).

Enhanced Tree Planting and Care Program: The funding for the enhanced Tree Planting and Care Program will not exceed the $610,000 in annual funding approved in the Board's 2013 Urban Forest Management Plan for tree planting and maintenance.

Energy Performance Retrofit Pilot: As outlined above, the funding for the retrofits is provided by the vendor as part of the performance contract to be paid back through energy savings.

TRCA Partnership: As TDSB staff members determine priorities for site improvements and identify opportunities to collaborate with the TRCA, the TDSB's contribution will be determined on a case-by-case basis. It is anticipated that the Board's portion of the funding will come from Renewal and/or the Learning Condition Index funding.

IMPLEMENTATION AND REVIEW

TDSB and OISE/UT Initiative: Components of the initiative, such as the EcoSchools cohort, have started. Full implementation is expected by the fall of 2017. The initiative will take place for an initial three-year period, subject to renewal for an additional three years.

Enhanced Tree Planting and Care Program: Components of the program were piloted in the fall of 2016. The full program to be launched by the spring of 2017.

Energy Performance Retrofit Pilot: Launched in the fall of 2016.

TRCA Partnership: A pilot project is in the planning stages at Tom Longboat JPS and is being managed through the TDSB's Viability Review process. Discussions are currently underway to formalize an agreement between the TDSB and the TRCA. The full program is expected to start in the 2017/18 school year and finish in 2022.

All of the programs listed above will be reviewed annually.

APPENDICES

Appendix A: SuperCouncil Report
Appendix B: EcoSchools
Appendix C: Building-related Greenhouse Gas Emissions
Appendix D: Components of TDSB and OISE/UT Collaboration
Appendix E : The Impact of Tree Planting at Summit Heights PS

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Appendix A

TSDB SuperCouncil's Report on EcoSchools

Preamble: The purpose of this report is to provide a comprehensive documentation of the activities, opinions and recommendations of secondary school students in the Toronto District School Board (TDSB) with regards to participation in the EcoSchools program. These activities, opinions and recommendations were shared by the student body of the TDSB at SuperCouncil's EcoSchools consultation meeting on April 6, 2016. This report will serve as a guide for the TDSB to achieve its environmental goals through the continued support and development of the EcoSchools program.

Activities of the Student Body: Currently, as a result of the ambition of dedicated teams of students and staff—colloquially referred to as "green teams" or "eco clubs"—several schools across the TDSB are implementing policies and initiatives in their schools to reduce their environmental impact. These activities include community gardens located on TDSB property, the implementation of compost centres (i.e., green bins), reuse projects (e.g., transforming recycled materials into clothing, accessories and other usable objects), activity days (e.g., sweater days during which the student body dressed in sweaters and the school turned off central heating) and lobbying local organizations to be environmentally responsible by recycling and composting. Teams pioneering efforts such as these have made a significant qualitative impact on the ecological footprint of the school they belong to, the TDSB as well as the community in which they are located.

Opinions of the Student Body: Despite the success of many of the teams as outlined above, the student body of the TDSB has expressed concerns regarding environmental efforts within their schools. These concerns include an apathy towards environmentalism, a lack of time available in the schedules of students to participate in environmental teams and initiatives, a lack of rigorous selection criteria for EcoSchools (i.e., it is too easy to become an EcoSchool) and a lack of environmental accountability from caretaking staff in following the procedures implemented by the student environmental teams of their school (e.g., composting food waste found left in the cafeteria).

Recommendations of the Student Body: Based on their concerns, the student body has collaborated to propose several recommendations which, if implemented by the TDSB, would alleviate concern and provide a greater board-wide foundation of environmentalism. These recommendations include awarding a specific EcoSchool ranking to schools that have an "ecological aesthetic" (e.g., a school that has a community garden and/or a greenhouse would be awarded a specific EcoSchool ranking); increasing promotion of initiatives that aim to reuse and recycle waste as opposed to merely reducing consumption; mandating that schools must print unofficial documents (e.g., homework sheets) on Good on One Side (GOOS) paper; investing by the TDSB in community gardens on school property; holding assemblies that rally students to support environmentalism; providing greater incentive for students to participate in environmental initiatives (e.g., scholarships and awards for individuals who display exceptional environmentalism); implementing a grant system that funds large-scale student-run environmental initiatives; improving infrastructure (e.g., changing incandescent light bulbs to

LED, introduction of solar panels); introducing volunteer students into the custodial staff to clean outdoors; mandating board-wide school clean-up days; promoting experiential learning in the environment (i.e., going outside to learn), and initiating board-wide events such as “trash basketball” (making a basketball-like game out of picking up trash, where the trash is the ball), “trashion shows” (having a fashion event centred around clothes made from recycled and repurposed waste), and “carbon footprint jeopardy” (an environment-themed quiz bowl that would bring together school staff, trustees, board employees and students from across the TDSB).

Conclusion: The student body is aware that many of their recommendations may require a significant budget in order to execute successfully. However, it is the general consensus of the student body that the environment, and its protection by the TDSB, is crucial to the continued success of the TDSB as a leader of education and for the academic and social success of future generations.

Appendix B

EcoSchools

The EcoSchools program was developed by the TDSB and launched in the 2003/04 school year with three certification levels: bronze, silver and gold.

Rapid Program Growth – 2003/04 to 2011/12

The program enjoyed rapid growth for the initial nine years – from 13 certified schools in its first year to 426 schools by 2011/12. In its sixth year, a platinum level was added. Within the first four years, the number of platinum schools grew to 67.

Table 1: Number of Certified Schools, 2003/04 to 2011/12

Year	Bronze	Silver	Gold	Platinum	Total*
2003/04	1	4	8	N/A	13
2004/05	3	10	40	N/A	53
2005/06	9	23	65	N/A	97
2006/07	32	36	105	N/A	173
2007/08	69	63	132	N/A	264
2008/09	93	118	84	16	311
2009/10	67	115	122	41	345
2010/11	81	96	179	45	401
2011/12	61	94	204	67	426

*Totals include regular schools and outdoor education centres.

Shortly after demonstrating the strength of the model in Toronto public schools, the TDSB gave permission for other Ontario school boards to adapt our EcoSchools program for their schools. This was the inception of the Ontario EcoSchools program. Today, there are more than 1,700 certified schools in 52 school districts in the province.

Uneven Growth – 2012/13 to 2015/16

Since 2012/13, the levels of school certification show more mixed results. In 2012/13, employee work-to-rule campaigns precipitated a drop from 426 the year before to 188. In subsequent years, many schools returned to the program, but not all – 378 schools were certified in 2013/14, 357 in 2014/15 and 321 in 2015/16. The most recent drop is a reflection of the employee work-to-rule campaigns of the past year.

While the overall number of EcoSchools appears to have reached its peak, there continues to be steady growth in the number of schools certified at the platinum level. Eighty-eight schools (78 regular schools and 10 outdoor education centres) were certified platinum in 2015/16. This development suggests that a significant number of existing EcoSchools are improving the depth and quality of their program.

Table 2: Number of Certified Schools, 2012/13 to 2015/16

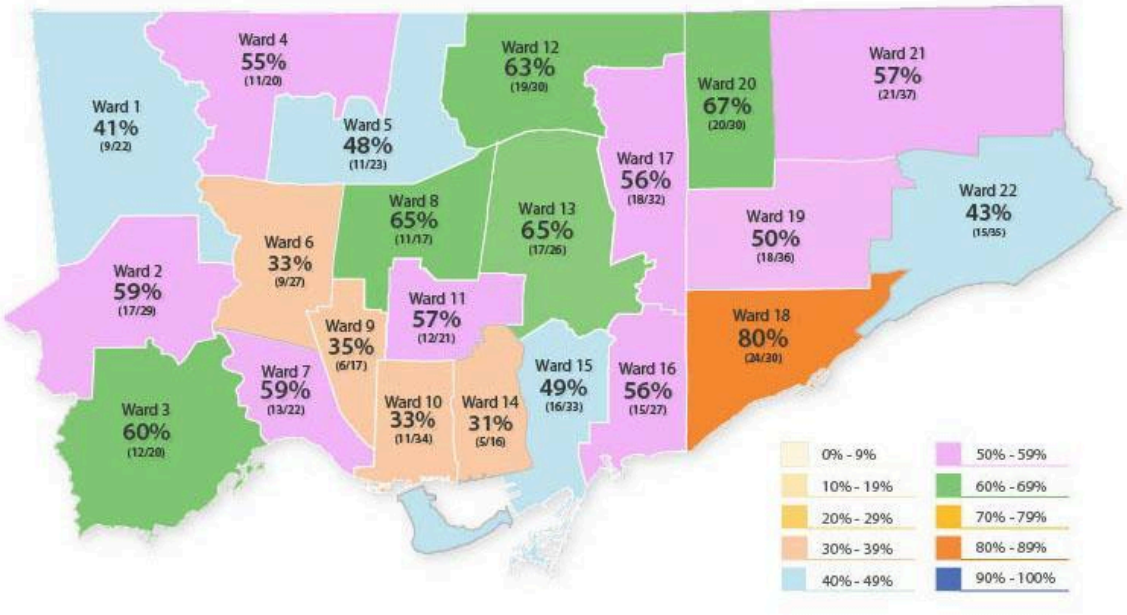
Year	Bronze	Silver	Gold	Platinum	Total*
2012/13	23	41	91	33	188
2013/14	49	99	147	82	378
2014/15	22	93	155	87	357
2015/16	24	52	157	88	321

*Totals include regular schools and outdoor education centres.

Distribution of EcoSchools by Ward

There is significant geographic variation in the number of certified schools across the district. As shown in Figure 1, at the Ward level, one Ward has 80% of its schools certified, thirteen Wards have between 50% and 75% of their schools certified and eight have less than 50% certified. The Ward average is 53%.

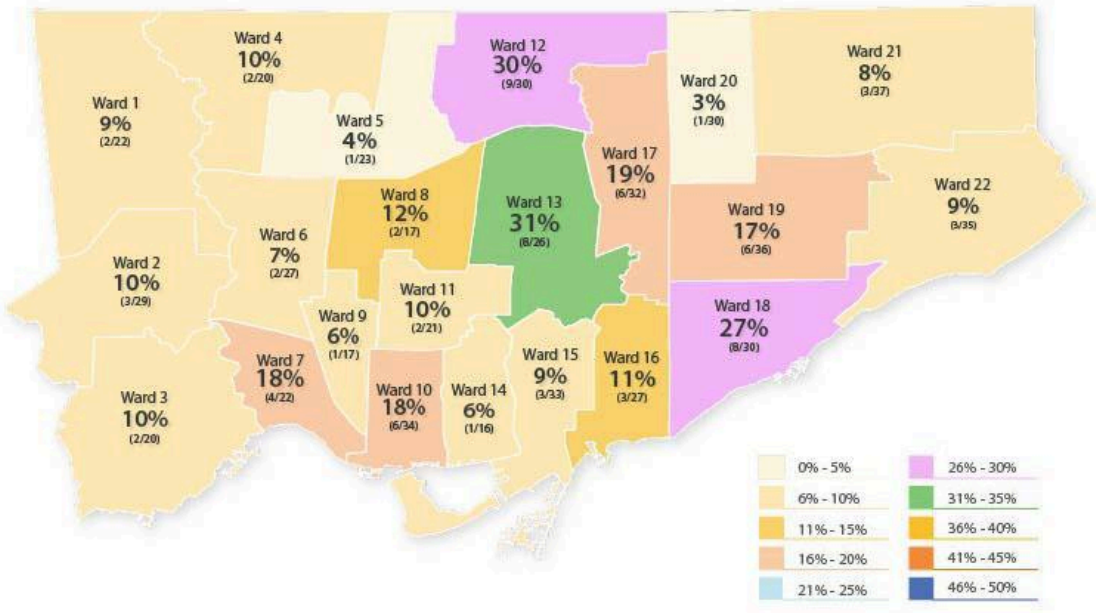
*Figure 1: Certified EcoSchools by Ward (%), for 2015/16**



*% = Number of Certified EcoSchools / Total number of active schools in each Ward. There are 10 platinum Outdoor Education Centres not shown on the map but included in the total number of certified EcoSchools.

There is also significant geographic variation in the number of certified platinum schools across the district. As shown in Figure 2, three Wards had more than 20% of their schools certified platinum. Ten Wards had between 10% and 19% of their schools certified platinum, and the remaining nine had less than 10%. All Wards had at least one platinum EcoSchool.

*Figure 2: Platinum EcoSchools by Ward (%), for 2015/16**



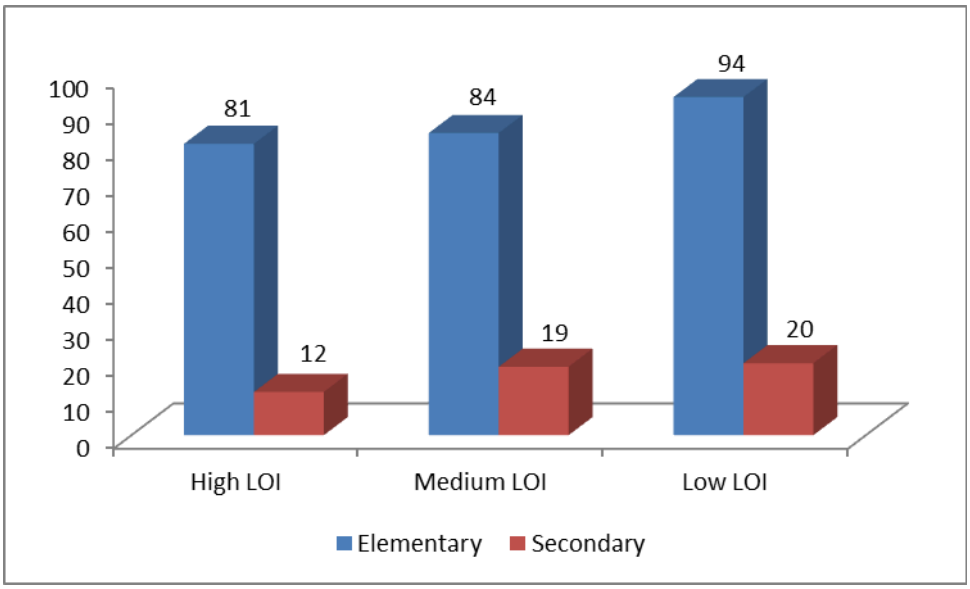
*% = Number of Certified EcoSchools / Total number of active schools in each Ward. There are 10 platinum Outdoor Education Centres not shown on the map but included in the total number of certified EcoSchools.

Distribution of EcoSchools by Learning Opportunities Index

At the elementary level, as shown in Figure 3 below, there is a fairly even distribution of certified EcoSchools among high-, medium- and low-needs schools. There are currently 81 certified schools that are rated as high-needs schools according to the Learning Opportunities Index, 84 are medium-needs schools, and 94 are low-needs schools.

At the secondary level, there is a significant variation among high-, medium- and low-needs schools. Out of the 51 secondary schools that are certified, only 12 are high-needs schools; 19 are medium-needs schools; and 20 are low-needs schools.

At the platinum level, as shown in Figure 4 below, there is significant variation in both the elementary and secondary panels. Among elementary schools, more than twice the number of low-needs schools are certified platinum (28) as compared to high-needs schools (13). In the secondary panel, there are 4 low-needs schools certified platinum and only 1 platinum high-needs school. Medium-needs schools in both panels have more platinum schools than high-needs schools: 20 medium-needs platinum elementary schools and 6 medium-needs platinum secondary schools.

Figure 3: 

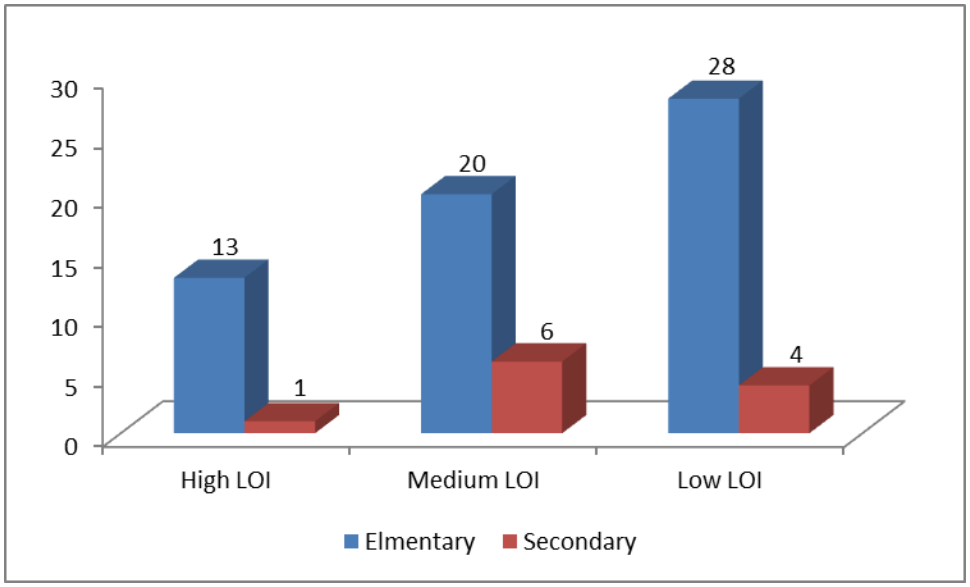
Certified EcoSchools, by Learning Opportunities Index and Panel

Note:

Elementary LOI is based on 474 schools identified in 2014 LOI Report
High LOI = 1-158
Medium LOI = 159-317
Low LOI = 318-474

Secondary LOI is based on 110 schools identified in 2014 LOI Report
High LOI = 1-35
Medium LOI = 36-75
Low LOI = 76-110

Figure 4: Certified Platinum EcoSchools, by Learning Opportunities Index and Panel



Appendix C

Building-Related Greenhouse Gas Emissions

The majority of the TDSB's greenhouse gas (GHG) emissions arise from the electricity and natural gas used to operate the Board's 48 million square feet of real estate. As shown below, both the Board's overall building-related energy consumption and its energy intensity have been in steady decline since the 2000/01 school year. Consequently, the TDSB's building-related GHG emissions have been decreasing as well.

Energy Consumption

In 2015/16, the TDSB consumed 278 million kilowatt hours (kWh) of electricity and 62.2 million cubic metres (m3) of natural gas, and emitted a total of 204,238 metric tonnes of greenhouse gases.

As shown in detail in Table 1, below, this represents a 0.8% decrease from the year before, thereby avoiding $400,000 in energy costs.

These results are part of a long-term trend of declining energy consumption at the Board. Since 2000/01, the TDSB's electricity consumption has decreased by 90.3 million kWh and natural gas by 16.2 million cubic meters. During the same period, the TDSB's building-related GHG emissions have been reduced by 58,766 metric tonnes or 22%.

The reduced level of electricity and natural gas consumption since 2000/01 has resulted in $15.36 million in avoided utility costs.

Energy Intensity

The TDSB's building portfolio is dynamic in the sense that over time, the Board reduces its holdings through the sale or lease of buildings; but at the same time, more space is added through the construction of new schools and additions.

For this reason, it is more meaningful to focus on the energy intensity of our buildings and not just on the overall consumption of electricity and natural gas. Energy intensity is a measure of the combined use of electricity and natural gas on a square-metre basis, expressed in mega joules per square metre (MJ/m2).

By focusing on energy intensity, the change in the total amount of real estate in the Board's portfolio is not a factor when reporting on the TDSB's overall energy performance.
As with overall energy consumption, the energy intensity of the TDSB's portfolio of buildings continues to decrease steadily. In 2015/16, as shown in Table 2, the energy intensity of our buildings was 809 MJ/m2; a decline of 4 MJ/m2 or 0.5% compared to the year previous. The TDSB's energy intensity has dropped by 20% since 2000/2001, when it was 1,015 MJ/m2.

Table 1: Energy Consumption History, by Year

School Year	Natural Gas Consumption (M3)	Electricity Consumption (kWh)	Natural Gas GHG Emission (Metric Tonnes)	Electricity GHG Emission (Metric Tonnes)	Total GHG Emission (Metric Tonnes)	% of Change	Annual Cost Avoidence (million)	Cumulative Cost Avoidence from 2000-01 Baseline
2000-2001	78,501,852	368,754,633	147,583	115,420	263,004	-1.95%	$ (1.07)	$ (1.07)
2001-2002	79,347,623	347,661,265	149,174	108,818	257,992	-1.91%	$ (1.05)	$ (2.12)
2002-2003	75,231,043	333,316,665	141,434	104,328	245,762	-4.74%	$ (2.61)	$ (4.73)
2003-2004	76,051,686	309,601,970	142,977	96,905	239,883	-2.39%	$ (1.32)	$ (6.04)
2004-2005	76,000,254	315,032,747	142,880	98,605	241,486	0.67%	$ 0.37	$ (5.68)
2005-2006	72,635,507	303,814,556	136,555	95,094	231,649	-4.07%	$ (2.24)	$ (7.92)
2006-2007	69,270,181	299,533,789	130,228	93,754	223,982	-3.31%	$ (1.82)	$ (9.74)
2007-2008	68,548,051	296,663,356	128,870	92,856	221,726	-1.01%	$ (0.55)	$ (10.29)
2008-2009	65,852,488	290,813,317	123,803	91,025	214,827	-3.11%	$ (1.71)	$ (12.00)
2009-2010	67,593,837	282,849,303	127,076	88,532	215,608	0.36%	$ 0.20	$ (11.80)
2010-2011	66,163,829	281,796,769	124,388	88,202	212,590	-1.40%	$ (0.77)	$ (12.57)
2011-2012	66,705,319	273,167,297	125,406	85,501	210,907	-0.79%	$ (0.39)	$ (12.96)
2012-2013	64,964,893	274,323,820	122,134	85,863	207,997	-1.38%	$ (0.69)	$ (13.65)
2013-2014	63,032,907	278,871,809	118,502	87,287	205,789	-1.06%	$ (0.53)	$ (14.18)
2014-2015	61,651,153	277,037,698	115,904	86,713	202,617	-1.54%	$ (0.77)	$ (14.96)
2015-2016	62,280,023	278,439,387	117,086	87,152	204,238	-0.80%	$ (0.40)	$ (15.36)

Table 2: Energy Intensity, by Year

School Year	Natural Gas Consumption (M3)	Electricity Consumption (kWh)	Building Area (M2)	Portable Area (M2)	Electricity Energy Intensity (MJ/M2)	Gas Energy Intensity (MJ/M2)	Total Energy Intensity (MJ/M2)
2000-2001	78,501,852	368,754,633	4,177,267	46,055	315	700	1,015
2001-2002	79,347,623	347,661,265	4,174,073	46,055	297	708	1,006
2002-2003	75,231,043	333,316,665	4,233,533	46,961	281	662	943
2003-2004	76,051,686	309,601,970	4,229,424	36,928	262	670	932
2004-2005	76,000,254	315,032,747	4,213,636	36,231	268	672	939
2005-2006	72,635,507	303,814,556	4,196,812	36,092	259	645	904
2006-2007	69,270,181	299,533,789	4,206,067	35,813	255	613	868
2007-2008	68,548,051	296,663,356	4,235,630	42,641	250	603	853
2008-2009	65,852,488	290,813,317	4,231,916	42,571	246	580	825
2009-2010	67,593,837	282,849,303	4,161,666	42,084	243	605	848
2010-2011	66,163,829	281,796,769	4,170,770	39,924	242	591	833
2011-2012	66,705,319	273,167,297	4,105,259	39,784	238	605	843
2012-2013	64,964,893	274,323,820	4,057,150	39,575	242	596	838
2013-2014	63,032,907	278,871,809	4,024,011	41,178	248	583	831
2014-2015	61,651,153	277,037,698	4,044,328	40,760	245	568	813
2015-2016	62,280,023	278,439,387	4,098,254	40,899	243	566	809

*Portables do not use natural gas for heating; instead, they are heated through the use of electricity. As a result, portables only have an impact on electricity intensity, not the natural gas intensity of our building portfolio.

Appendix D

Components of TDSB and OISE/UT Collaboration

The components of this new initiative are as follows:

1. **Environmental Education Additional Qualification (AQ) Courses – Parts 1, 2, 3**

These Ontario College of Teachers–certified courses allow teachers to deepen their knowledge of environmental and ecological literacy. The AQ courses are currently subsidized by the TDSB to make them accessible to all TDSB staff. OISE/UT facilitates development and provides coordination, registration and other forms of administrative support. Part 1 will be offered each spring and summer, ensuring sufficient participants for part 2; part 3 may be offered every other year, depending on the number of registrants. Teachers in part 3 help to plan and deliver workshops at an annual EcoSchools conference (item #3 below) as part of their coursework.

2. **EcoSchools Action Research Professional Learning Community (PLC)/ Meetings**

Two to three meetings per year will be offered to TDSB teachers who have taken the OISE AQ Part 3/Specialist to continue the action research projects they planned in the AQ course, forming the basis for a PLC. These action research projects will be shared with other TDSB teachers at the annual EcoSchools conference (item #3 below) and in after-school workshops. Individual mentoring on action research will be provided for Specialist teachers as needed.

3. **EcoSchools Conferences and Eco Fair**

A one-day conference will bring together teachers from across the TDSB to broaden their knowledge of environmental and ecological literacy. Alumni from the Part 3 AQ course will help to lead workshops, along with OISE faculty and non-governmental organization (NGO) leaders from across the GTA. An Eco Fair will accompany the conference, featuring ESE-related exhibitors and TDSB community partners. OISE/UT pre-service students involved in ESE would be welcome to attend. Starting in year two of the agreement, a one-day "pre-conference" on TDSB teachers' action research would be offered for up to 50 teachers.

4. **EcoSchools Cohort**

OISE/UT has developed an off-site elementary cohort dedicated to ESE for Primary-Junior teacher candidates; this class of student teachers are taking some of their teacher education courses in an elementary school (rather than on campus.) Teacher candidates in this cohort will undertake part of their classes in a partner EcoSchool; for their practica, they will be placed in TDSB EcoSchools to learn alongside experienced EcoSchools Associate Teachers, supporting the work that they do. As part of their practicum placements, teacher candidates will be invited to share their lesson plans related to ESE; suitable plans will be posted on the TDSB's EcoSchools website. Service learning hours will be conducted in an EcoSchool program.

5. **EcoSchools/AQ Alumni Meetings**

Two meetings will be offered to TDSB teachers who have taken OISE AQ courses to track how their ESE projects have manifested in their classrooms and to deepen their EcoSchools network.

6. **'Pollinating Partnerships' EcoSchools Celebration**

This early-evening event celebrates teachers' EcoSchools achievements. A short keynote features the results of a local research study or program related to ESE. Using a learning carousel approach, teachers share best practices with their colleagues and OISE/UT students. A small Eco Fair with educational exhibits from NGOs is included.

7. **OISE/EcoSchools ESE Workshops**

TDSB teachers will be invited to attend OISE's ESE workshops, which run during after-school hours and on Saturdays in the fall and winter terms. Teacher candidates will have opportunities to meet and learn alongside TDSB teachers as part of this. Alumni from the Part 3 AQ course will be invited to lead some of the workshops, along with OISE faculty and community partners from across the GTA.

8. **Program Evaluation: EcoSchools Teachers' Professional Development**

An evaluative component focusing on the needs and expectations of EcoSchools teachers will be started to better understand how to meet their professional learning requirements over time. In conjunction with this, each major professional learning component outlined above will be evaluated by establishing success criteria and collecting assessment data from its participants.

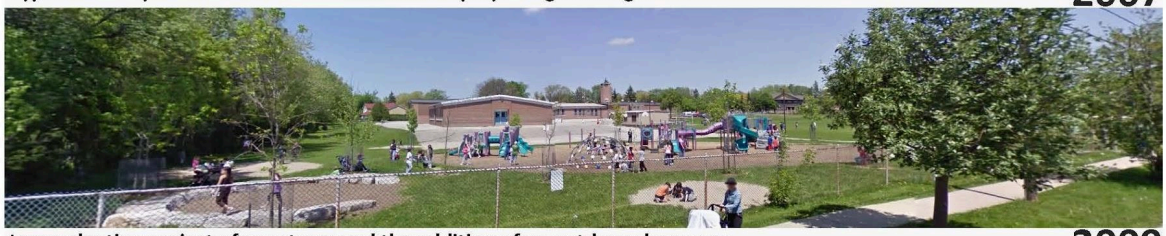
9. **Program Administration**

This partnership will entail meetings between the TDSB and OISE staff; AQ development and coordination; planning coordination, implementation, and administration of the various components; and specific reporting mechanisms at key points in the partnership cycle.

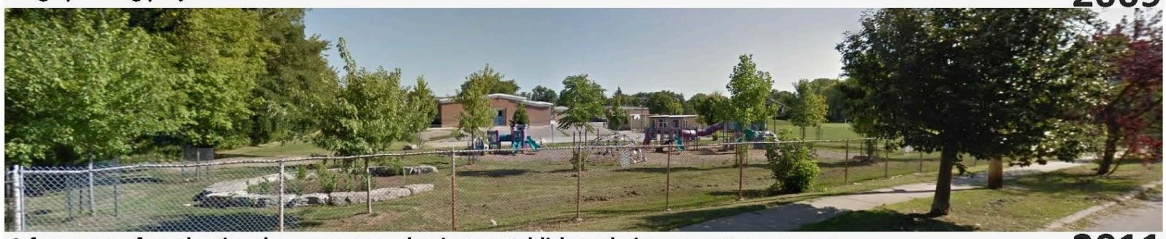
Appendix E

The Impact of Tree Planting at Summit Heights, 2007-16

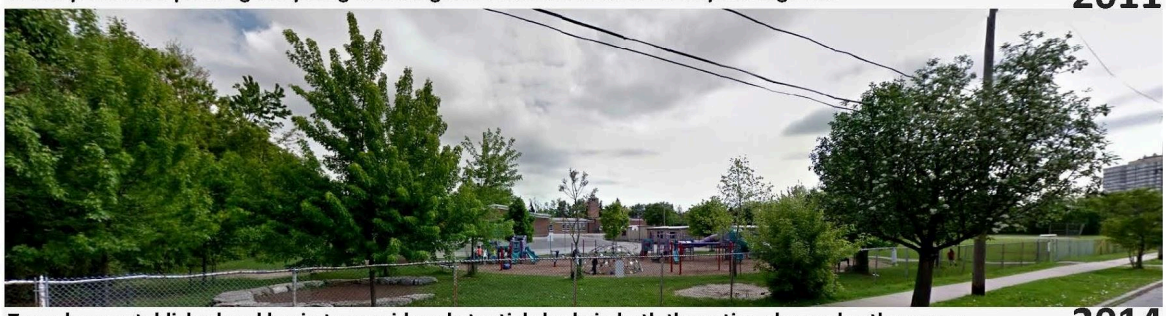
Typical schoolyard with few trees around active play and gathering areas **2007**



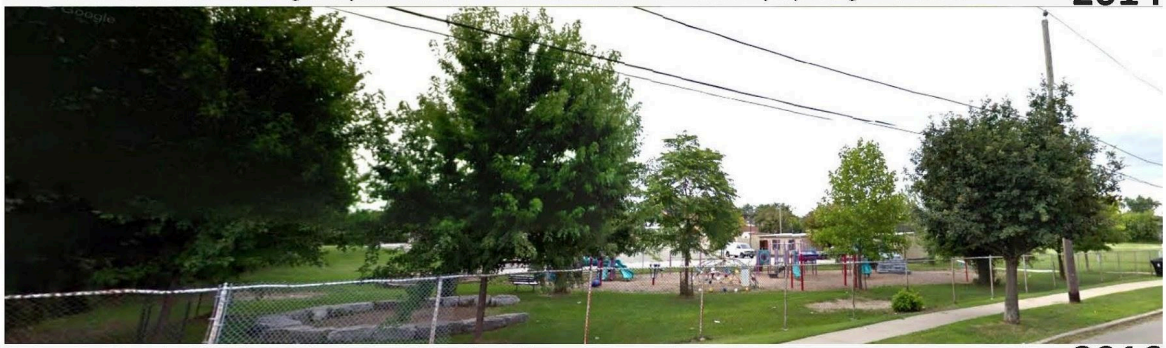
Large planting project of new trees and the addition of an outdoor classroom **2009**



A few years after planting the young trees begin to establish as their root systems go out **2011**



Trees have established and begin to provide substantial shade in both the active play and gather areas **2014**



Ten years after planting, the environmental benefits of these trees continues to grow **2016**