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‘Our garden is colour blind, inclusive and warm’: reflections on green school grounds and social inclusion

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In the interest of enhancing children’s environments, communities around the world are ‘greening’ school grounds, replacing asphalt and manicured grass with a diversity of design elements such as trees, shrubs, gardens, water features, artwork and gathering areas. Despite a growing body of research from a number of disciplines exploring the potential of these spaces, very little is known about the ways they can promote social inclusion with respect to gender, class, race and ability. This paper explores the relationship between school ground greening and social inclusion in a Canadian public school board where approximately 20% of more than 500 schools have begun the greening process. A mixed methods approach was used: (1) 149 questionnaires were completed by administrators, teachers and parents associated with 45 school ground greening initiatives; and (2) 21 follow-up interviews were conducted with administrators, teachers and parents at five schools across a range of socio-economic statuses. The study revealed that green school grounds are more inclusive of people who may feel isolated on the basis of gender, class, race and ability, suggesting that these spaces promote, in a very broad sense, social inclusion.

Introduction

School grounds around the world are changing. Through the process of greening students, parents, teachers, neighbourhood residents, and school and city officials are collaborating to transform hard, hot, unimaginative expanses of turf and asphalt into hospitable places for learning and play.¹ These initiatives vary in approach and uptake, but typically involve diversifying more or less homogeneous environments of asphalt and grass through the addition of trees, shrubs, gardens, water features,

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berms, pathways and gathering areas. The innovative use and arrangement of natural features, artwork, shelters and seating are intended to enhance the social, ecological and pedagogical value of the space.

When a school ground is greened, many benefits emerge for children (Dymont, 2005). Research indicates that students benefit from increased play opportunities (Weinstein & Pinciotti, 1988; Moore, 1996; Tranter & Malone, 2004), healthier, safer and less hostile outdoor environments (Titman, 1994; Cheskey, 2001; Bell & Dymont, 2006; Boldemann *et al.*, 2006), increased learning opportunities (Centre for Ecoliteracy, 1999; Bell, 2001b), increased connections to the natural environment (Harvey, 1989; Nabhan & Trimble, 1994; Hutchison, 1998; Bell, 2001a; Malone & Tranter, 2003a, b) and improved academic performance (Lieberman & Hoody, 1998; Simone, 2002). Teachers working at these schools also report unique opportunities for curriculum development (Moore & Wong, 1997) and reduced classroom management problems (Lieberman & Hoody, 1998).

A limited amount of research has also pointed to the socially inclusive benefits of greening projects, noting how they promote improved social relations among students (Moore, 1986a; Titman, 1994; Moore & Wong, 1997; Stine, 1997). Inclusion can be fostered especially when students are involved in the process of greening (Hart, 1997; Mannion, 2003).

Much of this research examines the benefits of greening projects at individual schools and explores general issues related to inclusion. What this paper adds to the discussion is a more broadly representative picture of the impacts of greening across a large number of schools, looking specifically at issues of gender, race, class and ability. Through the involvement of 45 green school ground initiatives in the Toronto District School Board, Canada's largest public school board, this study reveals that the benefits of greening with respect to social inclusion are being widely realized.

Methods

The study sites were selected in an urban school board in southern Ontario, Canada, which includes 451 elementary/middle schools (kindergarten to Grade 8) and 102 secondary schools (Grades 9–12). The school board is located in Canada's largest city and is diverse in terms of the ethnic composition and socio-economic status of students. The school board was selected because of the large number of schools with greening initiatives (approximately 20% of schools in the board).

Procedures

Questionnaires. A package of four questionnaires was distributed to principals at 100 schools with green school grounds in the school board.² Each principal was asked to complete a questionnaire and to distribute the additional questionnaires to two teachers and one parent. The principals were provided with information to help them select the additional questionnaire respondents (e.g. description of role, type of involvement).

Standard demographic information about the respondent (e.g. gender, age) and school community (e.g. number of students/staff, socio-economic status) was collected. Study participants were also asked to respond to a series of closed and open-ended questions that explored their perceptions about the relationship between green school grounds and social inclusion with respect to gender, class, race, ability and general behaviour (e.g. Sample question: 'As compared to a more typical turf and asphalt school ground, I find that our green school ground design fosters activities that are ___ inclusive with respect to gender'. Based on a five-point Likert scale ranging from 'much more', 'more', 'the same', 'less' and 'much less').

Follow-up case studies. Follow-up case studies were done at five elementary schools that had completed the questionnaires. These schools were chosen from the returned packages of questionnaires to include one school selected from each 'category' of socio-economic status (i.e. very high, high, medium, low, and very low). Individual interviews were conducted with individuals who completed the questionnaires (teacher, principal and parent)³ as well as additional teachers and parents who could provide insight into the study themes but had not been selected to complete the questionnaires. One of the authors (J. D.) also visited the schools and had tours of the greening projects.

Data analysis. The questionnaire responses were analysed using SPSS, a commercially available statistics program. Descriptive statistics were generated to understand respondent demographics and perceptions. Data from the interviews were fully transcribed, with a view to identifying potential themes and topics that were relevant to the research questions. ATLAS.ti 4.1 (Visual Qualitative Data Analysis, Management and Theory Building) was used to code the interview transcriptions and develop conceptual themes relevant to the research questions.

Response rates and demographics

Questionnaires. Out of the 100 schools invited to participate, 45 returned at least one questionnaire (a 45% response rate at the school level). Forty-one principals, 39 involved teachers, 36 uninvolved teachers and 33 parents completed questionnaires (Table 1).

Follow-up case studies. The five elementary schools involved in the case studies ranged from very low to very high socio-economic status (Table 2). The schools also varied in terms of the size of their student body (280–950 students) and their staff (13–48 staff).

A total of 21 individuals (four principals, seven teachers and ten parents) were interviewed. A large majority of interview respondents were women (81%). The teachers and principals involved in the follow-up case study had been involved in the educational system for a minimum of 8 years and a maximum of 34 years, and had been working at their current schools between 2 and 15 years. The interviewees had

Table 1. Profile of questionnaire respondents

Characteristic and variable	Frequency	%
Role:		
Principal	41	27.5
Involved teacher	39	26.5
Uninvolved teacher	36	24.2
Parent	33	22.1
Gender:		
Male	26	17.4
Female	123	82.6
Age (years):		
20–29	7	4.6
30–39	40	26.8
40–49	56	37.6
50–65	46	30.9
Highest level of education completed:		
College diploma	23	15.4
Undergraduate	73	49.0
Master's	36	24.2
Doctorate	2	1.3
Other	15	10.1
Number of years working in the public/private education system:^a		
0–2	4	3.4
3–5	8	6.9
6–10	12	10.3
11–20	36	31.0
> 20	56	48.3
Number of years involved with school ground greening projects:		
0	31	20.8
1–2	20	13.4
3–5	54	36.2
6–10	32	21.5
11–20	11	7.4
> 20	1	0.7
Level of involvement with school ground greening projects:		
Not involved at all	24	16.1
Not very involved	27	18.1
Fairly involved	39	26.2
Very involved	59	39.6
Level of interest with school ground greening projects:		
Not interested at all	3	2.0
Not very interested	9	6.0
Fairly interested	49	32.9
Very interested	88	59.1

n = 149 respondents.

^aResponses from administrators, involved teachers and uninvolved teachers only (*n* = 116).

Table 2. Profile of schools

Characteristic and variable	Frequency	%
Level of school:		
Elementary (kindergarten to Grade 5/6)	32	71.1
Middle (Grade 5/6 to Grade 8)	6	13.3
Secondary (Grade 9 to Grade 12)	7	15.6
Socio-economic status of the school catchment area: ^a		
Very high	9	20.0
High	11	24.4
Medium	8	17.8
Low	9	20.0
Very low	8	17.8
Length of school ground greening project (years): ^b		
< 2	6	13.3
3–5	14	31.1
6–10	14	31.1
> 11	6	13.3
Unknown	5	11.1
Number of students:		
< 200	1	2.2
201–500	26	57.8
501–1000	11	24.4
> 1000	7	15.6
Number of staff:		
< 20	11	24.4
21–40	20	44.4
41–60	7	15.6
> 60	7	15.6

$n = 45$ schools.

^aSocio-economic status of each school was provided by the school board. It is determined by evaluating school communities as a function of: (1) the average and median income of families with school-aged children; (2) parental education; (3) the proportion of lone-parent families; (4) recent immigration; (5) housing type (apartment, single detached house); and (6) student mobility.

^bData for this response were sought from the involved teacher. If the involved teacher did not respond, data were used from the parent questionnaire. If neither respondent indicated a response, 'unknown' was recorded.

been involved in greening projects for a varied amount of time: one respondent had only been involved a year, while another had been involved for 12 years.

Results and discussion

This study indicates that green school grounds are more welcoming of differences than conventional turf and asphalt school grounds. This inclusiveness manifested

itself in many different ways, with approximately half of all study participants reporting that their green school ground is more inclusive with respect to gender (54%), class (47%), race (46%) and ability (52%).

Gender

Several researchers have noted the different play behaviours of boys and girls throughout a number of developmental stages, and many have argued that play spaces need to be designed with their respective needs in mind (Moore, 1986b; Hart, 1987; Nabhan & Trimble, 1994; Cunningham & Jones, 1996; Gagen, 2000). Many participants in this study concurred with this viewpoint, noting that before greening, the school ground favoured the play activities of boys who dominated large open spaces with competitive, rule-bound games such as hockey, baseball and soccer. Questionnaire respondents and interviewees described how the transformed school ground provided a diversity of spaces that better accommodated the play interests and abilities of both girls and boys. For instance, there were places where children could play in a manner that was more nurturing, more cooperative and less competitive.

These findings support the work of Moore and Wong (1997), who found that a green school ground in Berkeley, California, allowed boys and girls to ‘expand the play repertoire’ (p. 91) by engaging them in less organized play and more unorganized ‘free’ play. On the green school ground, they observed an increase in active play, creative play, pretend play, exploratory play, constructive play and social play as compared with the original school ground. They noted:

This was a far cry from the old school ground, where girls hung around admiring the boys’ prowess at playing ball or felt excluded because they were not attracted by the crowded play equipment; and where nonathletic children were ridiculed for not participating in the unchanging routines of ball courts, game lines, and metal bars.

(p. 91)

Obviously, the play patterns of girls and boys are far more complex than such broad generalizations imply. There are, of course, girls who want to run and play active games and boys who want to engage in quieter activities. It is therefore important not to reinforce simplistic gender stereotypes. Nevertheless, the findings from this study point to the value of offering a diversity of spaces to accommodate a range of active and quiet play activities, irrespective of gender.

Class and race

With regard to differences of class, researchers have described the particularly important role that outdoor common spaces, such as streets, parks and school grounds, play in the lives of children of less affluent backgrounds (Rivkin, 1995; Malone, 2001; Chawla, 2002; Thomson & Philo, 2004). Study participants from schools located in Toronto neighbourhoods of lower socio-economic status also noted this pattern.

They suggested that, since many of these schools are surrounded by housing and industrial development, green school grounds might assume an especially significant role. Participants reported that the majority of students at these schools lived in dense housing units and did not have access to backyards or community green spaces within walking distance. Nor did they have opportunities to travel or camp with their families during school holidays. As one principal explained:

It [the green school ground] does expose children from poorer homes who perhaps don't have backyards at their home. At school [they have] the ability to just play in a wooded grass area.

(Principal)

Issues of class were quite intertwined with issues of race in this study. While racial diversity is present throughout public schools in Toronto, in many of the schools located in neighbourhoods of lower socio-economic status there is very high racial diversity, and many of the students have recently relocated to Canada. A notable number of study participants suggested that green school grounds might be especially important for these new Canadian students who might not have had safe opportunities to connect with natural settings in their home countries. At one school, where more than 73 different languages were spoken and many students were on a 'pilgrimage' or 'journey' to Canada from another country, study participants consistently commented that the green school ground played a particularly important role. The principal explained:

These kids are so keen, so enthusiastic and so excited about having these opportunities. We're planting bulbs and for the kids, once again, it may not be an experience that they would have had in their homelands.

(Principal)

Intellectual and physical abilities

Several participants in this study noted that their green school ground was more inclusive of people with intellectual disabilities. Unlike conventional school grounds, the green school ground provided a diversity of play areas so that students with distinct needs were better able to find spaces that were safe and suitably challenging. They could also choose from among a wider variety of activities to find one more in line with their abilities and needs. One parent described how the green school ground provided safe spaces for students in the Special Education course:

It was the Special-Ed kids that hung out in that area. And a lot of autistic kids hang out in the shade and just hold on to a tree. So if you ask me, that was why we did it. You don't have to go any further for an answer — that was pretty powerful to me ... that those kids are not getting picked on and they feel they're secure at recess.

(Parent)

With respect to physical abilities, there is ample literature that describes how school grounds can and should be designed to accommodate differences (Schleifer, 1990;

Farnham & Mutrie, 1997; Nabors *et al.*, 2001). The majority of participants in this study acknowledged, however, that there had been little explicit consideration of such issues during the design of the green school ground. While the literature suggests accommodating physical disabilities with specific design ideas such as accessible signage, wide pathways, inclusive toys and raised planting beds, these have been incorporated to only a small degree at some schools in this school board. Evidently, much more remains to be done.

Broad inclusion

The fact that green school grounds in this study were more inclusive of people who may feel isolated on the basis of gender, class, race or ability suggests that these spaces promote, in a very broad sense, social inclusion. Some participants commented that green school grounds helped to provide an inclusive space for people with other 'differences' as well, noting that they were welcoming of people of all ages, sexual orientations and religions. Green school grounds provide a more diversified environment with a broader choice of play activities. These factors appear to foster the type of positive social dynamics that support more socially inclusive behaviour.

Indeed, study participants reported that when students were learning and playing on a green school ground, they were being more civil (72%), communicating more effectively (63%) and were being more cooperative (69%). These improvements were noted not only among students; interactions between students and teachers were also enhanced (69%).

Participants provided numerous examples of how the green school ground encouraged students to be more well-mannered, tolerant and polite with each other during recess and lunch hour. They noted that there was less fighting, more sharing of toys and more kindness. In the words of one principal, the students were 'generally having more fun and being nicer to each other'. This particular situation stood in stark contrast to that which existed before the greening initiative at the school, as described by one of the teachers:

Before the greening project, we were having major troubles in the school yard at recess. Kids were not happy; they were discontent, running around doing nothing, with no focus. Most of our yard was asphalt or terribly hard packed ground. We did have a soccer field, but then they fought about who was going to play in the soccer field. Always fights at recess. It was terrible.

(Teacher)

Generally, the positive influence of green school grounds on social interactions extended beyond recess and lunchtime. Many principals and teachers commented that students were more cooperative and communicative when they were having formal classes on the school ground as well. They indicated that students were able to work in small groups more effectively and that they had more patience for their tasks. They also noted that students who normally found it difficult to interact with other students were able to work better with others when learning outdoors.

Just under half of the study participants (44%) reported that student discipline problems had decreased on the green school ground and an almost identical percentage (45%) reported that incidents of aggressive behaviour had decreased. Participants suggested that school grounds consisting of only turf, pavement and manufactured play structures were very dull and boring, and that this led to student frustration and aggression. As one parent recalled:

Before we built our garden, we used to have a 70s-style big adventure wooden playground, and that kind of building really allowed for some bullying because there were big fort spaces ... there just wasn't enough to do ... so some kids used to just pummel other kids when there were no teachers around.

(Parent)

In contrast, participants suggested that the diversity of environments on green school grounds provided for a variety of activities, thus decreasing incidents of bullying and other aggressive behaviour. A principal described:

I believe that the installation of the bushes and the trees and the plants and all that stuff out there has gone a long way to making our schoolyard more peaceful, and has gone a long way to providing alternatives for kids, so they don't just have to play soccer or sweat to death on the asphalt in June ... there are places to sit down, there are places to go that are quiet, where they can eat a snack with a friend. There are a variety of places to be now, whereas before you had two choices — on the asphalt or on the grass. And usually on the grass is football and soccer, and it's not everybody's cup of tea. They can hide behind the bush now when they're playing with a friend or seek some shade from some of our trees.

(Principal)

Respondents in this study also reported that the diversity of play spaces on their transformed school ground influenced the play of students. A principal describes play on her green school ground:

It's quite magical. They have names for various spots. And it really quite delightful to see them in a very informal setting ... they will get in under trees and hiding, there's a lot of 'hide-and-peek', there is a large sand box which is a popular item ... but then there are also little places where they sit and talk. We got these very large boulders brought in there along the soccer field side of the naturalization area and they love to play on them. I find it quite delightful, just to see them playing so creatively.

(Principal)

Another teacher noted that the green school ground provided more freedom 'just to wander around the garden and lie down and look at the sky, whatever they needed to do'. This is in stark contrast to

the old playground that just promoted active play. Once you get into that perimeter of the playground ... you're there either to jump around or you're going to get run over basically.

(Parent)

One parent stated that she even chose her children's school because of the diverse play opportunities that promoted social inclusion.

Many participants suspected that these improved social and behavioural skills were heightened through active student involvement in the *process* of greening, a contention that has been noted by many researchers (Hart, 1997; Mannion, 2003; Dymont, 2004). Study participants reported that when students were given opportunities to work with other students, teachers, parents and community members on greening projects, they learned important life skills. They learned, for example, that through teamwork, cooperation and dedication they could make a difference:

The greening project has shown kids the power of their collective action. While working with the entire school community ... over several years ... they learned about lots more than gardening. It shows them that when they put their minds together and lean shoulder to shoulder into the task they can accomplish just about anything. They can take something that looks like a wasteland and turn it into something that has a purpose. This took hard work, teamwork and dedication.

(Principal)

At one school, the green school ground was used as part of a behaviour modification program for students who were having difficulty working with other students and teachers in a conventional classroom setting. Students in this program were involved in all aspects of the greening project, including design, fundraising, planting and maintenance. The social benefits of the program were clear to one teacher who indicated that:

students from the program ... experience a greater development of positive self-esteem. Through leaf-raking, digging and planting, negative energy is transformed into positive life force. Students learn to question, observe, discover and appreciate the natural world as it develops.

(Teacher)

One principal noted the benefit of involvement in greening projects for people who were having temporary difficulties in their lives:

If they're facing a real tragedy in their personal life, if life is really tough for them ... for a whole variety of reasons, the group of parents just reaches out and connects them... hands them a shovel and says 'come give us a hand', and then there's that opportunity for talking and listening and supporting.

(Principal)

Evidently, green school grounds in Toronto provide places where a range of individuals' needs can be met. They help to draw people in, inviting them to share experiences and goals and to participate, as they are able. A parent captured many of these sentiments with these words:

Everyone can join us in the garden. What a great place for a disenfranchised child to meet new people, dig and plant. Our garden is colour blind, inclusive, and warm. Anyone can help us, and they do.

(Parent)

Community inclusion

Students are not the only ones feeling more welcomed by green school grounds: study participants also commented on the important community connections fostered through greening projects. While not specifically targeted in the questionnaire, remarks about community connections arose often during the interviews.

Study participants noted that the green school ground enhanced community connections by providing opportunities to meet new people, make new friends and strengthen old friendships. Through their involvement in regular greening committee meetings or weekly gardening sessions, adults had opportunities to spend time together while working towards a common goal. As noted by other researchers (Lewis, 1992; Barker, 1994; Shapiro, 1995; Glover, 2004), community greening initiatives create inclusive and friendly social environments. Glover (2004) even suggests that community gardening projects are 'less about gardening than they are about community' (p. 143). Other researchers have made similar observations about urban green spaces, indicating that provide important meeting places for social interactions (e.g. Lewis, 1992; Barker, 1994; Hartig *et al.*, 1994; Shapiro, 1995; House, 1996; Miles *et al.*, 1998, 2000; Lambert, 1999). With respect to school ground greening initiatives in Toronto, study participants generally reported knowing more people and feeling more positive about their community. One of the parents described how community bonds were developed through participation:

it's not that I know everybody; it's just you're in the garden and you just say 'Hi'. 'Hi, I'm still here'. ... 'Hi, Hi' ... every day ... because you want to be friendly and welcoming.

Many study participants commented that their green school ground was an especially important venue for inviting involvement from new Canadian parents. Given the tangible and physical nature of gardening, commonly cited impediments to their involvement in school activities, such as language barriers, were removed or mitigated. One interviewee, who had recently emigrated from Yugoslavia, indicated that her involvement in the greening project had been critical in easing her transition to Canada and had helped her to 'learn the language, make some contacts and make some friends'.

Limiting factors

Notwithstanding the overwhelmingly positive comments of study participants, a green school ground is no guarantee of inclusiveness. Some participants suggested, for example, that green school grounds might influence primarily those students who were directly involved in the greening process. At one school, where the 'Garden Club' is solely responsible for maintaining the green section of the school ground, a parent commented: 'I think it has a positive effect on those students involved, but not all students at the school'.

Other potentially limiting factors are the size and location of the greened areas and the degree of student access to these parts of the school ground. Some participants questioned the potential influence of greening projects that were small and/or

isolated. For example, some greening projects in this study were located entirely at the front of the school and students were prohibited from playing in those areas. As one teacher noted, 'the green area is in front of the school and not accessible during active time. Students aren't allowed to play on it ... so I doubt it has a big impact on their behaviour'. While access to selected green school ground sites needs to be regulated (e.g. to deal with safety issues around aquatic features) and managed (e.g. to protect newly planted sites), site plans should allow students the maximum amount of direct interaction with the green space in order to exploit fully its potential (Hart, 1997; Stowell, 2001).

Reflections and conclusions

The positive findings reported in this study support existing research that has explored the relationships between the school ground environment and the behaviour of young people (Weinstein & Pinciotti, 1988, Harvey, 1989; Titman, 1994; Moore & Wong, 1997; Lieberman & Hoody, 1998; Cheskey, 2001). The majority of educators in Lieberman & Hoody's (1998) study, for example, noticed an improvement in students' abilities to collaborate on projects with others, to function democratically, to communicate with others, to give care to self and others, and to practise civility towards others. Reflecting on behaviours on the Environmental Yard at a school in Berkeley, California, Moore & Wong (1997) noted that:

asphalt generated more conflict and stress ... compared to the more diverse setting which ... engendered a more harmonious relationship between children of all ages.

(p. 34)

Other researchers have found a positive correlation between natural environments and pro-social behaviours for a variety of age cohorts, including pre-school children (Moore, 1986a; Huttenmoser, 1995), school-aged children (Weinstein & Pinciotti, 1988; Titman, 1994; Alexander *et al.*, 1995; Cheskey, 2001), and adults (Kuo *et al.*, 1998; Kweon *et al.*, 1998).

In light of this body of research, the findings of this study should come as no surprise. They add further, broad-based evidence to the contention that school grounds can and should be designed to foster inclusiveness and other social benefits. Given the amount of time that children, staff and community members spend there, we need to consider what types of play and social interactions our school grounds invite and support. We need to recognize and work from the understanding that they can become a site of purposeful intervention for promoting social inclusion and well-being.

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Ground Greening in the Toronto District School Board', is available online at <http://www.evergreen.ca>

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Notes

1. A number of terms have been used to describe changes occurring on school grounds, including 'school ground gardening', 'school ground naturalization', 'school ground restoration' and 'school ground greening'. While there are important differences between each term, and while each term is itself somewhat contested, for the purpose of this paper 'school ground greening' will be used to describe collaborative efforts to improve school grounds. (For a more detailed explanation of the differences between each term, see Houghton, 2003).
2. This list of schools was generated when the school board was preparing a document related to school ground greening, at which time all schools in the board were asked to indicate if they had a greening project.
3. In circumstances where the original questionnaire respondent was unable to participate in the follow-up interview, a replacement interviewee (with a similar role) was sought.

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