

## IF I COULD DESIGN MY OWN SCHOOL: STUDENTS' PERCEPTIONS OF THEIR LEARNING SPACES

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### KEYWORDS

School Architecture, Student Views, Design Features, Outdoor Areas, Home-Like Environments

### ABSTRACT

*This paper captures students' perceptions of various informal and formal learning spaces in their schools. It is part of a three-year study on architecture and pedagogy examining close to a dozen schools in North America and Europe, aimed to encapsulate the complex relationships between student experience and school design in public, purpose-built, and Waldorf schools. One elementary and one secondary school in Canada are represented in the present paper. The data are comprised of individual interviews, focus-group interviews, and photographs of each school building and grounds. Students involved in the study were greatly impacted by their school environment: the data revealed shared architectural ideals amongst students. The importance of providing an outlet for students to voice their innovative ideas regarding school design is emphasised by the findings of this study.*

*The research reported here was supported by a Standard Research Grant from the Social Sciences and Humanities Research Council of Canada (SSHRC).*

## **IF I COULD DESIGN MY OWN SCHOOL: STUDENTS' PERCEPTIONS OF THEIR LEARNING SPACES**

It seems self-evident that the kind of spaces children inhabit will affect how and what they learn. While some studies in the field of architecture have examined the relationship between the design of educational facilities and academic performance (e.g. Berner 1992, 1995; Küller & Lindsten 1992; Peters 2003), these studies are often limited to the effects of particular design features on students' academic achievement scores. There is scant research addressing how school architecture affects students in more subtle ways, such as building community by developing affection for one another, for their school community, and for the natural world.

From the age of four most children spend several hours a day in a school setting. During teenage years, school activity often increases to consume the greatest percentage of their waking hours. Knowledge is gained, friendships are formed, and characters are developed in classrooms and on playgrounds. But what are these buildings like, where so much growing, socialising, playing, and learning takes place? Who designs them? On what basis are plans drawn? Whose needs do the architects and construction engineers consider? What architectural features of schools complement students' daily lives? What changes would students like to see incorporated into these buildings and grounds? And, most important of all, how does the architecture of schools affect students' learning and wellbeing? These are some of the questions that have motivated our study. The present paper discusses the findings from two Ontario schools studied during the first year of a three-year research project exploring how school buildings and their surrounding grounds shape and influence learning. These two schools are part of a set of eleven schools examined in the first year of the research. The selected schools reflect a variety of school types (e.g. public elementary and secondary, Waldorf schools) and geographic and cultural settings, including schools in Manitoba, Germany, Iceland, and the two in the present study.

## **LITERATURE**

### **Reflections on School Experience**

Many North American adults have shared a common schooling experience over the last century. We are familiar with the layout of elementary and secondary school classrooms, gymnasiums and hallways. Most of us can conjure up the sights, sounds and smells of our primary school through high school learning: desks, chairs and blackboards; bells, fire alarms and public address systems; wet boots, running shoes and chalk dust – these, and many other sensory cues quickly take us back to days spent learning with our peers. But, what were we learning along with the reading, writing, and arithmetic that appeared in our scribbles?

According to American educator Bill Bigelow (1996), one aspect of hidden curriculum that the physical set-up of classrooms in North America during the last century has taught students is that all the important work takes place inside. He writes, 'Implicitly, we were taught that the important work of society – which would be our work – occurs indoors, with books, and paper and pencils' (p. 3). He suggests that the time spent indoors at school was for concentrated study in order to keep up grades, while the outdoors was for play and less serious pursuits. The hidden curriculum is clear when we consider David Gruenewald's (2003) statement that, 'Places teach us about how the world works and how our lives fit into the spaces we occupy. Further, places make us: As occupants of particular places with particular attributes, our identity and our possibilities are being shaped' (p. 621). Canadian educator, Rena Uptis (in press) further underlines the notion of socialisation through school architecture when she writes, 'School buildings tell students and teachers what societies value, what kinds of learning are important,

and ultimately, what kinds of human beings we wish our students to become.' We learned a lot more from our primary classroom experiences than our times tables and spelling rules.

What did many of these buildings look like? An informal survey of graduate students revealed that we share memories of factory-like buildings surrounded by asphalt playgrounds and requisite swings and climbing apparatus sets. We recollect polished floors (tile or wooden), doors with high windows and desks set in rows facing the teacher's desk and blackboard. We varied on whether the outside structure was metal clad or brick and whether it was one story or several, but the enduring sense was that these were substantial and important buildings; we share, with Bigelow, the notion that here is where serious learning happens. These recollections are interesting considering that our schooling took place in various locations across the country and over four decades. One thing we all agree on: no one ever consulted us, or our peers, about any changes we might propose in the buildings where we spent our childhood hours and passed major milestones in adolescence.

### **What Could Children Contribute to Design?**

If we had been asked our opinions about change in our school settings, what might we have said? According to Nel Noddings (2003) all human beings, especially children, have an inherent need to experience nature in order to be happy. She writes, 'Ideally, we would spend part of the [school] day outside exploring, teachers and students together,' (p. 125) and continues to explain that our happiness in adulthood depends in great measure on our having developed a connection with the natural world when we were young. Noddings' ideas are in stark contrast to Bigelow's observation that, and the idea that, students think they learn all the important things in life inside a building. It speaks to a very different view of what aspects of learning are important. It brings to mind the joy of jumping in puddles in the schoolyard or discovering a stick bug clambering up a school wall or knowing that you can hang upside down on the monkey bars longer than any of your schoolmates. The evidence that children instinctively know there is joy in being outdoors can be found on any day, in any classroom, when the recess bell rings. Considering the connections Noddings (2003) also makes between inner happiness and caring for others, we would do well to take seriously that instinctive movement towards discovery in nature and create more spaces and time for children to be outdoors and happy. In this light, American environmentalist David Orr's (1999) observation that schools are immediate and mundane and that the notion of place as being important has no standing in contemporary education becomes a condemnation of societal values. This connection between the architecture of schools and the values of society is not new. Over a century ago education pioneer John Dewey (1900, 1933) claimed that schools should be thought of as embryonic communities, with activities in schools chosen to reflect the undertakings of society as a whole. Schools with no interest in developing the surrounding grounds into places of learning and nurture are a pointed reflection of society's neglect of the environment. Children, according to Bigelow (1996), will have their initial care for their natural surroundings trained out of them during their school years unless we listen to what their behaviour is telling us about school design.

Another facet of design that children are adept at recognising seems to be areas of safety and danger. According to Sutton and Kemp (2006) while adults are very good at identifying environmental and chemical concerns, children are best at identifying physical and social places in their communities that they experience as alienating and foreboding. When they asked children to design park spaces, they found that not only was care given for playground equipment and trails, but also that the students were concerned that areas be open and light. The children were able to name what features in a park landscape would make them comfortable, and thus, happy. It is not difficult to assume that students could also articulate what aspects of school and playground design cause them distress and which ones give comfort, leading to a feeling of safety and happiness. Noddings (2003)

expresses this notion when she says, 'The best schools should resemble the best homes... the best homes and schools are happy places' (p. 260). Once again, the literature suggests that children are able to take the lead in designing good spaces for themselves if given a voice in the process. Our research was designed to give them such a voice.

This research is being conducted at a time where giving students such a voice has never been more critical, not only in terms of the pedagogical implications, but in terms of the impact of new construction on the environment. More new buildings will be constructed in the first half of the 21<sup>st</sup> century than have been built in all of recorded human history (Orr 1999). Many of those buildings will be schools. Annual school construction budgets in the United States hover around \$20 billion USD, where two new schools are completed every day (Abramson 2006). Many of these schools, however, are aesthetically and pedagogically deficient (Fiske 1995; Meek 1995; Orr 1992, 1999). We have the opportunity and the responsibility to design schools in fundamentally different ways. But to do so, more research is needed to determine how architecture affects learning in direct and indirect ways. This study presents one such attempt.

## **METHODOLOGY**

### **Research Context**

The two Canadian schools represented in the present paper are among eleven selected for the first year of a three-year study on school architecture. The research program is based on the premise that problems with education are not only about curriculum methods, assessment, teacher education, or teacher competency, but that some of our challenges have to do with the ways in which we design school buildings and grounds. This research program explores how school architecture shapes the nature of both teaching and learning in several types of schools: (a) public elementary schools that have been explicitly purpose-built to be conducive to learning, (b) traditional public elementary and secondary schools, (c) Reggio Emilia schools, and (d) Waldorf schools. Of these types of schools, the present study represents traditional elementary and secondary schools.

### **Site Selection**

In order to gather responses from students across a wide age range, we chose both an elementary school and a secondary school located in an average sized city in Southeastern Ontario. The specific schools were chosen because they represent two distinct and ubiquitous periods of public school building. The elementary school is a three-story redbrick building constructed in 1900. The secondary school is a single level aluminium sided facility that was built in the 1960s. Situated in residential areas, both have large playgrounds and adjoining parking lots used after school hours by the community.

### **Participation Selection**

After obtaining clearance from the General Research Ethics Board of Queen's University and the local school board, one of the researchers, known to both schools, approached the two principals in order to identify a class where the teacher, students, and parents might be able to participate in our study. Once the teachers of these two classes agreed to take part in the study, we sent permission letters home to parents and arranged dates for focus group interviews to take place with the students. In the elementary school, we worked in an alternative

classroom with multi-grade students ranging from Grade 3 to Grade 6. In the secondary school we were in a homogenous Grade 11 class. A total of 16 students from the elementary school and 12 students from the secondary school chose to participate in our research. There were three site visits at each school. One extensive site visit, which involved school tours, an assessment of architectural features, and focus group interviews, involved three of the researchers from the team. The two remaining site visits were made by the first author of the present paper in order to interview teachers and take photographs of the schools. These site visits conformed to the data collection protocols developed for all schools in the study.

### **Steps in the Research Process**

An initial meeting was held with each teacher to explain the process to be used with students. Upon arriving at each school on the focus group interview days, two of the three researchers first independently completed a survey of architectural features based on architectural patterns identified by Christopher Alexander (1977), as applied to schools by Tanner and Lackney (2006).

After the survey was completed, we gathered students in groups of three or four, with each of three interviewers taking a group to a separate room for the interview. We used a semi-structured interview protocol and audio-recorded the group interviews. Each interviewer asked questions such as: If you could take one space from this school home with you, what would it be? What are your favourite spaces in the school and why? What are your least favourite places in the school and why? Some of the interview questions also involved photographs of other schools and public spaces, and students were asked comment on what was presented. These photographs were presented in pairs, and each pair represented an aesthetically pleasing and a less successful example of one of Alexander's patterns, such as natural lighting or entranceways. Care was taken that each child in the group had a chance to answer every question and students were encouraged to elaborate on their answers. The length of the focus group interviews ranged from 20–40 minutes.

### **Data Organisation and Analysis**

The researchers transcribed the audio-recorded group interviews, assigning pseudonyms during the transcription process. The entire research group analysed the transcripts, based on a series of codes that had been developed in analysing similar data from another school in the study. The entire research group analysed one transcript together, and because the inter-rater reliability was over 90%, we decided that any two members of the research team could reliably code transcripts using ATLAS.ti (1997) to facilitate the coding process. After applying the codes developed from the other school site, the researchers merged some of the codes and created new codes for the present study. For example, codes were expanded to more fully capture the students' most favourite and least favourite school spaces.

For this paper we analysed only the data from the student focus groups. In the following section, we describe some of the major themes that emerged from the analysis. These include (a) students' affection for their schools and communities, (b) their dismay at some of the washroom facilities, (c) the joy they associate with being outdoors, (d) some of the unsavoury aspects of the outdoor environment, (e) the importance of comfortable places to gather, and (f) the pride with which they associate themselves with their schools.

## RESULTS

### Students love their schools



*Figure 1. The 'Stream of Dreams' along the fence of the elementary school was created with individual fish made by every student in the school.*

It is clear from students' responses to the questions we asked that students love their schools. Although those interviewed have issues with certain areas of the school, both inside and outside, pride came through in both the tone of voice and the words they used to describe their school. Both elementary and secondary school students identified places where learning and social interaction occurred as their favourite areas. Many students named their classroom as their favourite interior space at school. When asked why, students said that they 'liked to learn,' that the classroom was comfortable, and that 'there are lots of fun things to do.' One student said her favourite space was 'our classroom when we're sitting together and talking.'

Elementary school students identified a room named First Space where they played with toys and had parties. First Space is a before and after school program that students attend by parental choice. It is well known for the fun activities that take place there. For both elementary and secondary students, the gymnasium was another favourite interior space. Some reasons given included, 'the room feels fun', 'you can run around and throw balls, 'because it's big. Computer labs were also identified as spaces where students enjoyed working, 'because I'm learning new things.' So, too, was the library named as a favourite place, '[with] all those books.'

In the secondary school, students identified specific classrooms as favourite spaces. One student enjoyed the technical room, because the projects are pretty awesome and the machinery and stuff. The English classroom was popular because 'it has posters all along one wall... and lots of quotes.' The music room was identified as having a special feature beside it – a ramp, where 'it's close to the cafeteria, and it's a large enough space – at least 25 people can talk. You can sit on the side rails if you want to.' In the example of the music room and the cafeteria, instruction and socialising combined as students moved between class and free time. This type of

feature is in keeping with Alexander's (1977) observation that people require places to sit comfortably and informally in order to foster social relationships.

### **Washrooms Need a Makeover**

Washrooms ranked number one as the least favourite space in both elementary and secondary schools. They were described as 'dirty and disgusting.' There were problems identified with garbage disposal. In addition, one student commented that, 'the dryers don't work [and] there are no paper towel dispensers.' Privacy was also an issue. Bad odours abound, '[students] don't flush' and frequently there was no soap for hand washing. Issues of personal safety were also mentioned in conjunction with the boys' bathroom in the basement near the storage room: 'Oh yeah, the storage room and the boy's bathroom' feels like 'a dungeon... it feels freaky.'

Secondary school students unanimously identified the smoking area as unpleasant. Even though the smoking area is outside, students explained, 'the whole hall and the area where the smokers come in stinks.' Another student said, 'We have these nice long windows in the cafeteria and where is the smoking area? Right outside the cafeteria windows!' The visual of students smoking marred the pleasure students expected to have during eating and socialising time.

### **There is joy in being outdoors**



*Figure 2. Playground equipment is used both during school and after school hours by neighbourhood children*

Outdoors, students enjoyed areas where they could visit with friends and play games. 'Somewhere where you can be active and can meet with friends' – these were the places that students enjoyed outside. A tree or a picnic bench became a place for friends to congregate. One girl identified the space, 'It's the gossip tree,' she explained. Another student liked an area where 'there are a couple of trees there in the summer time. It's neat when you're having lunch and just chilling.' Many of the favoured outdoor spots were spacious. The track, the

football field, the soccer field, the baseball diamond, the park 'across the way' were large areas that students enjoyed. Elementary students spoke with enthusiasm about the recreational equipment in their playground area: play structures, the monkey bars, 'the big red twisty slide,' and the jungle gyms. Again, these comments reflect architectural patterns identified by both Alexander (1977) and Tanner and Lackney (2006) as being crucial to socialisation and learning.

### **Outdoors Can Also Be Unsavoury**

The smoking area was problematic for many secondary students, both inside and outside the school building. One young woman's sarcastic comment was 'the smoker's area is a real breath of fresh air.' Vandalism also contributed to problem areas outdoors. At the secondary school, the picnic tables were taken away 'cause people were writing profanity on them.'

When we asked if there was anywhere that made them feel uncomfortable, the elementary school students mentioned the 'peeing corner.' One student explained that neighbourhood boys pee there when school's out and on the weekend. They described the 'peeing corner' as 'creepy.' One secondary student identified a road that ran between the technical hall and the football fields as unsafe: 'I always feel like I'm going to be hit by a car or something.' This was the only issue secondary students reported concerning their personal safety. Elementary school students reported that they didn't feel safe in the parking lot, 'or all alone someplace else.' The school's security policies concerning non-school members on school grounds made some students uncomfortable: 'The teachers see and they say "someone's cutting through" so that everyone knows. All the teachers – and it makes me feel they're scared when someone does that.' Other students reported feeling uncomfortable in the playgrounds when 'people tackle them there.' It appeared that elementary school students still relied on the presence of their teachers and other classmates to feel safe.

### **Comfort and Aesthetics: 'I like the big huge leather comfy couch best'**



*Figure 3. The big comfy couch is a favourite place for conversation and thinking.*



Students had plenty to say about what they thought was pleasing in their school, and what they thought needed improvement. Couches appeared in many categories of conversation; couches provide comfort, places for being with friends, for being alone, for thinking, for learning and for discussing ideas. The comment, 'I like the big huge comfy leather couch best' came from a student who then explained that there was a roster list for sitting on the couch: 'Every week we change it – every week three new sets of people can go on there.' Another student got his best ideas on the couch 'when you sit like this [striking a lounging pose].' Students suggested that appealing couches would be 'black', 'comfy', 'leather', 'long couches that go all the way around the room, a couch that turns the corner.' The general consensus was that 'every classroom should have a giant couch.' One student's wish list for furniture included, 'furniture that is big and soft with lots of stuffing and comfortable.' While the elementary school had a 'big huge leather comfy couch' in the junior classroom, a Grade 11 student complained that their school had only 'ugly green [couches] that are uncomfortable and have been sat on for years.' The same student commented, 'we get hard plastic and wood, with the desk connected to the chair. It makes your butt hurt. The back of the chair is really uncomfortable.' Another student commented that the stools in physics class 'are so uncomfortable and they hurt my back.' This attention to school furniture was a universal theme in the eleven schools that we included in the first year of the research study. Indeed, it has been identified, for nearly a half century, as one of the features of schools that students are most likely to notice (Coles 1969). We will return to this theme in the closing discussion.

There were various ideas about colour preference: 'I like soft colours', 'I like alive colours', 'I like bright colours'... 'I like dark colours. But regardless of the preference, views about colour were strong. Students in elementary school and secondary school spoke of colour as effecting mood. When asked about colour choice, an elementary school student said that she would use 'vibrant colours that always make me happy.' A Grade 11 student said, 'I like this lime green colour [in the staff room]. It makes me happy every time I see it.' Students from the elementary school talked about how hard it was to stay calm with colours that they considered jarring (like bright yellow and bright blue).



*Figure 4. Lækjarskóli, a primary and lower secondary school in Iceland.*



*Figure 5. A Canadian secondary school.*

As noted earlier, students taking part in the focus groups were shown photographs of contrasting architectural features. The photographs came from two public schools; one built less than 10 years ago in Iceland, and the other, a Canadian school, built at the end of the 20th century. When asked which design they preferred, all students chose the school in Iceland citing the architecture and the curved walls of windows. One student commented, 'You can tell if that's nice on the outside it's going to be nice on the inside.' When shown two pictures of classrooms, a secondary student noted that the way the furniture is arranged tells him/her what kind of teaching will happen in the space:

*I like all the chairs around the table. It's like this is a class where the teacher would say, OK here's the topic, now discuss it and you'd all talk, not like OK open your book to page 138 and do questions one to five.*

This student's comment suggests that the arrangement of a table and chairs in a classroom can promote lively discussion. An elementary school student said that best ideas came 'somewhere we can have pillows and chairs. And we can sit down.'

Many students talked about the importance of windows in the classroom. At the secondary school that we visited, the classrooms had no windows. The school was designed with the classrooms in the centre of the building, and hallways around the parameters of the classrooms. Students complained that they had no natural light in their classrooms: 'I think the halls on the outside of the school should be rearranged. It's the way it was built and it probably can't be changed.' Other comments about light included, 'There's not too many windows in this school and some places are pretty bad,' and 'even if there were windows in the hallway so you could see stuff.' When students were asked to compare pictures of classrooms with abundant versus limited natural light, all students chose the school with more light: 'I love the light – all the natural light,' and 'This one has more windows and it looks kind of light,' and 'the windows look good.'

### **Students Show Pride of Ownership: 'I think the school's pretty awesome all around'**

Even though students mentioned many ways they would like their schools to change, students in both the elementary and secondary school were proud of their schools and showed ownership of their spaces. For example, students at the secondary level were proud of the entrance of their school. When asked what area they

would show visitors, one student said, 'I'd choose the front foyer 'cause like all the awards and stuff and information of it. It's all out there.'



*Figure 6. Students in the secondary school were allowed to create their own mural on the cafeteria wall.*

Secondary school students described how they congregated at their lockers, because it was a place where 'you can talk as loud as you want' and 'it feels good.' They described the cafeteria as a place where all their friends get together 'and we have the best ideas and there is nothing to distract you.'

Students in elementary school were proud of their actual classrooms. One student commented that, 'I can make a space of my own.' Another said that she went to 'the same space on the round table every day.' Another talked about how they had places where they could both eat and work: 'Here we get to sit on round balls and eat while we work.'

Pride of ownership was also evident in colour preference and its association with school activities and identity. For example, students from both elementary and secondary schools said that they enjoyed their school colours (lime green and purple) and their sports teams' colours – 'I like the red and black and pink'.



Figure 7. Secondary school students were also encouraged to decorate the doors to different classrooms.

## DISCUSSION

In the review of the literature presented earlier in the paper, we related how Noddings (2003) identified the importance of a feeling of home in learning environments. Almost a half century ago, American psychiatrist Robert Coles (1969) put together a striking collection of students' thoughts on school architecture – and again the notions of home were prevalent. In Cole's study, a young adolescent boy named Arthur, living in an unnamed urban ghetto, fervently believed each classroom should have its own bathroom – partly in response to the kinds of issues raised about bathrooms in the present study. He said:

*They should have one for our homeroom, one for each one, and then we wouldn't be walking all over, and it would be ours; and that goes for eating, too. I mean, why couldn't they have a kitchen for us, like at home? My mother said if they can build these fancy apartment buildings so you can each have your refrigerator and your bathroom, they could do it for us in school, and then the whole place would be better, because we'd have a nice room and you wouldn't have to go a mile and then find a big bathroom and you can get lost in it and by the time you get back you've missed everything they've been talking about (pp. 49-50).*

The students in Coles' study also identified the importance of comfortable furniture. For example, one student offered: 'I'd like comfortable chairs, like ones that had cushions so your back doesn't hurt and your bottom either' (p. 49).

Dewey had a great deal to say about how children learn and about furniture, too. In the early 1930s, Dewey envisioned what he called the 'utopian' school. He began the discussion with physical space and, only later turned to issues of pedagogy (Uline 1997). He made a plea for large grounds, gardens, and greenhouses. He described the need for 'open-air' interiors, a variety of workspaces, and access to books – all of which would help create the feeling of a 'well-furnished home.' Dewey was 'not shy about emphasizing beauty and comfort and excitement' (p. 196). Nor were the children interviewed by Robert Coles nearly a half-century ago. Nor were the students we interviewed.

There are other corroborating studies indicating the importance of natural light, identified by the students in the present study. Abundant research demonstrates that students are more likely to achieve high levels of academic performance if the schools they attend are well maintained, kept clean, and meet safety standards. Students in schools with leaking roofs, broken windows, missing toilet stalls, and dark classrooms don't fare so well (Berner 1992; Kolleeny 2003; Lezotte & Passalacqua 1978; Peters 2003; Tanner & Anderson 2002; Tanner & Langford 2003). While it is beyond the scope of this paper to describe these studies, what was striking to us was not so much the architectural features identified by the students, but the fact that despite the problems in their schools, the overriding finding was that the students identify positively with their school environments. This identification comes not so much from the architecture, but from the complex web of social relationships fostered – and hampered – by school activities and features.

Students interviewed in both schools expressed their comfort in familiar surroundings. Even in situations that the interviewers noted to be outdated or shabby (such as the locker area in the secondary school) students expressed their enjoyment in being in the space because it was 'comfortable.' This idea speaks to Noddings' (2003) view that a good school is like a good home.

When we are asked about our homes it is hard to be objective. We see them through familiar eyes, not those of a stranger evaluating their features. We do this because we love them, and so it was with the students we interviewed. In Dewey's view, the ideal home would find a child learning through the family's social interactions, through household occupations and tasks, and by tending the garden and exploring surrounding fields and forests. Dewey (1900/1956) also acknowledged many of these activities take place in the most meagre of homes, albeit in a more haphazard manner. The schools we visited were certainly not meagre, but there were certain aspects of them that an outsider might note to be in need of repair or updating. And while students were aware of these aspects, they did not dwell on them during the interviews and were very strong in their opinions that good things happened in each school. One of the issues we are exploring in the next phase of the research is whether purpose-built schools, that is, schools designed with a specific educational or philosophical basis, in fact result in a different school experience or whether the overriding factors have as much to do with social relationships and familiarity as school design.

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## **AUTHOR INFORMATION**

The authors of this paper are members of a three-year research project examining how school experiences are shaped by the architecture of schools and surrounding grounds. Dr. Rena Upitis is the Principal Investigator on the project. She is Professor of Arts Education at Queen's University and recently completed a six-year term as National Research Co-director of Learning Through the Arts, a multi-year project bringing artists to the classrooms of over 100,000 students. Rena frequently presents at conferences and publishes widely in academic and professional journals. Her various research projects have explored teacher, artist, and student transformation through the arts. Jennifer Davis, Anna Peterson, Julia Brook, Meagan Troop, and Holly Ogden are doctoral students in Education at Queen's University. Their various research projects include work on school architecture as well as the role that the arts play in education and in enriching teachers' and students' lives.