

# THE IMPORTANCE OF PLACE: FACILITY CONDITIONS AND LEARNING OUTCOMES

Schools are central, public institutions. On any given day, about 20 percent of the Canadian population spends at least part of its day in a school building. By age 18, students will typically have spent about 15 percent of their lives in schools.

Administrators and teachers in contemporary schools face significant challenges. Globalization pressures have raised the public profile of the importance of educational achievement at the same time as changes in diversity, curriculum and authority patterns have made the challenge greater. In short, the demands on schools to perform have increased as the difficulties in doing so have multiplied.

Many factors affect the academic achievement of students, including gender, early childhood learning, parental support, race and ethnicity, social class, teacher qualifications, and curriculum. Not only is the list of factors affecting student outcomes lengthy, their effects are interacting and many are not amenable to systemic intervention. The socio-economic status of students is a good example. No one knows how to reliably mitigate the effects of this important predictor of student performance. The same is true of students' gender, or race and ethnicity, or disparities in early childhood support.

## THE EFFECTS OF FACILITY CONDITIONS

Given that many important determinants of effective learning are beyond systematic control, it becomes all the more important that school divisions optimize the effects that they can control. One underappreciated determinant is the quality of school facilities.

The available evidence from several studies indicates that the effect of facility conditions on student performance, independent of other variables, ranges between five and 17 percent.<sup>1</sup> The average effect in the literature is about 10 percent, which is roughly the difference between a C and a B grade. Seen in these terms, school facility conditions are a non-trivial, manageable contributor to educational outcomes.

It is quite clear that most of the effects of school facility conditions on student performance are indirect. It is unreasonable to expect, for example, that if a school changed its lighting, acoustics, air quality and temperature controls, student marks would move from C to B. If only it were that simple! Instead, the effects of facility conditions on student learning are mediated effects; they have their influence through their effects on other variables.

**THE EFFECTS OF FACILITY CONDITIONS ON STUDENT LEARNING ARE  
MEDIATED EFFECTS; THEY HAVE THEIR INFLUENCE THROUGH THEIR  
EFFECTS ON OTHER VARIABLES.**



The current literature indicates that one important mediating variable in determining student achievement is the learning environment, or the school's social climate. Facility conditions affect the climate of a school through such things as student morale and teacher commitment; when morale, commitment, pride of place, and enthusiasm are raised, the important work of teaching and learning is made more effective. As always, effective teaching and learning are embedded in the character of the interactions between teachers and their students. The 'built environment' of school facilities support (or hinder) those interactions, and through them the learning processes.

### THE CANADIAN SITUATION

The research literature contains over 400 studies examining the effects of school facilities on learning environments and outcomes.<sup>2</sup> For Canadian audiences, this literature contains serious deficiencies, including the fact that almost none of the existing research was completed on Canadian conditions (what was evident in Alabama may not be relevant to Alberta), and the fact that the literature spans almost four decades (what was pertinent in 1978 may not be applicable in 2008).

Although there is very little Canadian research about the connection between school facilities and learning outcomes, there is evidence about the physical condition of Canada's schools – and that evidence leaves no doubt that the actual school facility conditions in Canada are deteriorating. The density of occupancy in schools is four times that of office buildings; no other public buildings are subject to comparable wear and tear. From their opening ribbon cutting ceremony, school buildings begin a continuous process of decay. The rate of deterioration is such that architectural guidelines suggest budgeting between two and four percent of the replacement cost of buildings every year for school renewal. In most Canadian provinces, the actual percentage set aside ranges between 0.5 and 1.25 percent.

The fact that appropriate budgetary allocations are not made to schools does not stop the facilities from their normal course of disintegration. The resulting gap is what planners label a backlog of 'deferred maintenance'. This oxymoron is a way of stating that identified maintenance requirements have been neglected. Technically, the level of deferred maintenance of school buildings is measured through the Facility Condition Index (FCI); rising FCIs indicate worsening school facilities. In Canada, school FCIs have been rising steadily, leaving a large proportion of the building stock in 'poor' to 'critical' condition. The public gets an occasional glimpse into this chronic crisis when local news stories appear about lintels falling off school buildings, or wings of schools being closed because of hazardous conditions.

### DEFINITION AS PART OF THE PROBLEM

Although many factors contribute to the deterioration of Canadian school facilities, definition plays an important role. In public policy and building management terms, schools are viewed from a property management perspective. This means that school facilities are assessed the same way as other properties (e.g. apartment blocks, office towers, hospitals). This definition downplays their specialized mission and, in so doing, contributes to their decline.

**EN BREF** Tout le monde peut comprendre l'avantage d'un meilleur environnement d'apprentissage. Qui ne voudrait pas d'écoles où le moral des élèves est plus élevé, où l'engagement des enseignants est plus fort, où il y a plus de respect et moins d'absentéisme – tous des éléments d'un climat scolaire positif. À preuve, les données du Programme international pour le suivi des acquis des élèves (PISA) de l'OCDE, indiquent que ces éléments sont systématiquement reliés à l'état des installations scolaires. Pour obtenir les meilleurs résultats scolaires associés à de meilleurs environnements d'apprentissage, nous devons disposer d'installations scolaires optimales ou, à tout le moins, d'installations qui ne nuisent pas à l'important travail d'enseignement et d'apprentissage. Au minimum, les installations scolaires doivent soutenir le processus fondamental d'enseignement et d'apprentissage, faciliter la prestation efficace de programmes pédagogiques spécifiques, comporter une esthétique conférant la dignité des fins éducatives et assurer un environnement sécuritaire et sain.

---

## REVERSING THE COURSE OF DETERIORATING SCHOOL FACILITIES IS

### GOING TO TAKE INITIATIVES ON SEVERAL FRONTS, BUT ONE IMPORTANT

### STEP WOULD INVOLVE A REDEFINITION OF SCHOOLS, NOT MERELY AS

### INERT PROPERTIES BUT AS ACTIVE CONTRIBUTORS TO ADVANCING THE

### EDUCATIONAL AGENDA.

---

School boards understand this very well. When budgets are tight, it is easier to justify cutting facility allocations than curricular ones since facilities are merely properties, while curricular issues are central to the educational mission.

Reversing the course of deteriorating school facilities is going to take initiatives on several fronts, but one important step would involve a redefinition of schools, not merely as inert properties but as active contributors to advancing the educational agenda. To return to an earlier point, however, making that case has been problematic given the dearth of Canadian evidence establishing any connection between the condition of school facilities and learning outcomes.

### MAKING THE CASE

Most readers are familiar with the Programme for International Student Assessment (PISA). In this Organization of Economic Cooperation and Development (OECD) research study, students in dozens of countries complete standardized tests in math, science, reading, and problem solving. The results are used by nations to gain a sense of the relative performance of their educational systems.

Less well known than the students' results are findings from the School Questionnaire, completed by principals of schools that have students participating in the PISA study. Over 25,000 Canadian students participated in recent PISA surveys, and almost 1100 principals completed the School Questionnaire, which asks a wide range of questions about school conditions. Of relevance to the current topic, principals were asked to rate the condition of their school facilities and answer questions about the learning environments in their schools. An analysis of these results reveals an interesting set of findings about the connection between facilities conditions and educational outcomes.



Principals were asked three questions about the state of their school facility conditions, as follows: "Is your school's capacity to provide instruction hindered by a shortage or inadequacy of any of the following: (1) school buildings and grounds? (2) heating/cooling and lighting systems? (3) instructional space?" Based on responses to these questions, an index of school facility condition was constructed, so that schools could be ordered from 'top-ranked' to 'bottom-ranked'.

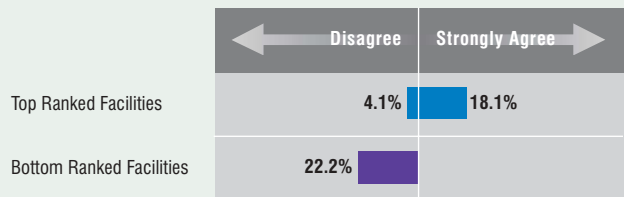
Principals were also asked 24 questions about the learning environment in their schools. These questions were organized around the four themes, shown here along with some items illustrating each theme:

- Student Morale and Commitment
  - Students work with enthusiasm.
  - Students value academic achievement.
  - Students are cooperative and respectful.
- Teacher Morale and Commitment
  - The morale of teachers in this school is high.
  - Teachers take pride in this school.
  - Teachers value academic achievement.
- Student-Related Factors Affecting Commitment
  - Classes are disrupted by students.
  - Students lack respect for teachers.
  - Students intimidate or bully other students.
- Teacher-Related Factors Affecting Commitment
  - Teachers' expectations of students are low.
  - Teachers are not meeting individual students' needs.
  - Teacher absenteeism is high.

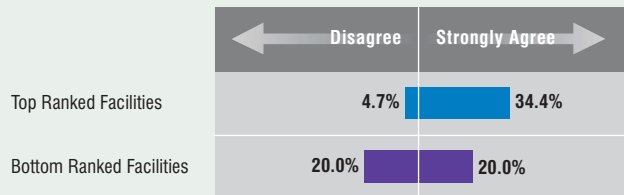
This recent PISA evidence allows us to use current, concrete, Canadian evidence to gain a sense of whether, and to what extent, school facility conditions are systematically connected to the learning environment in schools. We illustrate our basic findings in a series of simple graphs comparing the facility conditions in 'top ranked' and 'bottom ranked' schools with each of the 24 indicators of learning environment. A graph showing one comparison from each of the themes illustrates the clear trend.

When this type of comparison is made for each of the 24 indicators of school climate, a remarkable result is evident. On every one of the learning environment indicators, the evidence from almost 1100 schools across Canada shows *substantial differences* between schools with different facility conditions. In all cases, schools in top ranked facility condition have better learning environments than schools in bottom ranked condition.

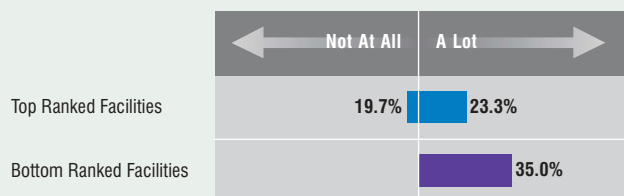
#### Students work with enthusiasm



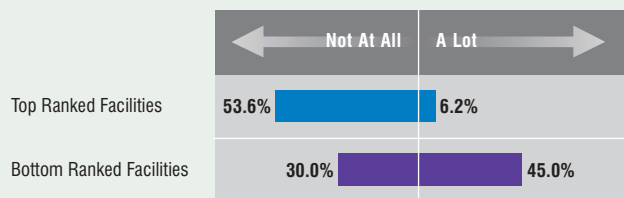
#### The moral of teachers in this school is high



#### Disruption of classes by students



#### Teachers' low expectations of students



#### WHAT THE EVIDENCE MEANS

It goes almost without saying that everyone can see the advantage of improved learning environments. Given the choice, who wouldn't prefer schools with higher student morale, stronger teacher commitment, more respect, less absenteeism, and all the rest of the components that make for enhanced school climates? But how many people feel as strongly about the physical condition of the school building?

Our evidence shows that these learning environments are systematically connected to the condition of school facilities. If we want the stronger student outcomes that are associated with improved learning environments, we need optimal school facilities or, at the very least, facilities that are not hindering the important work of teaching and learning.

The research is very clear about what it means for facilities to 'not hinder' teaching and learning. This message can be distilled into four fundamental propositions.

**Pedagogical Functionality:** School facilities must provide structures that support the fundamental teaching and learning process. The literature indicates that the top four structural features that impact student achievement are thermal comfort, proper lighting, high indoor air quality, and acoustical control.

**Programmatic Suitability:** Schools must provide facilities that support the effective delivery of curricular programs. Facilities must support program delivery, including science laboratories, fitness facilities, music and drama programs, special needs, etc.

**Cosmetic Appropriateness: Schools must provide aesthetics that support the dignity of educational purpose.** The cosmetic condition of schools has an undeniable symbolic function that sends important messages about the deemed importance of the educational work. Pride of place is signified in such things as graffiti removal, paint condition, landscaping, etc.

**Participant Wellness: Schools must provide healthy and safe environments for all in attendance.** Teaching and learning involves challenging tasks that cannot be efficiently or effectively accomplished when concerns about personal health or safety (e.g., asbestos removal, fire code compliance, risk management, etc.) are present.

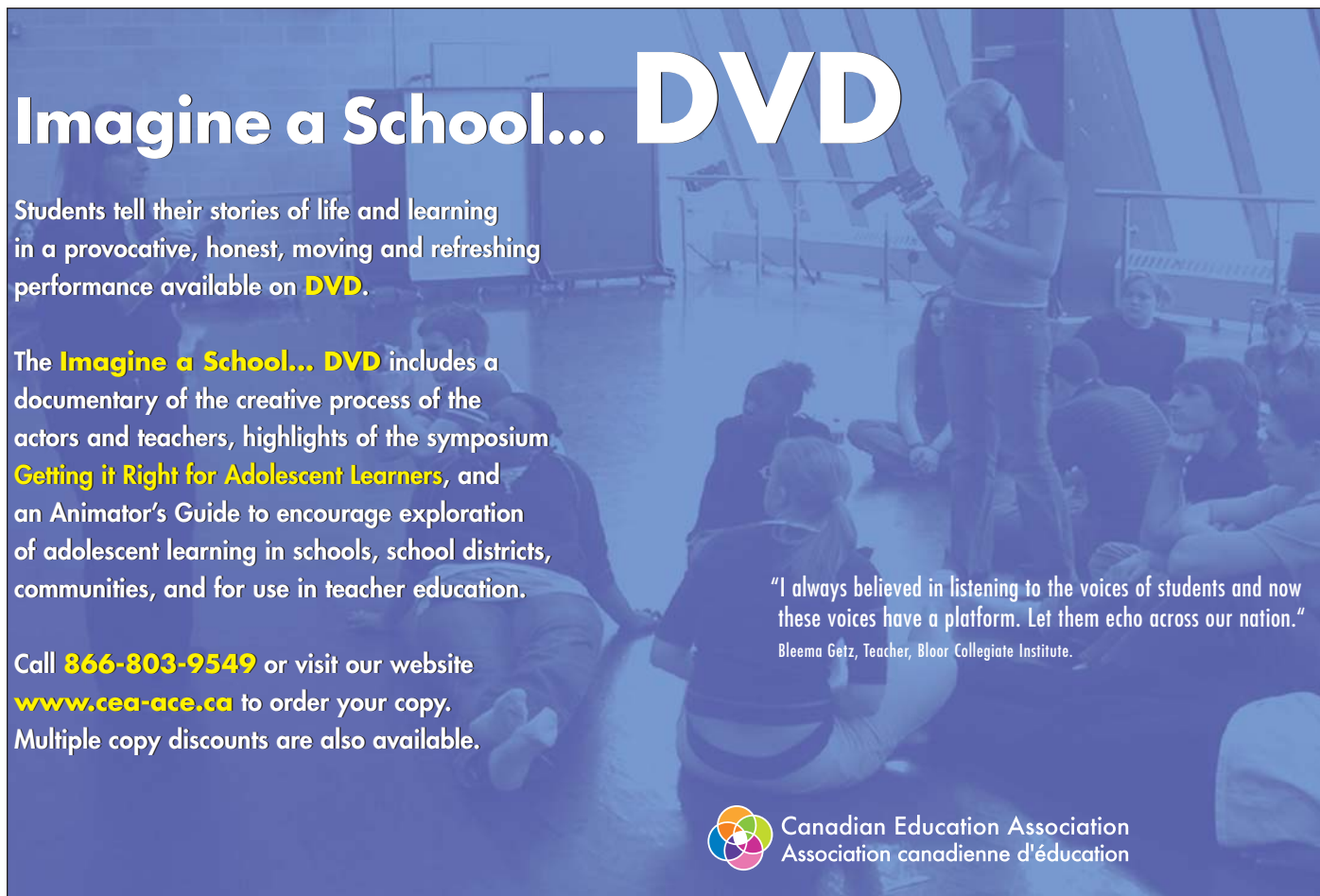
These are not unreasonable demands; they are, in fact, necessities of any organized, successful educational enterprise. The urgency of addressing these fundamentals comes into focus when we realize that less than 10 percent of the funds allocated to schooling are directed to facilities; the other 90-plus percent goes to salaries, textbooks, etc. While this allocation may seem justified by educational priorities in the short term, continually shirking the smaller investment in school facilities puts the efficiency and effectiveness of the larger investment at risk. Monies not spent on school facilities are not 'saved'; they represent a lost investment in the core educational mission. Moreover, from a fiscal perspective, maintenance costs deferred will only compound the future crisis. Denying the fact of the relentless deterioration of school buildings does not change the physical realities any more than denying gravity does.

School boards and administrators rightly have zero-tolerance policies about all kinds of issues related to effective education: no illegal drugs; no violence; no sexual harassment. Given the undeniable importance of facility conditions to learning environments and educational outcomes, why don't all boards have zero-tolerance policies about school facilities that hinder educational effectiveness? Unlike many contributors to educational effectiveness, we know how to create optimal school facility conditions – and administrators should be obliged to fulfill their fiduciary duty to create them. |

All three authors are members of the Sociology Department at the University of Manitoba. **LANCE W. ROBERTS** and **TRACEY PETER** are faculty members; **JASON D. EDGERTON** is a Ph.D. candidate. Their collaborative work focuses on exploring the social determinants and consequences of education. Comments, questions, or inquiries about this report should be directed to [Lance\\_Roberts@umanitoba.ca](mailto:Lance_Roberts@umanitoba.ca).

#### Notes

- 1 See M. Lewis, *Facility Conditions and Student Test Performance in the Milwaukee Schools* (Scottsdale, AZ: Council of Educational Facility Planners, International, 2001); M. Mendell & G. Heath, *Do Indoor Environments in Schools Influence Student Performance?: A Review of the Literature* (University of California, Berkeley, 2003).
- 2 See Mark Schneider, *Do School Facility Conditions Affect Student Outcomes?* (Washington, D.C.: National Clearinghouse for Educational Facilities, 2002).




# Imagine a School... DVD

Students tell their stories of life and learning in a provocative, honest, moving and refreshing performance available on **DVD**.

The **Imagine a School... DVD** includes a documentary of the creative process of the actors and teachers, highlights of the symposium **Getting it Right for Adolescent Learners**, and an Animator's Guide to encourage exploration of adolescent learning in schools, school districts, communities, and for use in teacher education.

Call **866-803-9549** or visit our website [www.cea-ace.ca](http://www.cea-ace.ca) to order your copy. Multiple copy discounts are also available.

"I always believed in listening to the voices of students and now these voices have a platform. Let them echo across our nation."  
Bleema Getz, Teacher, Bloor Collegiate Institute.



Canadian Education Association  
Association canadienne d'éducation