

Necessary Disruption

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Part 1 - Keeping Up With Technical Innovation

Surely there is no more oft-used or ill-defined slogan than “21st Century Learning.” I suppose it evoked the notion of learning for the world as it was becoming when used in the 1990’s but now that we have traversed Y2K without incident and are 10% through the new century I am not sure why we still say it or what it is supposed to mean. I do know, however, that there is good reason to feel some urgency about innovation in schooling practices.

Yes, Canada’s public schools are demonstrably excellent by international standards, and generally far removed from the sorry state of much of the American system, but the world is changing very rapidly and if schools don’t match that rate of evolution they will inevitably lose both relevance and effectiveness. Outside of school we see things like robotics, artificial intelligence, nanotechnology and genetic engineering that are true game changers. Inside of school we see incremental improvements at best in curriculum, instruction and organization. This won’t do. Its not only that good can be the enemy of great, but that complacency can kill you in a rapidly evolving context.

The world’s best typewriters became antiques overnight when keyboards arrived and every draughtsman has had to go digital. You can’t keep up with the kinds of changes that abound in society just by improving what you are already doing. Sometimes you have to change in order to survive. Henry Ford is reported to have said, “If I had asked what people wanted, they would have said faster horses.”

Abrupt change, which Clayton Christensen has termed “disruptive innovation,” is challenging for many reasons, not the least of which is that initially the innovation is more work and often less productive, and also because it upsets the prevalent social order in an organization, but unless one makes the change and suffers through the ensuing implementation dip in order to learn a new way, there is no possibility of significant improvement from the current plateau. Eventually even “sharpening the saw” is not good enough - you have to trade the thing in for a chain saw.

So where might such disruptive innovation be necessary in public education? The popular response, of course, is technology - and for good reason because there is a lot of potential there. However, while a technology-infused future seems promising, a technologically-focussed future is not the answer. Technology is the horse, not the cart - or perhaps I should say the booster not the payload - or, to be thoroughly modern, the codec not the video. So, “technology” does not really answer the question since that conversation is primarily about means rather than ends.

What is it about current structures and processes that needs to be disrupted in order for schools to free themselves from some of their current limitations and keep pace with the change that is occurring all around them? ... to be continued

Part 2 - Developing Engaged Citizens

In my last blog I argued that because there is an explosive rate of scientific discovery and technological innovation outside of schools but only incremental adaptation inside, the need for more abrupt (aka disruptive) change is growing. In this installment I want to add another reason for urgent innovation: escalating social and political complexity.

Citizenship demands more of us these days. Our communities have become more diverse than ever before along any dimension you care to mention - ethnicity, language, religious belief or lack thereof, family structure and so on. Much of what we took to be common is now clearly pluralistic. In part this is because we acknowledge differences that have always existed but were once denied, and in part it is because increased global mobility and Canada's dependence on immigration have brought many new citizens to all parts of the country. The result is a much richer mosaic with increased potential for both synergy and conflict.

Both the positive and negative potential of diversity in our communities is exacerbated by increased global interdependence along any dimension you care to mention - economics, politics, environment, health, security and so on. Our fate is inextricably interwoven with many others, arguably all others, and that makes the issues that we face as citizens, both local and global, more complex than ever before - calling not only for greater knowledge, but also for greater wisdom.

Enabling students to thrive in and contribute to this diverse and densely connected socio-political environment requires much more than traditional academic knowledge. Students also need the communication skill, creativity and critical thinking to apply their 'book learning' and evaluate new information they receive in order to solve unique problems in the world. Moreover, this problem solving increasingly occurs in multidisciplinary teams so collaborative ability and inclinations are essential. And the problems themselves are set in, or at least linked to, a global context of competing interests and thus require inter-cultural understanding and ethical decision-making.

These "soft skills," which animate the "hard skills," have been termed 21st Century Skills, not because they are new but because in the new millennium they have changed from being desirable to being essential. Employers require them of course because they are fundamental to the knowledge work that is now the primary generator of wealth, but these same skills are also critical foundations for democracy and global harmony. Thus, both the private and public ends of education require that schools complement the academic learning and intellectual development which has been their traditional focus with renewed attention to 'higher order thinking' (in reference to Bloom's taxonomy).

Of course, this has always been a stated goal. To quote the School Act in BC, for example, the purpose of public schools is to enable all students “to contribute to a healthy, democratic and pluralistic society and a prosperous and sustainable economy.” However, the reality is that the focus of public attention has been almost exclusively placed on academics - the so-called 3 R’s - and individual benefits as they pertain to employment. Moreover, assessment and the standards that are applied to them have been largely confined to knowledge acquisition and some algorithmic skill sets. Now, however - not in an imagined future, but right now in our lived reality - this has to change in order to sustain economic vitality and, more importantly, to sustain a “healthy, democratic and pluralistic society.”

So, like rapid technological innovation, escalating social and political complexity requires schools to change in order to keep pace with, and adequately prepare students for, a future which is already upon us. This is a reflection not of schools’ failures but of the highly dynamic nature of modern life. Standing pat is not an option in schools any more than it is in other spheres, so once again one must ask: What is it about current structures and processes that needs to be disrupted in order for schools to free themselves from some of their current limitations and keep pace with the change that is occurring all around them? ... to be continued

Part 3 - Preserving Relationships as the Core Benefit

Canadian schools have increased graduation rates over the past two decades at the same time that they have become more inclusive. By international standards our public schools score very highly. However, the world outside of school continues to change rapidly and fundamentally. To maintain, and ideally increase, their effectiveness, schools need to keep pace, but teachers are, for the most part, working as hard and as smart as they can, and taxpayers, for the most part, seem disinclined to any increases. Since there is no *more* to be had on either front, what we need is *different*.

So what could change and, just as importantly, what is it that must not? In considering this question one must focus on the core benefit that schools provide rather than the services they deliver.

Let’s start with what is *not* the core benefit. It is not providing content knowledge. And it is not even developing technical skills such as writing, mathematics or scientific inquiry. Ways to acquire knowledge and develop skills are now, or soon will be, freely available via the internet. Of course one can argue that not all students have equal access to, or are equally able to benefit from, such instruction, but that is also true of traditional classroom practices. Internet instruction is expanding rapidly and access is becoming ubiquitous, so at a minimum one can foresee large numbers of students obtaining a significant degree of their learning quite independently of schools in the near future. Of course they still have to come to school to write the test and get their credentials, but that is easily changed and it may well happen if schools stand pat and let competing avenues and technologies for learning pass them by.

What then is the core benefit that schools provide? I believe this rests in human relationships, particularly in the student-teacher relationship but also in the social fabric of the school community. This is the wellspring of the safety, support, stimulation, challenge and example that students require in order to thrive in their academic, intellectual and human development.

You can get a great lecture on the internet, probably better than any to be had in most schools, but technology cannot provide a caring, purposeful relationship with someone who encourages, probes, extends and acknowledges learning. It is within such a relationship that assessment occurs and guidance is provided. I am not talking about testing. There is nothing core about that. Summative evaluation is simple. It can be done easily, and probably better, by a computer, but formative assessment is a different matter altogether. That is a teacher's domain. Computer algorithms cannot replicate the dynamic observation, inquiry, feedback, direction and nurturing support that a teacher can provide. Some students may be able to succeed academically, and even intellectually, without that, but most will not and none will do as well in its absence.

In addition to the teacher's vital role in facilitation and support, the school community as a whole provides an essential foundation for both learning and growth. Within a school there is not only friendship but also membership, and that membership - school spirit if you like - provides an important anchor for young people. It is in public schools that society is forged, its values and behaviours inculcated. In communion with others, students grow beyond their family and out of their childhood to become independent adults and citizens. It is the experience of community that bonds students to their school, not the curriculum.

The relationships from which the core benefits of schooling arise must be preserved but many of the traditional practices could just as easily be done in other, perhaps better, ways. Specifically, methods of instruction and evaluation need to be deconstructed and reconsidered. Lectures, assignments and tests can come from many sources. It need not be done the way it is today and changing that may create the different conditions within which the essential benefits of schools can be preserved while the outer trappings evolve along with society as a whole.

There are, of course, significant implications for the daily duties and professional identity of teachers if the means of content delivery, skill development and evaluation change, but they are not the fundamental processes that require a teacher. My Masters Degree in Physics prepared me well to be a Physics teacher, but eventually I realized that what my students needed was a Teacher of physics. The former can be done by a computer but the latter requires a professional and it is this professional essence that must be preserved as the techniques and processes of schooling change.

Part 4 - Less, But Deeper, Curriculum

Schools must respond to the rapid, pervasive social and technological change all around them. In doing so they must preserve the supportive relationships which are

their most essential benefit. Surface features of schooling such as curriculum, instruction and assessment, however, need to be transformed. But how?

Let's start with curriculum, and specifically the high school curriculum. It's too broad and too thin. It too easily becomes a superficial diet of info-bits that are required to pass tests that measure what is easiest to measure rather than what is most important. In a rush to ensure that students know all the basic essentials in a world where knowledge is growing exponentially we have fallen into the trap of filling heads rather than changing minds. This serves no one well. Curriculum bloat needs to be reversed in order to free up the time required for deeper inquiry into big ideas so that students are enabled with understandings, skills and dispositions rather than encumbered by inert and decaying knowledge.

Curriculum is also too fragmented into subjects. This is a purely academic deceit that is not present in the "real world," where issues are always multidisciplinary. Subject divisions make life easier for curriculum writers, text book publishers and testers, but they make schooling less authentic, engaging and significant for students. These divisions also obstruct the development of important life skills such as critical thinking, collaboration and communication that should be present as pervasive themes but are generally lost, or at best inconsistently addressed, because nobody sees them as their job.

It seems to me that there is a fairly broad consensus that students would be better served if curriculum were deeper and more integrated, but much less willingness to make the change. Policy makers seem reluctant to suggest that anything be removed from the curriculum and many teachers are so indoctrinated with, and comfortable within, a subject-specific view that they do not seize the opportunities that do exist for a more substantial inquiry-based approach to learning. Sometimes, in fact, it is teachers themselves who are the most fervent defenders of the curricular status quo.

Therefore, I would propose a two-pronged response to this problem. Government should, with consultation but without undue delay, trim the curriculum to create some "white space," perhaps about 20%. Teachers should be challenged to use this opportunity to integrate and deepen learning and schools should be required to consult with and report to their community in this regard. I don't believe, as Michael Fullan says, that you can mandate what matters but you can articulate a worthy goal, create the potential and issue the challenge.

Ideally, in addition to individual teachers making changes, secondary schools would then organize students in "academies" or "houses" consisting of one class group per grade in order to encourage integration by having two teachers work together to cover at least the English, Social Studies, Math and Science components of the curriculum for those students until at least the end of Grade 9. These classes should stay together and work with the same core teachers for at least two years. This would provide a much more natural transition from elementary and create the potential for extended inquiry and stronger relationships.

To invigorate and accelerate these changes, teacher teams should, within the confines of the working day, be provided with time to co-plan, and, as part of their own commitment to professional growth, they should create personal learning networks (directly and virtually) on their own time.

The experience of deeper inquiry will, I believe, inspire both students and teachers so inquiry-based learning that takes root in Junior Secondary will extend into senior grades even if the greater degree of specialization required at that level makes a similar cohort organization impractical - which, however, I believe should be kept as an open question.

Government assessments, which some would eliminate but which I see as a reasonable expectation by the public and an inevitable feature of schooling in our time, should be amended to reflect these changes - narrowing but also deepening their focus. (I will say more about assessment in a future blog but mention this aspect because it is an essential feature of the disruptive change I am proposing.)

There are abundant individual examples of similar approaches that have been highly successful even without the enabling government action proposed. Its time for this good practice to become the common practice, and the expected practice, in order to provide students with the integrated, inquiry-based learning they require to prepare them for the world as it is and as it is becoming. I believe that it would serve both students and society better and that it would be more enriching, rewarding and sustainable for teachers as well - a virtuous circle of benefits.

Part 5 - Inquiry-Based Learning

In order to keep pace with the rapid, pervasive social and technological change all around them, schools need to modernize their curriculum, instruction and assessment practices while preserving the supportive relationships that will continue to be an essential foundation for student success. In the last post I suggested the creation of 20% “white space” in the curriculum to create time for learning in depth. In this post I will look at how instruction must change to exploit this potential and in my next post I will turn my attention to assessment.

Traditional instruction is primarily telling and demonstrating. We don't like to say it quite so bluntly, but the truth is that most time in most classrooms is taken up by some form of reading, lecture or video followed by guided practice or a lab exercise in class with independent practice later at home. Now there is nothing wrong with this approach at some times for some things. In fact, a skillful lecture can be both instructive and inspiring, and when augmented by strategies such as those that Barry Bennett describes in *Beyond Monet* (e.g., academic controversy, mind mapping) direct instruction often leads to success on tests and the various rewards that ensue for students and teachers. Moreover, students are used to this familiar pattern so they know how to get on with it and parents tend to recognize and trust it.

There are, however, two problems with this style of instruction. First, student engagement, and thus learning, tends to be confined to the lower levels of Bloom's

taxonomy. Second, the soft skills of communication, collaboration, critical thinking and creativity (aka 21st Century Skills) that are necessary to apply academic learning in real world contexts are addressed only tangentially, if at all. Additionally, some students do not find this style supportive and experience frustration or failure because of the mismatch with their learning strengths. Many more who are reasonably successful in academic terms are really only surviving and not truly thriving as we would like. The increased demands of modern life for creative knowledge workers and critically competent citizens requires that schools do better for students.

Increasing student engagement, deepening learning in content areas and broadening outcomes to include 21st Century Skills that transcend subject boundaries requires not merely refinements to traditional practice, but distinctly new practices - disruptive rather than incremental change, if you will. Traditional practices of direct instruction need not be abandoned, however. They will always have their place in the pedagogical repertoire, but they should be used selectively from amongst a broader pallet that includes critical, creative and collaborative inquiry.

Inquiry requires questions - real questions - that are developmentally appropriate, related to the learning outcomes that the curriculum intends and both interesting and important within the student's frame of reference. Framing these questions in partnership with students and scaffolding the inquiry that results so as to place students in their zone of proximal development is an essential pedagogical skill for 21st Century Learning. The approach is often termed "problem based learning" or "project based learning," without any significant distinction as far as I can tell. Personally, I prefer the former description of PBL because it emphasizes the grounding in real questions. (Note that PBL not the same as 'discovery learning,' which is concerned with the initial development of understanding rather than deepening it through application.)

The questions that students explore should provide an opportunity for them to use what they have learned previously and augment that with new public knowledge to which they have access and which they are developmentally able to understand. This knowledge building exercise should be conducted in groups, which provides the benefits of complementary abilities and potential synergy as well as the opportunity to develop communication and collaboration skills. Because students must identify relevant and reliable information, which they then use to create a response or solution, PBL requires both creative and critical thinking. Finally, the project should result in an actual application of the solution developed to evaluate its effectiveness and/or presentation of group results to an authentic audience that can validate the work and provide useful feedback.

As important and powerful as such projects are, they cannot constitute the entire curriculum. There are some things best learned through direct instruction. However, the knowledge acquisition and skill development that students continue to require is lent greater authenticity and significance when it is understood by students to be a useful part of a larger inquiry that requires such knowledge and skill.

It is fashionable to suggest that the use of technology itself will deepen engagement and thus understanding. I do not believe that to be an automatic result, at least not beyond a short-lived Hawthorne effect. The key to engagement is that students find the content interesting and important enough to warrant their time and energy. The modern world is infused with technology and that technology is reshaping the way things are done in all aspects of life, so schools should also exploit its potential, but technology itself is only a vehicle. It offers many exciting possibilities and innovative educators are demonstrating the potential of a technology-infused pedagogy in often dramatic ways, but technology grafted onto weak pedagogy will not result in improved learning and teaching. High Tech High, for example, has made a name for itself as an exemplar of 21st Century Learning and makes extensive use of technology, but its design principles are focussed on learning, not the technology used to support it (see <http://thurly.net/17di>).

More inquiry-based learning that extends and deepens learning through knowledge building and public application/presentation is essential to 21st Century Learning. This is hardly a new idea - in fact, it sounds a lot like something Dewey might say - and it is far from unknown in schools already, but it has to move from familiar theory that is occasionally enacted, perhaps with an enriched class, to a central premise and practice in all schools and for all students. Our ability to do so can be greatly enhanced by infusing inquiry-based pedagogy with the technological tools that are endemic in the world outside of school, but the heart of the issue for 21st Century Learning is not merely using technology but regularly engaging students with questions they can explore rather than only answers we want them to absorb.

Part 6 - Assessment and Evaluation

21st Century Learning that animates the 3 R's through the soft skills of communication, collaboration, creativity and critical thinking requires us to tackle the difficult challenge of removing curricular bloat and deepening learning through inquiry - but that is not enough. Traditional assessment and evaluation practices are also in need of an extreme makeover, which is the focus of this penultimate entry in the Necessary Disruption series.

Evaluation is traditionally used only to assign grades for the purpose of reporting to parents and outside agencies. This does nothing to improve learning or teaching. Of course, students deserve to know where they stand in relation to curricular expectations, and it is perfectly reasonable for the public to ask for some reassurance that the school system is working, so evaluation has valid purposes, but supporting learning is not one of them. Evaluation is an afterthought tacked onto the learning process rather than an integral and contributing element. That is unfortunate, but what is more troubling is that in its current form evaluation can actually be harmful in two respects.

For students, an exclusive diet of summative evaluation tends to focus their sense of accomplishment on the marks that others provide as surrogates for their learning rather than the learning itself, which discourages them from taking on difficult learning tasks and is therefore antithetical to attempts to engage them in inquiry. This focus on the

end product rather than the process through which it is achieved is akin to a company focussing on profits rather than the quality of the goods, services and business practices that result in the profit. It directs attention to the wrong things while neglecting the core business. There may be short-term results in some cases, but in the long run it's a losing strategy that fails because it does not enhance learning.

On the other hand, for the public, summative assessment is a reasonable way to provide a measure of accountability in one of the largest, and most expensive, arenas of government activity, but problems arise here also because of the breadth and complexity of the intended outcomes. Simple, clear measures are understandably preferred and often they are provided despite the fact that they neither accurately nor completely represent either intended or achieved learning. There is nothing inherently wrong with such measures - assuming they are based on the curriculum and are technically sound - but simple answers to complex questions often lead to false conclusions and misguided responses.

Would one find it appropriate to rank order the parents in a neighbourhood according to their proficiency in child rearing? Perhaps the average of a child's percentile score on a social skills index, an athletic proficiency test and the GPA on the school report card would tell us who is the best parent in town. I suspect that most people would find this suggestion ridiculously naive and quickly point out its fallacies and limitations, if not its dangers.

And yet, the Fraser Institute is seen as credible when it does this for schools using an essentially meaningless statistical mishmash of a narrow range of outcomes. This misleads both individual parents and the general public. Another example - mercifully not practiced in Canada - is the use of standardized test results for high-stakes decision-making about school funding and teacher pay. Standardized testing is not the villain here; it is the assumption that it can capture what is most important about learning and the misinterpretation and misuse of the results it provides.

So, while valid and potentially useful, evaluation is problematic because of the way it is sometimes used. However, summative evaluation is not really the important issue for 21st Century Learning so I will leave it there. It is formative assessment that is essential and that's what I want to talk about. First, however, let's be clear about the distinction. *Assessment* is the gathering of evidence of student learning to help a teacher understand what a student knows, does not know, is beginning to know, thinks s/he knows but has actually misconstrued, wonders about, is interested in and so on. Assessment data can be used in many ways. One of them is to compare what has been learned to expectations or standards in order to judge its quantity and quality in relation to what the curriculum intends. This second step is *evaluation*.

The difference is far more than semantic since these two related processes have fundamentally different purposes. Assessment is necessary to enable evaluation, but this is not its most powerful use. What a teacher comes to understand about a student's learning enables two much more important teaching functions. The first is to give helpful, descriptive feedback to the student within a coaching relationship that

provides acknowledgement, direction and encouragement. The second is to determine what the teacher can do next to most effectively respond to the learning success, needs and interests of the student. (This use of assessment to inform instruction and enhance learning is commonly referred to as assessment *for* learning, in contrast to assessment *of* learning, which is intended to provide data for summative judgments.)

Assessment *of* learning should continue, although it could be accomplished without consuming as much time and attention as is currently the case, but assessment *for* learning is the more important function and its elevation is key to 21st Century Learning. This, I hope, sounds logical, but it is also complex and requires significant change by teachers and school systems. Some of the change involves teachers learning new procedures and developing new skills, but the really hard part is for teachers - and equally importantly, for parents - to surface long-held assumptions and change those that have locked us into an almost exclusive focus on summative evaluation. Unlearning of habits is very difficult at the best of times. In this arena, the change is additionally vexing because it raises fears for many adults about loss of rigour based on subconscious attachment to flimsy views of teaching as telling and learning as listening.

Assessment *for* learning (AFL) must become an integral part of classroom life, but it need not take additional time. Unlike summative evaluation, which occurs outside of instruction and thus robs time from it, formative evaluation is embedded in the learning. Of course, this means that curriculum must be designed to incorporate it and that teachers must learn to do it, but AFL represents a change in practice rather than yet another addition.

The observations that are made and the feedback provided deal with the content of the learning but also with the process, thus helping learners to become conscious of their styles, strengths, challenges, preferences and habits. This self-awareness is necessary for developing metacognitive control over learning behaviour (aka self-regulation) and one of the essential foundations not only for maximizing achievement in school but also for lifelong learning.

Unfortunately, other than in the primary grades, students generally get very little feedback. What they get is marks. These marks are “earned” through compliance, diligence and replicative performance. They are not intended as a mirror that illuminates learning but as the “just desserts” for students’ work that lets them know “where they stand.” The entire ritual of reporting, and the accompanying ceremonies of recognition and reward, reinforce the idea that the purpose of schooling is for students to get good marks so that the adults can be happy and proud. In this pseudo-economic exchange, the most grievous sin is error, and this sin is detected through evaluation, which makes students understandably nervous about a process that they have learned to see as hostile inquisition.

Assessment *for* learning, on the other hand, sees students as partners rather than subjects, even co-learners in many respects, and error as a natural part of the learning process that occurs when one ventures out into the personally unknown. In this worldview, a teacher’s primary assessment task is not merely to assign and correct, but

also to provide constructive feedback that enables and encourages. It takes time for teachers who were themselves students in schools where the summative evaluation model reigned, and who may have re-enacted that model in their own classrooms with the most sincere and positive of intentions, to reconsider it. How much harder is it for students to believe that the ground has truly shifted and that it is now safe for them to openly share their questions and uncertainties without fear that all will be noted and held against them in the star chamber of evaluation?

In addition to being willing and able to receive feedback from a teacher, students need to learn to provide feedback to each other and to themselves. Peer evaluation, enabled through supportive curriculum design and instruction in reasoned judgment, helps to develop critical faculties and lays the foundation for self-evaluation. Empowering a student with the inclination and ability to self-assess, and thus to self-evaluate, is another essential step in developing the self-regulation that is required for lifelong learning.

Thoughtfully and constructively conducted, formative assessment (i.e, AFL) also helps students to develop a realistic but positive sense of self-efficacy that increases internal motivation and self-awareness that enables them to maximize their abilities by working to their strengths, knowing how to compensate for their weaknesses and skillfully selecting strategies to help them persist when they encounter challenges. Thus, AFL is a strength-based approach (Theory Y if you like) that stands in stark contrast to the prevailing focus on remediating deficiencies (which is much more Theory X). Both Theory X and Theory Y have their place, but 21st Century Learning puts Theory Y squarely in the foreground.

The shift from a primary focus on summative evaluation to an emphasis on embedded formative feedback is both complex and difficult, but also essential. It is a fundamental part of the disruptive innovation that will be required in the transition to 21st Century Learning. Therefore, it is important to think about how disruptive innovation occurs and what it will take for existing systems to engage in it - which is the subject of the seventh and final chapter in this series of blogs.

Part 7 - Making the Change

21st Century Learning that animates the 3 R's through the soft skills of communication, collaboration, creativity and critical thinking requires us to tackle the difficult challenges of removing curricular bloat, deepening learning through inquiry and refocussing time and attention from summative evaluation to formative assessment. What will it take to make this happen? Is it inevitable, impossible or conditional?

There is always lots of change in schools but traditional behaviours are amazingly durable and, in the end, schools seem, for the most part, much more similar than different over the 56 years since I entered Kindergarten. Perhaps the biggest change I have seen is greater inclusion of students with exceptional needs, but this change has been more of an addition to schools' services than a change in their fundamental nature - and even in this case inclusion in secondary schools has been seriously hampered

and limited by traditionalism. The transition to 21st Century Learning is even more radical than inclusion. It involves not only new services but different behaviours, not only refinements but also substantive changes, not only incremental improvement to the way things are done but also entirely new ways of doing them.

In addition, these fundamental changes must occur relatively rapidly to avoid weakening of the public education system by private schools and for-profit institutions that move more decisively to restructure their services for the new era. We could be easily left behind in this transition - sort of the Nokia of public service if you will.

Frances Westley, J.W. McConnell Chair in Social Innovation at the University of Waterloo, suggests in her interview with CEA on the landing page for this site that schools are inherently conservative because experimentation is dangerous and “we followed all the rules” is the best defense when you are being held accountable for many things over which you have no control. Perhaps that’s why innovation usually occurs in isolated pockets and seldom spreads throughout the school system.

Disruptive innovation that seeks to install a new pattern rather than merely enhance an existing pattern cannot succeed through grassroots enthusiasm alone. Mind you, like all innovation it cannot succeed without it either, but bottom-up energy is not sufficient. It also takes top-down initiative to create an environment that is hospitable to the innovation in the first place and, when innovation proves to be effective, it takes top-down intervention to recognize, enable and promote the innovation if there is to be broad adoption. School systems have generally been inconsistent on the first count and failed outright on the second.

This may be due in part to Ms. Westley’s observation, but I think it also the result of a flawed understanding of Professional Autonomy. Teachers actively defend their right to decide how to provide instruction and assessment in their classes, as they should. This autonomy is the flip side of their responsibility to do whatever it takes to enable the learners in their charge to succeed. Without Professional Autonomy schools cannot be responsive to the needs of learners and Canadian students would never have achieved such impressive world-class results. That, however, does not mean that there is no place for systemic expectations, and even insistence, on occasion, that individual teachers change their pedagogy to include necessary innovation and to be compatible with system-wide changes. This may mean something simple like doing away with textbooks, or something slightly more complex like providing a web page for students and parents, or something quite fundamental like “flipping the class” to provide instruction on-line and tutorial assistance in class.

When there is a demonstrable need and a proven response, it is ethically and professionally irresponsible to ignore it. I do not mean to suggest the existence of a silver bullet - there are no such panaceas in education - but it seems clear to me - as argued in the six previous blogs in this series - that there is a need for change and that there are clear examples of successful responses that have been demonstrated in pockets of innovation around the world. Isolated excellence, however, will not do in this case. Effective practice needs to become the common practice.

Therefore, I believe that the innovators cannot be left to convince their colleagues on their own. Systemic forces must also be applied in order for disruptive change to occur. These include provincial, district and school-level actions to enable change (for example, by addressing curriculum bloat and regressive assessment practices), to insist on teacher participation in change (for example, by deeply embedding assessment *for* learning in every teacher's practice) and to support teachers in making the change (for example, by supporting professional learning with time and resources).

Perhaps I am wrong. Perhaps, as Peter Hennessy says in his blog, "school reform is seriously underway and, like termites in the woodwork, cannot be easily stopped," but I doubt it. The change has clearly begun and it has momentum, but whether it will spread far enough, fast enough and deep enough is conditional. Perhaps it won't stop but it may drift rather than surge ahead as it should. The forces of preservation run deep in all organizations and certainly in school systems. I fear that they are set to once again buffer, isolate and minimize the forces of innovation. Good, as Jim Collins tells us, is the enemy of great and complacency is its faithful sidekick. Can the moral commitment to maximizing the life chances of our students and the courage to step outside our comfort zone defeat them? We'll see.

End