

The Untapped Power of International Partnerships for Educational Change: The Norway Canada Project (NORCAN)



The Alberta
Teachers' Association



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**The Untapped Power of International Partnerships for
Educational Change:
The Norway Canada Project (NORCAN)**

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Published October 2019

Photo: Astrid K. M. Sundt

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Special thanks to J-C Couture and Jean Stiles who assisted in the research and writing of this report.

*Published by Utdanningsforbundet
Postboks 9191 Grønland
N-0134 Oslo, Norway*

Published in collaboration with The Alberta Teachers' Association (ATA) and The Ontario Teachers' Federation (OTF/FEO)



**The Alberta
Teachers' Association**



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Foreword and Executive Summary

Creating a new network of schools committed to improving the teaching and learning of mathematics through a commitment to equity was the focus of the Norway-Canada (NORCAN) partnership, launched at an inaugural summit on March 13 and 14, 2015. From the outset, a commitment to an independent external evaluation of the project was a priority for the partners that included the Union of Education Norway (Utdanningsforbundet), the Alberta Teachers' Association, the Ontario Teachers' Federation and the Ontario Ministry of Education.

Norwegian mathematics expert Mona Røsseland (Western Norway University of Applied Sciences) and I were identified as critical friends, both in the evaluation process and in providing ongoing facilitation and support for the project. Stephen Murgatroyd (Collaborative Media Group) provided additional facilitation and support for the summit meetings over the four-year life of the project.

Drawing on the three jurisdiction summary reports from Norway, Ontario and Alberta, and based on a writing retreat of the NORCAN Steering Committee (October 5-6, 2018), I undertook an evaluation of this unique international partnership. This report represents the culmination of this work.

NORCAN demonstrates that the value of enhancing student learning opportunities can be attained in schools by mobilizing five imperatives of educational change. These are outlined in *The New Imperatives of Educational Change: Achievement with Integrity*. They are:

1. The courage to confront *evidence* of how students learn;
2. The willingness to accept that in situations of ambiguity, educators must sensitively *interpret*, and not imperiously mandate, how to act on evidence;
3. The determination to study and learn from diverse *professional* solutions to pressing educational problems;
4. The aspiration to think in terms of the *global* ramifications of educational policies and practices;
5. The adaptability to acknowledge that the *existential* realities of students' lives matter and that schools can and should help students to make meaning of their experiences.

Drawing on observations from students, teachers and school leaders and data gathered from the school projects over four years, this report illustrates how each of these imperatives were activated, not only to improve learning and motivation related to mathematics but, more importantly, in shifting school cultures where students became key agents of change. Finally, this report concludes that the leadership of the teacher organizations in supporting NORCAN helps to rekindle the spirit of the four pillars of learning outlined in the 1996 Delors Commission Report, entitled *Learning: The Treasure Within*. The global and existential imperatives activated in the NORCAN partnership – that also reignite the four pillars of learning – offer strategic opportunities for teacher organizations to advance their advocacy efforts for public education.

The success of NORCAN did not spring out of a vacuum. Central to these pre-conditions was the commitment of the funding partners to building the professional capacity of teachers and leaders as agents of positive educational development. This support was critical in positioning forward-thinking teacher organizations involved as key players in educational development globally.

Working alongside the school teams and through ongoing consultations with the Steering Committee, I have drawn together evidence of how the NORCAN partnership has successfully mobilized a theory of change that sees students, teachers and school leaders working alongside each other to improve educational opportunities for all.

The NORCAN partnership enabled teachers, school leaders and students from school districts in Alberta, Ontario and Norway to learn elbow-to-elbow in one another's schools, to reflect about what mathematics is and how it is taught, and to develop tools on an

online platform. It is unusual among international partnerships, which almost always include adults only and leave the students at home. Including students as co-leaders in educational change as a design principle in NORCAN provided assets to all. As the report describes, this is because when students accompany educators on school exchanges to foreign jurisdictions, they notice things that educators overlook. Students pay attention not only to the ways that their peers elsewhere attack mathematics problems, for example, but also are sensitive to aspects of a school's culture, such as how students interact with one another and with their teachers. They have a heightened awareness of whether students feel comfortable asking questions, and they can see ways in which students use technology to supplement learning in one school while using it in a distracting way in another.

When students are given opportunities to explain what things they like or dislike about a discipline such as mathematics, as has occurred in NORCAN exchanges, they are not only gaining opportunities to learn new ways to solve problems, they are also learning that their educators care about them as part of a united profession. For example, visiting schools in Ontario in May 2016, with NORCAN colleagues from Alberta and Norway, I was impressed by how vocal and self-assured the students at one school were. This spoke volumes about the civic education the students were receiving. But I also noticed how appreciative the students were of opportunities to reflect on their learning.

In the end, it will not be enough for schools and systems to be on the receiving end of prescriptive mandates from on high. To be economically competitive and environmentally sustainable, societies will need to prepare citizens to take on the challenges of our time: eliminating poverty, creating prosperity

We must embrace new imperatives of educational change that acknowledge the many threats to a future of dignified work and environmental sustainability

and distributing it equally. This can only be done by professionals operating at peak capacity. This is why our educators must be knowledgeable, enjoy strong peer networks, and have the autonomy and sound critical thinking skills to make good decisions.

This is why partnerships like NORCAN are indispensable to break through insularity to learn from colleagues from abroad. This is why we must embrace new imperatives of educational change that acknowledge the many threats to a future of dignified work and environmental sustainability.

In closing, I wish to thank the truly outstanding members of the NORCAN Steering Committee for their leadership in initiating and sustaining the partnership: Jim Strachan and Nick Zacharopoulos (Ministry of Education, Ontario), Lindy Amato (Ontario Teachers' Federation), Roar Grøttvik, Bjørg Eva Aaslid and Harald Skulberg (Union of Education Norway), J-C Couture (formerly with the Alberta Teachers' Association) and Jean Stiles (Edmonton Public Schools).

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The Norway-Canada Partnership – A Dynamo Of Educational Change

In 1969, Amitai Etzioni described teaching as a “semi-profession” with only limited control over working conditions by its practitioners. For Etzioni, teachers lacked discretion of many aspects of their work, relied primarily on outsiders for increasing their knowledge base, and were unable to close ranks to create a unified guild.

Educators were not professionals like lawyers, doctors, or engineers. They were like social workers or nurses. What has happened in the decades since Etzioni’s categorization of teaching as a semi-profession? Evidence is accumulating that when educational systems are characterized by public investment rather than privatization, student learning benefits (Adamson, Åstrand, & Darling-Hammond, 2016; Hargreaves & Shirley, 2009, 2012; Sahlberg, 2015). Contrary to the research, however, policies in many countries in recent years have focused on what Andy Hargreaves and Michael Fullan (2012, p. 14) describe as a “business capital” approach, in which teaching is seen as “emotionally demanding but technically simple,” ultimately “requiring only moderate intellectual ability.” With business capital, teachers’ semi-professionalism is an intentional design of teachers’ work.

One assessment of Bridge International, a company now expanding in Africa and Asia, exemplifies business capital in action. “Bridge is able to offer a cost-effective product in some of the poorest communities in the world by emphasizing a lean business model,” the authors write (Materie & McArdle, 2016, p. 1). “Through standardization and automation, Bridge has streamlined their operations and has largely removed “teachers” and “administrators” from the education process all together.” “Teachers” in the Bridge Academy read scripted instructions aloud from their tablet devices. They do so verbatim.

The Bridge Academy is an extreme version of a business capital view of education, that is spreading rapidly into many of the world’s education systems (Abrams, 2016; Verger, Lubienski, & Steiner-Khamsi, 2016). Business capital can be seen in

market-driven incentives to expand charter schools in the US and academies in England (Adamson & Darling-Hammond, 2016; Shirley, 2016). It can also be seen in on-line educational alternatives and for-profit teacher preparation programs, with the support and investment of corporate foundations (Darling-Hammond & Adamson, 2016). Technological change often goes hand-in-hand with business capital kinds of reforms, as innovations on digital platforms upend millions of jobs, replacing them with robotics (Ford, 2015). Because these kinds of innovations lower the costs of education by eliminating teaching and affiliated staff positions, they are appealing to policy makers who are looking for ways to save money or to redeploy it for other purposes.

The business capital model that has surged for years increasingly is found not improving results on the very metrics that its advocates espoused

Still, the business capital model of change has not gone unchallenged. In the US, the “Every Student Succeeds Act” (ESSA) has supplanted the No Child Left Behind (NCLB) Act, with greater flexibility given to states and

encouragement provided to assess different forms of student engagement and wellbeing. In Chile, a student-led movement for greater equity and a shift to public investment has overturned features of over 40 years of market-oriented reforms (Bellei & Cabalin, 2013). Sweden’s experiments with a uniquely Nordic endorsement of business capital have been called to a halt after that nation’s plunging results on the Program of International Student Assessment (PISA) of the Organization for Economic Cooperation and Development (OECD) (Åstrand, 2016; OECD, 2015). The business capital model that has surged for years increasingly is found not improving results on the very metrics that its advocates espoused.

New Imperatives for Educational Change – Achievement with Integrity

When teachers lose control of key components of their professional judgment, they experience “alienated teaching” (Shirley & MacDonald, 2016, p. 3). This is what happens when teachers adapt their pedagogies, curricula and assessments to the dictates of higher authorities, even when teachers know they are eroding their best professional judgment. Once alienated teaching becomes a default pedagogy in schools, it impacts everyone, even school counselors, who just like teachers, are pressed into bureaucratic compliance (Stone-Johnson, 2016). Ultimately, when teachers struggle, this impacts their students, because “in order for teachers and educational leaders to have a positive impact on the wellbeing of students’ lives, to model good practice in wellbeing, and to assist young people to prepare for the future as they transition through schooling, they must be well themselves” (McCallum & Price, 2010, p. 20).

Yet how should these problems of workplace alienation and educators’ ill-being be addressed? One proposal (Shirley, 2016) is that integrity in our schools can be attained by practicing five new imperatives of educational change. These are:

1. The courage to confront *evidence* of how students learn;
2. The willingness to accept that in situations of ambiguity, educators must sensitively *interpret*, and not imperiously mandate, how to act on evidence;
3. The determination to study and learn from diverse *professional* solutions to pressing educational problems;
4. The aspiration to think in terms of the *global* ramifications of educational policies and practices;
5. The adaptability to acknowledge that the *existential* realities of students’ lives matter and that schools can and should help students to make meaning of their experiences.

The Preconditions of NORCAN

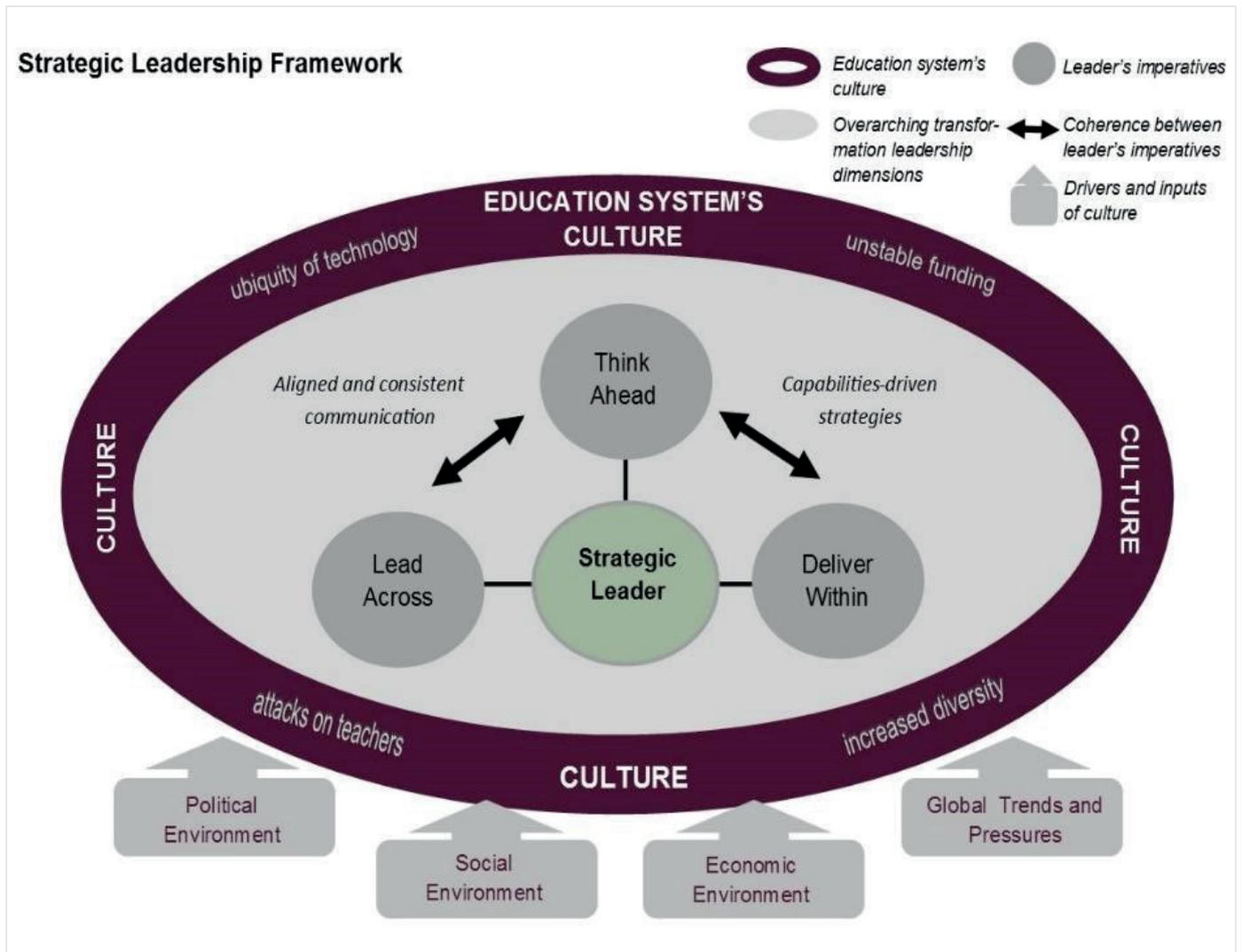
Each of the five imperatives were evident in the Norway-Canada (NORCAN) partnership. From the fall of 2014 until the spring of 2018, the Alberta Teachers’ Association (ATA), the Union of Education Norway (Utdanningsforbundet), the Ontario Teachers’ Federation (OTF) and the Ontario Ministry of Education (EDU) led NORCAN. They wanted to know:

How can an international network of schools and educators committed to mindful leadership help to identify obstacles to students’ mathematics learning and develop strategies for attaining success?

By collaborating across jurisdictions, educators and students involved in NORCAN investigated diverse approaches to improving student learning in mathematics, while simultaneously developing teacher, principal and student leadership in their respective schools. The project also included an explicit focus on equity, since mathematics is often used as a mechanism for sorting and ranking students in both developed and developing countries.

NORCAN was initiated by educators’ professional associations in Norway and Alberta, with Ontario invited to join subsequently. The partnership grew from the theory of change developed as part of the Finland-Alberta (FINAL) partnership initiated in 2011 to support educational development by building the capacity for student, teacher and school leaders to cross the historical school jurisdiction and national boundaries. The partnership took up a body of research that illustrates how educational development can be undertaken by lateral networks of schools (Evers & Kneyber, 2015; Hargreaves & Shirley, 2012).

A framework for the partnership (Booz & Company, 2012), developed with Pasi Sahlberg, calls for networks of teacher, principal and student leaders to engage in three transformational strategies: *thinking ahead*, *delivering within* and *leading across*.



From the outset, the NORCAN partnership was driven by the commitment of forward-thinking teacher organizations to the goal of improving student outcomes in mathematics while aspiring to the goal of enhancing the broader goals of education. Each of these organizations, nested within the ecologies of their respective countries and histories, while bringing shared commitments to the theory of change, did so through a particular lens. In the view of the Union of Education Norway (UEN), “the NORCAN partnership can also be understood as a counterbalance to a top down lead development of teaching practices in schools” (UEN, 2017). For the union, the partnership offered a strategic opportunity to advance the collective professional capital of the organization:

Currently there is an increased emphasis on the importance of a strong teaching profession, where the initiative to the development of professional work is anchored within the profession itself. Given the knowledge base and easy access to relevant research-based knowledge. This is best achieved when the profession itself is involved in research rather than just being the object of research, and when the research is considered relevant to professional work (UEN, 2017).

For the Ontario Teachers' Federation and its collaboration with the Ontario Ministry of Education, NORCAN was an extension of the principles driving its highly successful Teacher Learning and Leadership Program (TLLP). Since 2007, this initiative supporting reflective innovative practices of experienced teachers has been recognized as a proven approach to educational development in Ontario. According to one analysis:

Research on TLLP has identified that this is a powerful approach to supporting and improving teachers' knowledge, understanding, practices and leadership skills, for sharing teachers' knowledge and expertise to support improved understanding and changes in practices for other adults including education professionals, parents/families and communities, and for benefiting students' engagement, motivation, learning and achievement (Campbell & Alexander, 2018, p. 6).

By reaching across jurisdictional boundaries and involving school administrators and students more directly, the Ontario Teachers' Federation and Ontario Ministry of Education hypothesized that they would extend even further the deep impacts of the TLLP approach.

For the Alberta Teachers' Association, the partnership was an extension of its comprehensive agenda for educational change in the province – *A Great School for All: Transforming Education in Alberta* (Alberta Teachers' Association, 2012) – that had previously developed in collaboration with a panel of international experts it had convened. A key element of this blueprint was a commitment to excellence through equity, achieved by schools working across boundaries and by applying

what they have learned to complex challenges, to ensure the integrity of purpose, practice and policy. The initial FINAL partnership garnered attention that has been profiled at a number of international conferences and publications (Couture, 2015; Murgatroyd & Stiles, 2015; Shirley, 2016). One success story in these boundary-crossing internationalization efforts was the direct involvement of students; in FINAL, that was critical in disrupting almost every previously existing educational change network (Stiles, 2018). Students developed leadership skills through FINAL that they then used to engage with the political process to advocate for a better educational system, in Alberta in particular (Shirley, 2016).

As the NORCAN partnership took shape, the involvement of students quickly shifted the focus into the nooks and crannies of the cultures of the nine participating schools. The focus on mathematics as a discrete subject, while central to the partnership, acted as a point of departure for understanding school cultures and their impact on the complex interplay of the identities of students, teachers and school leaders. The evidentiary base for illustrating these shifts in focus is provided by student reflections drawn from journals and videos from NORCAN schools.

From the first official meeting of the NORCAN educators in Banff, Canada in March 2015, it was recognized that understanding their particular contexts would be critical to success. In this respect it was evident that not only did the selection of the nine schools require careful consideration by the teacher organizations, but also the school-community characteristics such as different age groups of students, a mix of rural/urban, and representation of the country at large. To begin the process of identifying the pre-conditions that would give shape to the work ahead, a protocol for reflection using the four texts of action research (pre-text; sub-text, con-text ad re-text) was employed (Luce-Kapler, 1997) at the opening workshop. A full description of this mapping tool and its application in the project can be found in the Alberta summary report (Alberta Teachers' Association, In Press).

Each school team had gone through processes of internal development and reflection from the outset of the partnership. The often-ignored point is this: educators need to develop trust and “street credibility” with one another. One

kind of trust (bonding social capital) needs to be established amongst educators within schools and another kind of trust (bridging social capital) needs to be developed with educators working outside of schools, in ministries of education and teacher unions, for example. Each school was also part of pre-existing relationships with other schools and organizations that prepared it for productive engagement with others.

As previously indicated, the two schools that were selected by the OTF and Ontario ministry were already active in reflective practice and successfully had established an embedded school culture of learning through the Teacher Leadership and Learning Project (TLLP). As the Ontario summary report concludes:

The project and its successes cannot be understood without knowledge of how the participating teachers came to be primed for the opportunities that NORCAN afforded. Although all teachers involved express agency, efficacy and professional expertise, many will attest that it was the learning from their TLLP projects that helped them feel prepared to collaborate and learn through NORCAN (Campbell & Alexander, 2018, p. 5)

The TLLP was an essential cornerstone of the preconditions of possibility then, for a successful NORCAN partnership.

Finally, a third example, this time from Norway: It was crucial in the eyes of the teacher union that prospective teachers and principals ought to be prepared to be open and willing to take risks in having their pedagogical practices open not only to educators from Canada but students as well (WNUAS, 2019). In the view of a senior UEN official, “In Norway the system is organized with the intent not to produce outsiders.”

Oral assessment holds students more accountable and celebrates what they know as opposed to evaluating them on what they don't know

From the outset with the initial workshop in Banff in March 2015, where school teams first came together, it was apparent that the language and cultural differences between the Norwegian and Canadian schools would require some careful

consideration. This included not only questions about the focus on equity, but on what role students might actually play in the project in the three years ahead. For some of the Norwegians, the initial launch of the partnership drew questions about the concerns Alberta and Ontario teachers had about their workload of a 56 hour work week, which is considerably higher compared to Norwegian teachers, and the increasing stress on students, including the pressures of large-scale standardized testing programs and intensifying reporting requirements.

For two Norwegian teachers, their concerns reflected the more pragmatic perspective of their colleagues. One said: “We might be happy if only we could get our math scores better.” Another, however, commented, “I’m so proud of the Norwegian system. We take care of the children. We take care of the teachers.”

The Evidentiary Imperative Of Educational Change

One way in which Canada’s educators found their assumptions challenged related to the nature of assessment practices in Norway. As concluded by one Alberta principal, they experienced a “shock to thought” because their own practices did not include some foundational assumptions about fair evaluation in Norway.

In particular, the prevalence of oral assessments found in Norwegian schools was unfamiliar to them. To their surprise, several Norwegian students viewed being randomly selected to participate in oral examinations as fair and as just a regular occurrence within the Norwegian education system. Both students and teachers contended that surprises happen all the time in school and in life – so oral assessments are a good way to be prepared for those. One teacher from Alberta commented that:

Oral assessment intrigues us as we see the need for students to be able to speak in public. As adults, we often have to present in front of others and what better way is there to reduce anxiety than to start early in school classes and practice this skill? Student voice is important in the Norwegian system and this is an area we could do better in.

For their part, Canadian students expressed some concern about the emotional challenges that could accompany oral assessments. However, as one student commented:

Our intention, as a school, was to find ways to create equity in our school, using oral assessment as one target. Through my experiences, I have seen that students in Norway tend to fear oral assessments, but the success of these students prove that this system can be adapted.

This same student believed oral assessments contributed to the “independence given to Norwegian students,” which ultimately aids “their success in education.” Other students believed that “oral assessment holds students more accountable and celebrates what they know as opposed to evaluating them on what they don’t know.”

Oral assessment was just one strand of a different approach to assessment that the Alberta teams appreciated as a way to reclaim the nobility of evidence. It was not until mid-way through the partnership in June 2017 that a Norwegian educator explained to the Canadian colleagues that their schools had an annual oral assessment program where students were randomly selected to an assessment of their learning by a peer panel of teachers from across the community. The serendipity of the moment was described by the Alberta school principal:

By pure luck, the Norwegian schools we visited were in the process of preparing for the Norwegian national oral examinations. Amidst apologies from our Norwegian partners that they were “only preparing for oral exams,” our team gained access to the rich history and practice of oral assessments in all Norwegian schools. The time-honoured tradition of every 15-year old student participating in the Norwegian National Oral Assessment program had seemed unimportant to share with NORCAN partners, as the Norwegian teachers claimed that “oral assessments are just a regular occurrence within the Norwegian education system, so it didn’t seem of importance to share!”

The result of this insight was the development by the Canadians in the following two years of a major assessment initiative involving five other high schools beyond those directly involved in NORCAN. This project continues today to explore alternative assessment practices that will move beyond conventional standardized testing by drawing on multiple sources of evidence of student progress. Given the widespread disenchantment with standardized testing and the keen interest in developing more authentic and engaging forms of assessment, this new initiative is a major innovative outcome from NORCAN, with potentially far-reaching ramifications for education in Alberta and Ontario.

As a result of NORCAN one teacher in this program sees his practice and use of evidence radically changed:

For the teachers involved in NORCAN, there was an opportunity to not just learn, but to unlearn and to challenge assumptions about what we know about students and how they learn best. Teachers had the opportunity to think about our context, and what we can do better, to more creatively meet the needs of students. We reflected on our values as a school, and what that meant, felt and looked like at our school. NORCAN was a great opportunity to look, listen, ask questions and just be curious, as we learned from each other.

Similarly, when interviewed for a research study undertaken by Education International on teacher identities, an Ontario teacher reflected on the enormous change in practice that resulted from observing and collaborating with teachers from other jurisdictions:

NORCAN has totally blown our minds just in terms of how different things are from province to province. We are all learning so much from one another. Those opportunities are what make teachers grow. I don't think I would be doing what I'm doing now if it weren't for those opportunities (Campbell & Alexander, 2018, p. 10).

Intriguingly, up until the discovery of the oral assessment practices in Norway, the Ontario and Alberta school teams had not noted anything particularly innovative about assessment practices in the Norwegian schools. Much like Canadian schools, it appeared the Norwegians struggled with conflicting purposes of assessment, the impact of large-scale assessments and student engagement, particularly in relation to students' level of confidence in mathematics. For both the Norwegian and Canadian teachers, the ongoing challenge was the desire to build student confidence within system cultures that were becoming characterized by standardized testing and rankings.

While it is true that, globally, educators inhabit what Sørensen (2017) has characterized as the "contemporary culture of competitive comparison," there are opportunities to offer

alternative narratives to defining success in mathematics. For example, it was only when the oral assessment program was noticed by the Canadian school teams that a Norwegian teacher observed, "We are actually sitting on a gold mine with oral assessment, and we've never considered it as an asset."

Another Norwegian teacher saw NORCAN as a reflective mirror on her own teaching:

I have begun to look at my own practices with a more exploratory glance. The times we have had visits from Canada and I've had teachers and students in my classes, I've been so surprised at what they've noticed, what they think is amazing and what they've been amazed by and/or questioned. What I think is simple and trivial, they can find both exciting and interesting. It has led me to reflect more on my method choices and re-visit the reasons for what I do.

These and other moments then led to broader conversations about conventional assessment practices and how they can disadvantage some learners. This included conversations about developing alternatives to the Norwegian national testing program. As well, the consensus grew that students could engage in activities without a pre-determined assessment in mind. This seemed to be in contrast to the situation in Canadian schools, where each and every activity has a corresponding assessment dimension.

As with the unexpected discovery of the tradition of oral assessment in Norway, mid-way in the partnership, school teams discovered that discerning and adapting the work was not going to be a simple matter of identifying a pre-determined question, gathering data and generating conclusions. Consider the case of one Alberta high school:

One initiative that the students tried was to survey students to find out what teachers could do to make it easier for students to learn. This did not go too well. The surveys were taken but students did not take them too seriously. Some teachers were not too open to the suggestions given by students and not much came of these surveys. Since then we are finding that student voice is much more effective.

NORCAN was a great opportunity to look, listen, ask questions and just be curious, as we learned from each other

Students and teachers are working more at developing relationships so that both are more comfortable at letting the other know what they need.

The process of thinking ahead, leading across and delivering within was not a straight line. Throughout the project, the gathering of evidence was to remain a highly contested one driven by multiple impulses to both improve achievement in mathematics while focusing on the enigmatic goal of enhancing equity. Very quickly these aspirations became enigmas wrapped in riddles. Consider Norwegian and Alberta teachers ruminating early on: “Maybe we have got the curriculum all wrong – or our assessments – or maybe both?” As one of the Alberta principals who had been involved in both the international partnerships (FINAL and NORCAN) observed:

The partnerships succeeded most when initial questions as practitioners were often shown to be the wrong questions. What I mean is thanks to the student involvement they showed us that we already had the answer to our question within the way we thought of the question. For example, so often we think making better tests will be our salvation – so we put our old weak assessments such as multiple-choice tests on digital platforms.

Fortunately, or unfortunately, the students see past this and recognize all we are doing is the wrong things faster.

Continually, amidst all of these efforts to navigate the work of NORCAN, the focus on assessment was a reminder of the seemingly ubiquitous question that is pre-occupying teachers’ pedagogical practice across the globe: What counts as evidence? Yet NORCAN reminded participants that this preoccupation is the result of global policy shifts and influential players, such as the OECD, focussed on particular conceptions of accountability that are often removed from the classroom. Several times throughout the partnership, teachers and school leaders recognized that, while what counts as evidence is important, an even deeper question is: “who is counting what and for whom?” (Sellar, 2015).

The tensions and struggles around assessment and other

pedagogical practices continued throughout the partnership, as the individual partner reports highlight. This was driven home in the youth summit, *More Than Your Evidence*, held in Iceland in October 2017, that brought together student alumni from the FINAL, NORCAN and other international exchanges to assess the longer-term impact of their experience in the partnerships.

Students and school leaders spoke at great length about how assessment and evaluation systems drive student and teacher subjectivities and determine the learning environments of many contemporary schools... Canadian participants remarked on how time does not seem as frenetic and intense experience in Norway and Finland and that teachers are afforded more opportunities to delve deeper into curricular areas and have more time for preparation and collaboration compared to their Canadian counterparts. Canadian participants expressed consternation that school life was dictated by strict adherences to time and schedules in a very crowded school day where students and teachers are forced to produce and demonstrate measurable outcomes in discrete units of time (Stiles, 2018, p. 13).

It is important that the evidentiary imperative is not an excuse or justification for ongoing critique and ‘paralysis-by-analysis,’ but an acceptance that the process of deliberation and navigating the seemingly intractable questions of ‘what counts as learning?’ and ‘what counts as evidence?’ *is the work*. As one Ontario Ministry participant observed, “The nice thing about NORCAN was that people from the Ministry and from the union got to connect with kids around these questions - and the result was that a lot of learning is happening that isn’t tied to our roles.” One Ontario principal spoke for many principals of the persistent difficulties of engaging student questions: “This is the work that is rejuvenating and inspiring.”

A Norwegian vice principal echoed a similar sentiment in reflecting on the ongoing questions that challenged taken-for-granted assumptions:

“The partnership has confirmed that we are good, we have got more confidence, and have developed parts of

The partnership has confirmed that we are good, we have got more confidence, and have developed parts of teaching and education that are not so measurable

teaching and education that are not so measurable.”

For a Norwegian teacher, the questions of “what counts as learning?” and the place of mathematics in the broad goals of education are compelling. This educator describes how an evidentiary imperative to study improvements in student achievement can go far beyond the usual metrics to lead into deeper reflections on the relationships between academic content knowledge and the deepest aspirations of educators to help their students grow as human beings:

As a math teacher, I now have a greater focus on variety, learning and listening to the students. ...In retrospect, I see that much of what I do today is justified in changes in view of learning. Earlier, I was probably a formal mathematician where I thought that if the students were practicing enough they were learning. Today I perceive mathematics more as a “human builder” where many of the qualities one needs in modern society are the same as one needs to master maths. Of course, this has influenced my practice by facilitating more activity and conversations in the lessons.

How can we develop assessment systems that are flexible enough to introduce a higher degree of local innovation and give teachers more responsibility of developing and securing quality in education?

For this educator, then, NORCAN was truly transformative, moving beyond mathematics as a technical set of skills for solving problems into a richer engagement with students that invites constant inquiry, reflection, and experimentation.

A dilemma regarding evidence that has been addressed in the Norwegian jurisdictional NORCAN report is the contrast between conditions that promote local professional development work and the traditional assessment system. The teachers experienced a dilemma when forced to use tests that reflect a more traditional teaching of mathematics. When new approaches to teaching do not show up as improvements of results in traditional tests, it can create stress among both students, teachers and leaders. The question is how can we develop assessment systems that are flexible enough to introduce a higher degree of local innovation and give teachers more responsibility of developing and securing quality in education? And is it possible to change our pedagogical vision and didactic practice without changing the assessment system?

The Interpretive Imperative Of Educational Change

What matters about mathematics? What's the matter with mathematics? More than a play on words, these opening questions signal some of the interpretive spaces opened up by the NORCAN partnership. They conveyed both the inherent importance of the discipline—but also the sense that there is something limited about the way that schools have been teaching and assessing students' math knowledge.

For the teachers and school leaders who met in the initial NORCAN partnership workshop in Banff, March 2015, the challenging work was coming to terms with the focus on the ambiguity of phrases such as “excellence through equity.” What role does equity play in education? How do data collected based on narrowly defined curriculum and standardized testing and assessments mask inequities? At different points in the partnership, equity was framed in various ways. While the Norwegians were unfamiliar with the English word “equity,” they knew the Norwegian translation, “likeverdighet.” The Alberta and Ontario teams, along with the Drammen team, saw growing immigration and refugee populations in their schools with “foreign-born” student populations reaching 25 per cent. On some occasions the partnership participants saw equity through a lens of mediating complex identity politics such as protecting LGBTQ students. The Norwegians tended to see equity as a much more concrete and pragmatic commitment to address all types differences between students in the classroom.

One moment illustrates the differences in interpretation around the meaning of equity. When one Alberta principal asked a Norwegian colleague, “What is your government’s policy to help homeless people?” the puzzled response was, “I’m not sure what you are asking – we give them homes.” Throughout the partnership the Norwegians remained polite and patient regarding what one observed to be “an almost obsession with talking about equity as a word to cover every social and political issue in society.” The ironies and paradoxes generated by differences in interpretations around words such as “equity” are also signalled by the impossibility of separating out the place and function of school in two quite very different societies.

Given the tradition of social democracy and collective action in Norway, the universal access to a comprehensive social program including free post-secondary education was striking to the Canadians. As an Albertan educator observed, the result was a somewhat intriguing paradox:

One of the unspoken values of mutual respect was at the forefront of the teacher-student relationship in many of the classes that we observed in Norway. The Norwegian students seemed to be more independent in their learning, which was enlightening to our staff and students alike. The overall educational culture seemed to be somewhat more self-reliant and students are more responsible for their own education than our Albertan counterparts, who tend to be more marks driven. We wonder if this is linked to the free post-secondary opportunities in Norway, vs the competitive nature of our post-secondary entrance processes.

For the students, anxiety around what success in mathematics meant and their sense of wellbeing continued to inform the schools’ work. As one Alberta student concluded, “If I feel confidence as a math learner, I feel confidence in school.” Recurring student comments about assessment are reflected in comments such as: “It’s like you’re trying to trick us and the tricks make us anxious.” Students talked of the recurring phenomenon of ‘pop quizzes’ used to monitor their homework and work habits.

Other students commented on the irony that teachers appear more and more pressured to administer common examinations; yet, as one teacher wryly observed, “While we are encouraged to do common assessments, there isn’t common preparation or practice.” Consistently across the partner schools, students

reported not getting their examinations back – apparently due to concerns about securing the test items. These comments reflect the research on the importance of student engagement and the importance for teachers to seeing learning from the perspective of students (Hattie, 2017).

While his sweeping generalizations based on problematic meta-analyses must at times be questioned and challenged (Shirley, 2017; Terhart, 2011), Hattie’s laser-like focus on the importance of students’ feedback to their teachers is of great value for all educators. Ultimately, this concern comes back to the question of whether or not students truly are valued by their educators as partners in the learning processes. Throughout the NORCAN partnership, this concern for enhancing student confidence matters because the systemic issues of competition and standardization significantly impact the emotional life of students and teachers. An Ontario Catholic school teacher echoed the sentiments of the Alberta teachers who lamented, “We all recognize that math matters the most as a gatekeeper in our school.”

It was while working through, and living within, the paradoxical space of the focus on improving performance in mathematics that the NORCAN partnership revealed the tensions surrounding the interpretive imperative regarding the students’ role. As one Alberta student concluded at the final NORCAN summit, “The risk is that none of this matters, because we don’t have any respect at my school in general anyway.” Rather than writing this off as an isolated expression of adolescent dissonance, NORCAN reminds us that the contexts and milieu of our schools is the cultural process of how we reproduce ourselves through language. For students who experience school cultures where trust in the agency of students is diminished, is it any wonder that reform too-often stalls? As Payne (2008) illustrates in *So Much Reform, So Little Change*, one beginning point is to understand schools less as rational organizations than as places characterized by hierarchies, a lack of curricular coherence and an absence of distributed leadership. One result of this sociology of failure is that these schools become places where “the whole is less than the sum of the parts” (p. 61).

Throughout the NORCAN partnership, this concern for enhancing student confidence matters because the systemic issues of competition and standardization significantly impact the emotional life of students and teachers

So, as we consider the interpretive imperative circulating throughout the work in NORCAN, we need to consider student voice and leadership, not as a singularity within an easily understood homogeneous culture, but within a complex ecology and a multiple of possibilities (Stiles, 2018). By inviting students into leadership roles, the NORCAN partnership challenged long-standing individual and institutional resistance and ambivalence. As participants worked through these realities, it became clearer that student voice was a complex architecture rather than a unitary object of examination - with which we needed to come to terms through the interpretive imperative. As one Ontario student reminded us, from his experience in

NORCAN, “Depending on how we feel, safe or not, students can use their internal microphones to raise the volume.”

The cultural capital globally ascribed to performance in mathematics by groups such as the OECD and national governments shapes the experience of school for millions of students in ways that are too-often ignored or misunderstood. NORCAN helped to uncover some of the differences in the ways that students experienced mathematics as more than a school subject, but as an experience they were *subject to*. Their wellbeing in terms of their agency and sense of accomplishment continuously were tested by this discipline and the symbolic weight that has come to be attached to it. Comments reflecting both trepidation and ambivalence from only a few students in Norway were more common from students in Ontario and Alberta. This indicates that something has happened in the assessment systems in Alberta and Ontario that is damaging students’ confidence in mathematics. As one Canadian student confessed, “I’m happy to ask questions of my teacher—but I don’t want to out myself amongst my peers because math is what tells me whether I’m smart or not.”

The partnership conversations among the students helped to nudge school cultures nested in the differences between Norwegian and Canadian schools. Norwegian students often commented on being enabled to find a voice to raise more questions about how the classroom experience felt: “The

NORCAN project has led to many personal changes for me. I feel I have grown as a person that is a better version of myself because of having participated in this.” For the Norwegians, the critical role of students as stakeholders in the school development efforts was a key finding in their final project report:

The meeting between actors with experience from different positions in the school resulted in good discussions and synergies. The student voice, assessment, learning environment, supporting brave development work and curriculum renewal were topics that were highlighted as important for creating a better education for everyone. Students challenged the other participants to focus more on the broad social mandate of education, and not just on the results of tests. They thought that something needs to be done about the assessment methods to make the education a richer experience. For them, education was not just about understanding the subjects, but also about learning to understand themselves and their own role as active social actors.

Participants agreed that education is a two-way process in which students must also be given the opportunity to reflect on their own learning and development, and that school leaders, teachers, and students can learn together (WNUAS, 2019, p. 74).

The interpretative imperative is apparent in the effort in some of the NORCAN schools to engage their communities in a conversation about “what is math?” Coming to terms with how the partners and their school communities understood mathematics and its function both as a subject and gatekeeper was an important opening in NORCAN. One turning point was at one of the Oslo meetings held early in the project in October 2015. Kicking off this week of school networking were conversations led by Roger Antonsen (University of Oslo) and Simon Goodchild (University of Agder). Both researchers illustrated the diverse ways mathematics is understood as a discipline and as an integrated element of society from music and the fine arts, designed to more obvious areas such as engineering and the sciences.

Mona Røsselund, the Norwegian NORCAN researcher, reinforced these messages by reviewing her research on why

student disengagement in mathematics is often linked to mathematics being seen as an isolated discrete set of activities without context or deeper social- cultural meaning. As she was to later underscore in her final review of NORCAN, while we certainly need to attend to mathematics as a rigorous and distinct discipline, we also need to interrogate our pedagogies while seeing students “not only as end-recipients of development projects, but ... active partners and contributors” – all of which signals the need to focus more on student-centered approaches and our assessment practices (WNUAS, 2019). The national report from Norway includes a chapter describing how several of the participants, both teachers and students, have altered their views on both mathematics and learning – and the connection between teaching and learning. One of the Norwegian students reflects: “NORCAN has given us a broader understanding of how math teaching can be developed ... I understand the teaching much better now than before, and at the same time I have become more critical of teaching and have begun to ask questions”. Another student supplements:

Being exposed to questions about how I learn best starts some processes. I've never thought about this before. I've kind of just come to class, sat there and waited for the teacher to tell me what to do, and then walked out again. Thinking about how I learn best has led to a profound change in how I think. I have become much more aware of what the teacher asks me to do and not least what I do in the lessons.

Participating in the discussions together with other students, teachers and leaders has contributed to a new academic awareness.

Tackling the meaning of mathematics and its place in the larger society was an important line of inquiry for the Alberta and Ontario schools. As part the work with NORCAN, one of the Alberta schools initiated a critical effort to involve the community in the questions surrounding how mathematics was thought of both as a subject as its place in society. (Stiles, 2017). A student video project facilitated with community partners, *Philosophy for Children* from the University of Alberta, spurred many conversations and the apparent dilemma entailed in searching for a common answer to the question, “What is

math?” Students interviewed members within the community to reveal the multitude of ways mathematics is thought of and interpreted in the community.

The student video¹ offered compelling and confounding differences of perspective from across the community. The video helped the students, teachers and school leaders address the hope expressed by one teacher that the differences expressed by the community around the question of “What is math?” would broaden the possibilities for thinking about mathematics beyond its conventional role as a gate-keeper for defining success in school. As one of the Canadian teachers commented after viewing the video:

One of my aspirations for this program is to bring math out of the scary corner our society often places it in. I see this program as an opportunity to begin to address some of the issues around equity. I see the opportunity to help students take on leadership roles and to make mathematics more meaningful to their peers, younger students, teachers and the community at large.

NORCAN afforded teachers and school leaders the opportunity to build their confidence around not only their practice but, more importantly, in feeling they had agency in the global conversation about math

This sentiment was later echoed by the other school partners in conversations regarding the need to interpret mathematics beyond its conventional position as a high-status discipline that gives those successful practitioners significant cultural capital. NORCAN

afforded teachers and school leaders the opportunity to build their confidence around not only their practice but, more importantly, in feeling they had agency in the global conversation about math. One Alberta teacher described the contested space in educators’ work: “Our math teachers were not involved in the curriculum previously, instead they were told what math was by professors. Now they’re being told by engineers.” As a result of NORCAN, the Ontario teachers were able to reflect not only on the different ways mathematics was conceived in the official government documents, but to more critically reflect on how the curriculum might open spaces for “having empathy and patience, building strong relationships with their students and being up-to-date with current pedagogical approaches” (Campbell & Alexander, 2018, p. 7). This enhanced confidence was signalled by a Norwegian colleague who reported, “With new curriculum in Norway, teachers are very much on board, up until we get up to deep learning. Will teachers be better than professors at this? We will have to wait and see.”

¹ <https://vimeo.com/142309907>, password: globalcafe

The Professional Imperative Of Educational Change

At the core of NORCAN was the aforementioned “shock to thought” around different understandings of why we teach and lead schools beyond the pursuit of test scores and rankings (Stiles, 2018).

A Canadian teacher resonated this shift in thinking shared by many in NORCAN:

My work is to enable our students to flourish, to reach their full potential, to serve the public good. NORCAN acted as a catalyst for thinking of the subject of mathematics more as an encounter. I keep wondering how to navigate the fact that, as a teacher, I am other to my own desires about what is good for students.

Yet, throughout the NORCAN partnership, in the view of an Ontario Teachers’ Federation participant, “professional growth and rejuvenation” remained the thread that sustained teacher commitment to the work. She went on to describe her sense that the professional imperative resides in the struggle to sustain confidence in the teacher as one who both knows and does not know:

But embracing ambiguity can lead to powerful learning outcomes. Ambiguity is very uncomfortable for educators because you feel all of this sense of responsibility to your students and your school. The ability to wade through that messiness, in the end, leads to great success. It feels very uncomfortable for that moment, but once you get there it’s all worth it.

Amidst navigating these necessary uncertainties, NORCAN helped educators to find their way back to the soul of the enterprise of teaching. One Ontario school leader described the impact of NORCAN as:

The opportunity to experience how others think and conduct their teaching. This applies to both one’s own colleagues, colleagues at other schools in the country, and not least colleagues from another country with a different culture. This has been very interesting and educational.

An Ontario teacher similarly commented:

Closer cooperation with colleagues at school: First and foremost, NORCAN has been working together. We have worked closely with the working group at the school, and there have been meetings and cooperation with students, teachers and management from the other schools in the project... The project has provided me with a large network of committed educators who always stand up as discussion partners, with tips and advice when I need it.

Several of the NORCAN teachers report that they have gained more confidence in their role as teachers. One of the Norwegian teachers confirms this sentiment:

In a way, I feel that having been a part of NORCAN has helped me to define myself more clearly in the role of teacher. I’ve received a good response to what I’m doing in the classroom. I have experienced that my ideas are being tried out and have been an inspiration for others.

Another has become a more active agent in the conversations with colleagues as a consequence of participating in the partnership:

Personally, I dare say that I have gained more self-confidence and confidence in the job – the changes have been invisibly slow. But if I look back four years, I know I didn’t speak at the math meetings, I do now!

It is through the difficult inquiry into what math really is that teacher professional identity and critical self-reflection was activated. This is a process both of the micro-politics of change and professional deformation, as illustrated in one Alberta school:

Mathematics teachers at our school have enjoyed enlightening discussions during our newly implemented “Mathematicians’ Breakfast” meetings (modelled on Simon Goodchild’s “Mathematician Lunch”). One focus of the breakfast meetings is the implementation of the various mathematics strategies initiated out of the NORCAN project. The other focus of the meetings is “just talk about math,” what’s new in development, and best practices that we can share with each other. Mathematics teachers have discovered value in our breakfast meetings as previously our short and purposeful math conversations focused on assessment and students at risk. They would usually occur before school, in the hallway between class breaks, at the photocopier, or after school on the way out the door. Having a set time and date to discuss ideas has been a welcomed change. Through these formal and informal conversations, as a mathematics group we have committed that improving confidence in the mathematics abilities of our students is our overriding objective.

As a result of these “Mathematician’s Breakfast” meetings—and also as a result of visiting an Ontario school — a student-focused “Mathematics Council” was created to inform teachers’ curriculum development and lesson plans. One outcome of this was that Grade 9 students agreed to serve as tutors to Grade 3 students in mathematics. This opening up to the possibility of student peer learning represented a significant shift in teacher identity. With teachers’ support and based on a solid research base, the student tutors were provided with a “student action plan” with a “learning inquiry model” appropriate to guiding their interaction. An Ontario teacher went on to create a guide on how to create a math council that supported more distributed leadership among the students related to supporting the mathematic program. He has now become a mathematics coach for the school district and the idea of “Math Student Councils” has spread across several Ontario schools, reaching well beyond his own school district.

Across NORCAN, teachers and school leaders engaged with the complexity of learning and teaching. An Ontario Steering Committee representative reflected that “a sense of connectedness and feeling that you are a part of something bigger (a mentoring web) is inspiring for both students and educators —a sense of personal and professional renewal and rejuvenation via reciprocal learning [has] permeated NORCAN.”

Throughout the four years of classroom observations of each other’s lessons, teachers were often confronted with evidence that they had not noticed before or had chosen to discount. An observation by an Alberta principal echoes what other school leaders noted:

When teachers see other teachers teach, they see the messiness of learning. The debriefing after it creates street ‘cred’ amongst teachers because teachers actually are teaching kids. The teacher-to-teacher conversations that happen embrace some of the ambiguity.

While principals in Norway tend to view themselves removed from the day-to-day activities of the individual classroom compared to their Canadian colleagues, over time it became

Over time it became clearer that the key to enhancing school cultures was in slowing down the pace of the school day and allowing for more meaningful interactions

clearer that the key to enhancing school cultures was in slowing down the pace of the school day and allowing for

more meaningful interactions. It is by slowing our pace that as educators we can take note of what is quite often hidden in plain sight. One powerful example was the discovery of the Norwegian student democracy system that was noticed at the second international meeting in Oslo. The idea was developed further by an Ontario school leader who wanted to investigate how one could create a deeper involvement of students in the academic development in his school – by establishing a Math Council, to capture student voice.

The professional imperative does not mean that school leaders need to know everything, in this case about mathematics learning. NORCAN principals tended to empower mathematics department chairs and their teachers rather than focusing on the details of mathematics as a discipline themselves. “This project has opened my eyes to what our teachers are doing,” one Norwegian principal offered. The NORCAN partnership has given the school leaders an opportunity of “being closely connected” to the professional work of teachers, and the principal confirmed the importance of organization and for leaders to give the teachers framework conditions for cooperation – for realizing change. In the words of another Norwegian principal:

“*Knowledge mobilization*” – *knowledge being picked up and moved around in and across systems is one of the partnership components that gave momentum to NORCAN*

This project has to be teacher-driven. Because I have been strongly involved in all development work at the school, it has given me a strong connection to what we are doing – without having to run all the processes myself. I now experience support in the staff when new development areas are presented and worked on.

There was a strong understanding among the leaders in the partnership that NORCAN should not just be an episodic intervention in their schools.

“Knowledge mobilization” – knowledge being picked up and moved around in and across systems is one of the partnership components that gave momentum to NORCAN. As one Ontario participant noted:

Knowledge mobilization is an important outcome of this project. It's worth emphasizing this because that is not common and it's not easy to achieve. It may seem very simple,[but] we should speak about it as an accomplishment when great practice spreads quite far.

What remains consistent across all of the NORCAN partners is the recognition that professional growth is a highly relational activity and that “the reason anything sticks – that practice changes – is because of relationships that build trust and confidence.” Reflecting on the intensity of the relationship developed over four years with his Norwegian colleague, an Alberta teacher referred to his Norwegian colleague as “my NORCAN spouse.” While half-joking, his comment resonated with the voices of other NORCAN participants. This degree of professional connectivity signals the importance of recognizing that advancing the professional imperative is a fluid, interpersonal and reciprocal process. Increasing and developing a higher level of professional collaboration within and across schools has been a key asset of the partnership and one of its enduring legacies.

The Global Imperative Of Educational Change

Increasingly, there is consensus among researchers about the power of educators' professionalism to uplift student learning (Schleicher, 2016). But this research base is disconnected from what is happening in many schools and their systems. More and more, business capital models are imported into schools, which leads to resentment among teachers who lose control of their work.

What is underestimated by many is the global scope of this transformation. This is because educators are preoccupied with the students we see in front of us every day. We log in long hours, forgetting that once there was a labor movement that battled for a forty-hour work week. We forget what constituted our scope of practice as a profession.

This insularity bestows blessings upon educators. If we can keep up our stamina, we get to know our students well and their families also. We become nested in our communities. This gives our lives meaning and purpose. But there is a dangerous side to this insularity. It means that we are caught unaware when change models are imported into our schools. It means that we don't have an organized response when new technologies or curricula arrive with little introduction or support, but with high expectations for our use of them.

Much educational change is driven by policy makers, who travel to other countries and often make erroneous conclusions about a school or educational system only after short 2-3 day visits to carefully selected schools. By contrast, NORCAN provided a counterbalance by including teachers, students, principals and even, in some cases, parents in delegations traveling across jurisdictions. A new truly global imperative of educational change requires that teachers, principals, and students reach out to peers and colleagues from other countries to exchange what they are learning and what their dreams and aspirations are for the future.

Throughout the partnership the significance of simply being able to travel outside of one's familiar space was important beyond measure. One Ontario principal observed, "There were a number of kids who had never been on a plane. There were

kids from Windsor, Ontario who had never been to Toronto." It was not the sheer distance involved in international travel that mattered, so much as it was the opportunity for some students to leave their immediate locale. While the cultural and geographic differences were critical for the students, NORCAN indicates that a great deal can be attained by enabling students to step outside of their own community in their own immediate communities or province. This also gives them a new perspective on their own educational system – by being present in regular school activities in a different culture.

As the partnership evolved, it became apparent that distance and boundaries were as much psychological as physical. With nine schools involving over 100 students, teachers and school leaders working both within their own jurisdictions and across international boundaries, it became increasingly difficult to distinguish between local and global – in fact, one Norwegian teacher described this experience as "going global to understand what is local – and even then this is near impossible." What became clear, in fact, was that the process of going global actually brought about a better understanding of the local. The Ontario school teams came to characterize their experiences in NORCAN as being similar to astronauts who view the earth from outer space. As one Ontario teacher commented, "We went to the moon, and from there we saw the Earth differently." As the Ontario school teams reflected on their NORCAN journey, there certainly was a discernment of the global – of being given the opportunity to see something bigger than what was taken for granted or unquestioned:

The guiding principle from the ‘overview effect’ challenges all educators to step outside their comfort zone and ask ‘why?’ NORCAN has allowed all of its participants to collaboratively step outside their comfort zones. During the process of building these [relationships], we have had the opportunity to reflect on our practices, identify our commonalities, and reflect on where we are, and where we want to go. Our successes as well as our failures have inspired us to always look for ways to improve along our journey and renewed our ongoing love of learning.

From the first tentative steps in the first year of the partnership in 2015 grew a recognition that the nettlesome challenges surrounding the questions of student voice and engagement would not be addressed by a focus only on instructional practice or curriculum design. The global imperative called upon students and teachers to share a commitment to changing the relationships and culture through local changes that became globally connected. This is illustrated in the spawning of Math Councils across the jurisdictions, as described by an Alberta teacher:

Many schools around the world are forming student-led Math Councils to better understand the voice of students as it relates to math teaching and learning. The Council provides a forum for students to support innovative teaching by suggesting ideas, connecting to other such Councils around the world (we have created connections to such councils in Alberta, Ontario, Norway, Iceland, Finland, New Zealand) and to encourage students to engage with parents directly in promoting math.

In some schools the Math Council also gave offspring to language councils and ICT-councils led by students. So, the main idea was finding methods of involving students in the development of subjects and teaching.

As the partnership evolved, it became increasingly apparent that the small communities of mathematics teachers, spread as they are across Canada and Norway, are in fact able to connect through the threads of special days celebrating mathematics. As the same teacher observed:

Schools are now running Pi Day (14th March), Fibonacci Day (23rd November), World Math Day (1st March) or Math Storytelling Day (25th September) and other days (e.g. Square Root Days) in which math is celebrated as if it were an event or sports-like activity. All sorts of activities are offered to bring the school’s work in mathematics alive to the school community and the parents of the school. The idea is to see math as fun.

All of these small activities can shift schools away from honoring a privileged few involved in athletics, for example, to broadening the definition of what counts and who counts. As well, these special days have the function of engaging parents – bringing the local community into the global community of mathematics teaching and learning. As one teacher commented, “These days help see new possibilities in small spaces.” This stands as a way to counter the reality expressed by one Ontario teacher, but shared across the NORCAN Partners: “NORCAN is important to me because mathematics is one of the biggest sources of parents’ anxiety about their children.”

While participants in the NORCAN partnership recognized the growing inter-connectedness of their schools and the intensifying personal relationships that were growing, one moment was an especially powerful reminder of how relationships build capacity and resilience. A Norwegian student reflected on this in her log after being in Alberta in 2017:

NORCAN has inspired me for life. It was a sense of belonging and fellowship that became so clear to me. A bridge of trust was built between the teachers and students, which will be absolutely essential for collaboration” (...) On this trip I have developed eternal friendship with students from other cultures. NORCAN has, and will forever, affect my life and view of learning.

The high school team from Fort McMurray, Alberta, was attending the Ontario summit in Toronto in 2016, when a massive wildfire swept through their city, leading to an evacuation of the entire population of 80,000 residents. Even here, the NORCAN partnership was helpful:

The fire left a mark on what and how we accomplished what we set out to do. It slowed things down and we lost focus as we tended to what had to be done to set our lives back in order both inside and outside of our school lives. By getting back together with the other schools we regained our focus and found that we were accomplishing things that other schools found valuable and that many of the things we were doing were of help to others. The group meetings helped us to refocus and get back on track.

Relationships have a strong protective role in helping educators, and all people, to overcome trauma and to get their lives back in order. In this way, NORCAN went far beyond simply the improvement of mathematics. It attained a truly existential dimension of helping individuals to propel their lives in positive directions after a natural disaster.

For two Alberta school leaders from Olds, Alberta, who had already been committed to the internationalization of school development, the NORCAN project was a way to thread the local to the global through a focus on the enduring values that build a vibrant future for students and communities.

A thread running through our NORCAN experience reminds us that we were already a school committed to many of the goals of NORCAN and its focus on excellence through equity. For example, our school is part of the United Nations Educational Scientific and Cultural Organization (UNESCO) Associated Schools Network, a global network of schools that actively promote a culture of peace by focusing on the ideals and themes of UNESCO. As a UNESCO school, we continue to foster the values of UNESCO in our school programming based on Delors' four pillars of learning.

Moving beyond a focus only on mathematics achievement in isolation was another way to build space for their students. In these ways NORCAN was an example of efforts to create alternative narratives to the culture of “competitive comparison” (Sørensen, 2018) that has become the dominant model for educational change and governance systems, reducing educational leadership to the impoverished imagination of managerialism. Recognizing the truly global nature of

our shared predicaments, an Ontario Teachers' Federation participant remarked, “Our question was not only about math, but what can we learn from each other in so many areas – the nature of school and why we organize ourselves the way we do.”

NORCAN reignited the fundamental questions around the purpose of school – offering a strategic opportunity for the teacher organizations and government partners to rekindle a global conversation that began four decades ago. In 1972, UNESCO released a report by an international team convened by lead author Edgar Faure, entitled *Learning to Be: The World of Education Today and Tomorrow*. The Faure Report focused on the skills, aptitudes, and dispositions that young people would need to master the challenges of the late twentieth century. At no point in *Learning to Be* did the authors propose that educators should prioritize the creation of market systems that would rank students, schools, or countries against another.

Instead, *Learning to Be* called for an education that would promote “the fundamental solidarity of governments and peoples, despite transitory differences and conflicts” (Faure et al, 1972, p. vi). This kind of education would advocate “belief in democracy” with education as its “keystone” (ibid.). The Faure Report encouraged everyone to educate towards “the complete fulfillment” of each person “as individual, member of a family and of a community, citizen and producer, inventor of techniques, and creative dreamer” (ibid.). Ultimately, the Report affirmed, “We should no longer assiduously acquire knowledge once and for all, but learn how to build up a continually evolving body of knowledge all through life—‘learn to be’” (ibid.).

In 1996 UNESCO issued a second report that was written by lead author Jacques Delors, a former president of the European Commission. The “Delors Commission Report,” as it came to be known, argued for four pillars for twenty-first century education. The report argued: “The far-reaching changes in the traditional patterns of life require of us a better understanding of other people and the world at large; they demand mutual understanding, peaceful interchange and indeed, harmony—the very things that are most lacking in our world today” (Delors et al, 1996, p. 22).

This is a different message from ones that argue for human capital formation. Alarmed by international conflicts, the authors emphasized the importance of “learning to live together.” This would be attained by “creating a new spirit which, guided by recognition of our growing interdependence and a common analysis of the risks and challenges of the future, would induce people to implement common projects or to manage the inevitable conflicts in an intelligent and peaceful way” (Delors et al, 1996, p. 22). The support for NORCAN by professional associations and the building of the leadership capacity of teachers, school leaders and students resonate with the spirit of the Delors Report.

The first pillar was to be supplemented by “three other pillars of education that provide, as it were, the bases for learning to live together” (Delors et al, 1996, p. 23). These were:

- learning to know, which corresponds to the academic purposes of schools;
- learning to do, to make a practical contribution to society; and
- learning to be in a world in which “everyone will need to exercise greater independence and judgment combined with a stronger sense of personal responsibility for the attainment of common goals”.

Finally, the Report stressed that “none of the talents which are hidden like buried treasure in every person must be left untapped” (Delors et al, 1996, p. 23).

The Delors Commission Report was entitled *Learning: The Treasure Within*. In a new millennium, we need to ask: How should we be together? How should we show real solidarity with one another? How should we demonstrate an ethic of care in all that we do, while supporting the rights of others to lead their lives with autonomy and dignity? Finally, the Commission asked: How should we be as individuals? How can we assure that our young people have lives of real meaning and purpose?

The Delors Commission Report reminded us that education inevitably is moral. One cannot evade this moral content without mutilating the human spirit. Years in the making, the Report demonstrated that representatives of diverse nations in

an international body such as UNESCO could find common language and develop shared aspirations. *Learning: The Treasure Within* expanded the horizons of education beyond knowing and doing toward being and being with others. Its language encouraged educators and citizens the world over to re-imagine our prospects for a shared humanism in a new millennium.

This speaks to the example of the teacher organizations supporting partnerships such as NORCAN – where, as noted by a senior UEN official, it is through a commitment to the internationalization of educational development “that our union will itself be changed.” This commitment to the mobilization of research is highlighted in the Norwegian final report, describing the activities of the NORCAN steering committee and other efforts:

The steering committee has also participated in several international educational research conferences and summits where preliminary findings have been presented, with emphasis on professional organizations, teachers’ and leaders’ participation in research and development, both at the ICSEI conference in 2017, 2018 and 2019, and the ATA’s uLead conference. In order to bring up discussion and knowledge about how such partnerships can be organized in the future, meetings have also been arranged with actors such as the Ministry of Education, the Directorate of Education, the Center for Internationalization of Education (Diku), the Mathematics Center and the Pedagogstudentene association [teacher students’ organisation within Union of Education Norway]. In some cases, teachers and students from the NORCAN schools have also been involved in these meetings (WNUAS, 2019, p. 74).

These sentiments apply to the initiative of the Alberta Teachers’ Association that initiated the original FINAL network in 2011 and the Ontario Teachers’ Federation / Ontario Ministry of Education support for expanding the TLLP initiative into NORCAN. As with the UEN, all organizations have committed significant resources to both supporting the NORCAN partnership and to its independent evaluation.

In 2015, a third UNESCO report was published, entitled *Rethinking Education: Towards a Global Common Good?* It

acknowledged and asserted, “The Delors Report was aligned closely with the moral principles that underpin UNESCO, and therefore its analysis and recommendations were more humanistic and less instrumental and market-driven than other education and reform studies of the time” (UNESCO, 2015, p. 15). Repudiating the equation of education with human capital, *Rethinking Education* reaffirmed the “humanistic and holistic approach to education” advanced in the earlier reports and asked that educators create a “new development model” in which “economic growth must be guided by environmental stewardship and by concern for peace, inclusion, and social justice” (UNESCO, 2015, p. 10).

The report acknowledged areas of human progress in recent decades, observing that “Global rates of poverty declined by half between 1990 and 2010” (UNESCO, 2015, p. 22). The report said that new technologies have created “the most informed, active, connected, and mobile generation the world has ever seen” (UNESCO, 2015, p. 28).

What does this mean for educators? We are in situations of greater complexity than ever before, because “although economic activity is increasingly globalized, political decision-making and action remain essentially at the national level” (UNESCO, 2015, p. 58). Educators struggle to socialize students into national identities, but students’ subjective life experiences increasingly are transnational, with their family members and friends drawn from many countries. If we are skillful, our students can help us to optimize the convergence of cultures. If we fail to address the new global imperative, the young will find their educators unaware of the great transformations of our time.

The three UNESCO reports provide a powerful and intellectually rigorous response to the old imperatives of educational change that have become so influential in the past decades. Unlike the OECD, UNESCO represents not just affluent countries, but all nations. For many of these nations, the identification of children as carriers of human capital is not only culturally alien, but also unethical.

To offer a counternarrative to misuse of international large-scale assessments, our educators must be knowledgeable, enjoy strong peer networks, and have the autonomy to make good decisions

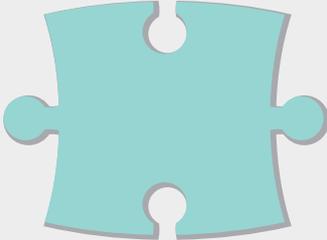
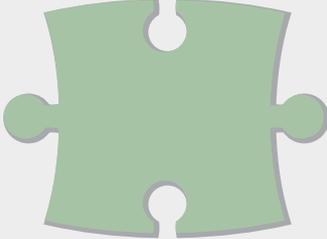
In so many schools, teachers are overwhelmed with trying to master the day-to-day demands of meeting curricular standards, pushing up standardized test results, and attending prescribed professional development activities. For this reason, addressing the global imperative may only appeal to those restless spirits who are willing to go along with any number of government initiatives and policies, but just not all of them. This is a new imperative for those who don’t just want to accommodate displaced peoples, but actually want to learn to be together with them. This is an imperative for those who want to do all that we can to ensure a peaceful, democratic, and prosperous future. Only if we address our challenges collectively will we truly harmonize achievement with integrity.

In the end, it won’t be enough for schools and systems to be on the receiving end of prescriptive mandates from on high. To be economically competitive and environmentally sustainable, societies will need to prepare citizens to take on the challenges of our time: eliminating poverty, creating prosperity, and distributing it equally. This can only be done by professionals operating at peak capacity, engaging the enduring purposes of school.

If we cooperate with the pupils, the parents and the local communities, we can find the strength to avoid the distractions of the culture of testing and rankings. This is one of the lessons we have learned from our four-year partnership with Alberta and Ontario schools (NORCAN), as we connect schools in an effort to foster equity in subjects such as mathematics (Norwegian Union official).

To offer a counternarrative to misuse of international large-scale assessments, our educators must be knowledgeable, enjoy strong peer networks, and have the autonomy to make good decisions. This is why partnerships like NORCAN are indispensable to break through insularity to learn from colleagues from abroad – moving beyond the isolation, solitary critique and hopeless helplessness. This is why we must embrace a global imperative of educational change.

The following snapshots of comments from students in the final NORCAN summit, April 2018, trace the global landscape of NORCAN:

<p style="text-align: center;"><u>Learning to Be</u></p>  <ul style="list-style-type: none"> • “I learned to be confident in who I was...” • “I began to understand what it meant to be a Canadian – living in a different country helped me understand...” • “I understood that being anxious or depressed was a part of life...” 	<p style="text-align: center;"><u>Learning to Live Together</u></p>  <ul style="list-style-type: none"> • “I couldn’t even imagine living with a family I didn’t know in a different country, but I loved it and learned so much...” • “I have formed a life-long friendship with my friend in Norway...” • “I have new respect for my fellow students here at school...”
<p style="text-align: center;"><u>Learning to Do</u></p>  <ul style="list-style-type: none"> • “I learned how to solve the problem of living in a different culture...” • “I understood that action speaks louder than words...” • “We had big ideas... but I learned to learn from failure...” • “Getting involved meant that I learned to get involved, design projects and engage with others so as to have impact...” 	<p style="text-align: center;"><u>Learning to Know</u></p>  <ul style="list-style-type: none"> • “I realized I knew stuff... and could use this knowledge to make a difference...” • “I learned what I knew and [more importantly] what I needed to know...” • “I learned that we could learn together and find out...” • “I learned that we could co-create knowledge...”

Rather than mere abstractions, the Four Pillars resonate with the comment of one Alberta principal that, ultimately, the work of NORCAN was recognizing that the very beginning of improving outcomes in mathematics resided in being open to new possibilities: “There was a real responsibility that we saw for the people who went to Norway to build that same kind of space back in their schools. I just spent my time saying ‘Yes!’ to all of the ideas that were being generated.”

The Existential Imperative Of Educational Change

About one-fifth of students in the developed world suffer from depression, anxiety, or both. They need teachers who are sensitive to their plight and policies that acknowledge their challenges.

Formal schooling doesn't necessarily contribute to wellbeing because "when U.S. levels of education rose dramatically in the postwar years, they did not bring with them increasing levels of happiness and life satisfaction" (Lane, 2000, p. 45). The opposite occurred. There has been a continuous upward trend in rates of depression and anxiety in the US from 1952 to the present (Wilkinson & Pickett, 2009).

Are these US trends reflected in other countries? UNICEF provides reports on child wellbeing that are calculated using five indicators. These are: material wellbeing; health and safety; education; behavior and risks; and housing and the environment. The PISA scores of the OECD are factored into the rankings for educational wellbeing. There is a strong correlation between the objective measures and students' self-assessment about their wellbeing.

Happiness—what psychologists call "subjective wellbeing"—should not be pursued directly. It is a by-product of the quality of one's relationships. To establish intimacy and trust, individuals need to be able to risk vulnerability. They have to demonstrate to others that they can be relied upon in good times and bad. These virtues cannot be acquired rapidly. They need to be earned over time. They require that students have opportunities to get to know themselves and to overcome adversity, so that they acquire a strong personal identity.

Rethinking how schools can play a part in either developing or neglecting students' subjective wellbeing was a critical aspect of the boundary-crossing and innovative nature of NORCAN. The partnership enabled students to develop and express their own ideas about their educations and what they hope to accomplish in their lives, thereby contributing to essential identity-building processes that moved the project beyond a singular focus on academic achievement. As one Honours student from Alberta observed after two years in NORCAN, "Maybe I need to be

more explorative. Maybe I don't need to just focus on the best marks." This comment reflects the beliefs of a student who is growing in confidence and widening horizons beyond tested subjects to grow in wisdom and experience beyond the mathematics classroom. For one Norwegian student, the seemingly small changes in schools such as the Math Councils brought far more than benefits in mathematics competencies:

NORCAN has ended up being a big thing in my life. It all started when I joined the math council at my school. Already, I pushed myself out of my own little comfort zone and sought after things I was interested in, despite how scary it seemed at the start. I have always wanted to engage and contribute to change where change is needed. The math council was a great opportunity to try it out. When I finally got the opportunity to be one of the leaders in the math council and then a member of the NORCAN group I was very excited. I got into several new situations and learned a lot.

These sentiments were similarly expressed during a meeting hosted in Ontario in the spring of 2016, when students created a video, entitled *This is my Voice*². The questions asked and answered by the students in the video included issues far beyond a narrow definition of mathematics achievement. Their questions included:

- What limits you from fulfilling your full potential in the classroom?
- What have you learned about the importance of student voice?
- How can you be the change?

"This is my voice and it matters," said the students. And their message was heard loud and clear by the educators in NORCAN, regardless of jurisdiction.

² <https://norcan.ning.com/blog/voice>

The international nature of the partnership worked against insular or constrained definitions of identity by bringing students into contact with others from different languages and cultures. Consider these Norwegian student reflections after looking back at their experiences of four years in the partnership:

Not necessarily as a mathematical student, but rather as a student in general, I have become more aware of my own learning and the learning of others.

The social in me has also evolved through all the new social contacts I have attached. Mostly, I would say I have become more critical and have more courage to speak and to ask.

Indeed, human connection and relationships were key to the Norwegian students who, time and again, commented on the interpersonal growth they experienced.

Open dialogue with people working towards the same goal can make wonders, this is an important thing I have learned from this collaboration. By talking together, you find questions that you did not even know you wondered about and answered things you have not found by yourself. Although we did not find the answer to everything we wanted, the most important outcome is that the project has started conversations and opened up for new thoughts about how teachers teach and students learn. Not only in mathematics, but in school in general.

For the Norwegian students, there appeared at times a willingness to embrace a bit of ambivalence about the long-term impact of NORCAN. One female student commented about the NORCAN meeting: “I went home mad every day. Why did I get chosen for this project? I’m sitting here killing myself. But now that I’m done with this frustration, I’m not going back to how I thought of math before.” For her, the partnership nudged some possibility for change.

Another commented that “It’s not that the Norwegian schools have changed completely. After a while, everything goes back to normal again.” This student was having a direct experience with how difficult educational change and cultural change are to sustain – especially when facing the traditional systems of assessment and exams. And finally, contrasting the energy and exuberance in the student barnstorming sessions regarding

how to change mathematics in her school, another Norwegian student reflected, “Is this the best way to do this? I have an exam coming up!”

Yet these students demonstrate a deeper understanding of the relationship between culture, history and the broader societal anxiety about mathematics in their schools:

Really, the teachers have got a lot of new tools in their toolkit. And the students are trusting teachers more. But teachers still have a traditional math orientation and culture. We have been doing this for four years, but it is still too short to make real changes.

For students across the partnership, they could recognize the intersection of school cultures, curriculum as written and teacher identities. Their ability to see through these complexities needs to be recognized as a powerful catalyst in NORCAN. Consider these student observations and their ease at expressing bold critique, including of their teachers and the NORCAN project itself:

Would it have been different in this shift if we had other than math teachers involved? Say we had science teachers, for example. We didn’t have ways to interrogate math through other lenses, like the fine arts. I want that cross-pollination. I question if that would have made a difference.

These are students who are asking big questions about change across curricular areas and about styles of leadership. These are the kinds of students we will need to lead the world to a better future.

By definition, the existential imperative invites us to consider the experiences of the NORCAN participants within the fractal complexities of identity and the alchemy of how one might possibly attempt to construe what might be meant by the construct of the *student*, *teacher* and *school leader* in the world today. The shifts and churns that characterized the partnership saw students, teachers and school leaders growing far beyond the previously only apparent limitations of identity and agency.

Conclusion

For the NORCAN participants, success in mathematics came to be seen as deeper than “learning math” and increasing student achievement in a discrete subject, representing a move from an instrumental focus on results to a broader embrace of the existential imperative.

Over the course of the partnerships, to varying degrees in the nine schools, we see two challenges regarding the focus on learning mathematics as a discrete subject: (1) that learning is reduced to a process that “is in itself neutral or empty with regard to content, direction, and purpose”; and (2) that learning “is an individualistic and individualizing term” that moves “attention away from the importance of relationships in educational processes and practices” (Biesta, 2013, p. 63). There is also a main challenge when locally initiated school development projects are confronted with the traditional assessment systems established in each jurisdiction. In mathematics these traditional assessment tools usually have a narrow focus on “learning the algorithms”. If the assessment methods are not changed to mirror and fit new teaching methods and a wider scope, the teachers and leaders face the threat that new and better teaching will not show up as improved results. For the NORCAN participants, success in mathematics came to be seen to be deeper than “learning math” and increasing student results, particularly in the move from the instrumental to the existential imperative (Shirley 2017, pp. 113-129).

Tied to the shift away from the impulse of “learnification,” the NORCAN network has shown that more attention needs to be paid to the factors that shape the identities of students, teachers and principals, as they are invited to challenge their respective taken-for-granted assumptions about what constitutes success in school. Central to this effort is the participation of students in the three leadership elements of thinking ahead, leading across and delivering within.

At the wrap-up summit in June 2018, the Alberta, Ontario and Norwegian teachers and school leaders shared a common set of conclusions about NORCAN’s successes and challenges:

- building meaningful relationships with all students to draw on the profound power of student voice;
- continuing to have opportunities to investigate our sense of wonder;
- the development of nuanced and practical and varied teaching methods;
- an environment where we can learn from our mistakes and are not penalized for them;
- the culture of the school/classroom can allow for students to articulate what they need to be successful;
- realizing that our education needs to reflect the world we live in, which includes the physical environment of our schools; and
- all learn differently so assessment should reflect this: we feel respected when we are provided multiple opportunities in which to learn, assess and teach.

Further driving these points home, an Ontario ministry official reflected on the four years of professional growth by the teachers and school leaders and concluded, “How can we run professional development for teachers and not have students there?”

Through their work with other international partnerships, the Alberta leads reflected that: “The nature of the international partnerships over the past seven years including the summit has been non-linear, messy and sometimes resulted in failure. However, participants gleaned that it is not the “magic bullets” or the “competency checklists” that change school communities, but the conversations made into actionable experimentation that sets the course for potential reform.” At the *More Than Your Evidence Summit* in Reykjavik, where students from previous international partnerships gathered, was the call to action by moderator Jean Stiles, “that having the conversation changes the conversation” and as the summit proceedings suggest, “the partnerships secured spaces where

students, teachers, and administration felt safe to engage in meaningful dialogue and action research initiatives about their school ecosystems (Stiles, 2018).

The experiences of the NORCAN partnership invited students, teachers and school leaders to cross boundaries of geography and identity to join together to unpack what could easily become one of many *au courant* slogans among current reform movements: 21st century learning; excellence through equity; and student voice. Picking up from the principle that “having the conversations *changes* the conversation” (Stiles, 2018), it is in the conversations that words are given their meaning.

While the educational change literature demonstrates increased interest in action research and networks, NORCAN offers a unique opportunity to illustrate the power of students as catalysts for educational change in a global context. The changing object

It is not the “magic bullets” or the “competency checklists” that change school communities, but the conversations made into actionable experimentation that sets the course for potential reform

of the NORCAN network to broaden its focus beyond mathematics illustrates how one international network successfully enacted the five imperatives of educational change to provide educators, students and community members with manifest evidence that it is possible, in spite of the many obstacles, for public school systems to exemplify achievement with integrity (Shirley, 2017).

For many of the NORCAN schools, this work shifted from adapting so-called “innovative” practices to instead concentrating on the relational work of building cultures where risk-taking and building confidence become a shared goal for all. The work undertaken in the NORCAN network will offer a reminder that we ought to continue to re-position students from *subjects to mathematics* to *subjects of and with mathematics*.

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