

# What the COVID-19 pandemic has taught us about teachers and teaching

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## Abstract

The COVID-19 pandemic has demonstrated that although learning can and sometimes does occur without teaching, on any significant scale, and especially among the most marginalized and vulnerable children, a lot of learning does not occur when children are deprived of teachers and teaching. Any questions of learning loss in the short term and learning transformations in the long run cannot therefore be addressed in any meaningful way without examining the short- and longer-term impacts of the pandemic on losses, gains, and transformations in teachers and teaching. This article analyzes actual and likely pandemic consequences of and insights deriving from remote access, digitally based interactions, and physical distancing in relation to three core characteristics of teaching and teacher quality. These are the development of “teacher expertise”, the nature of teaching as an “emotional practice” in which the well-being of students and teachers is reciprocally interrelated, and the ways in which external changes either enrich or deplete teacher’s “professional capital”, especially their “social capital”. Beyond post-pandemic narratives of educational doom on the one hand and of jubilant celebrations of bright spots and silver linings on the other, the article concludes that the future of teaching after COVID-19 will actually be complex, uncertain, and contingent on the policy decisions and professional directions that are set out in the recommendations to this report.

**Key words:** COVID-19, postpandemic, learning loss, teachers, teaching, professional capital, expertise, digital learning, learning outdoors

## Introduction

The greatest pandemic in over 100 years has raised many questions about its direct and indirect effects on children and young people. One of the most prominent sets of concerns has focused on learning losses. These concerns have emerged because most of the world’s children have missed at least a few weeks of regular schooling, some young people have missed an entire year or more, remote learning alternatives have often proved problematic with access to them being unequal, on-site learning with physical distancing has sometimes diminished or disrupted the regular learning experience, and millions of young people fell off the educational radar altogether, perhaps never to return, when their schools shut down (UNESCO 2020; OECD 2020; Vegas 2021; Dorn et al. 2020; Balingit 2021).

Researchers, policy makers, and media analysts have claimed that these losses are resulting or will result in serious shortfalls or losses in skill and competence in literacy and mathematics, depressed test scores, widened achievement gaps, gaps in knowledge needed for access to postsecondary



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education and employment, loss of lifelong income, increased social inequalities, and damage to the global economy (World Bank 2021; Economist Leader 2020)

Various consequences and policy recommendations are arising from these concerns. These include providing summer learning programs, extra school hours, cancellation of snow days, and additional tutoring and special education support to help students catch up and close achievement gaps. In some cases, these proposed measures are being accompanied by calls to institute or reinstate standardized testing to pinpoint the extent of the shortfalls or losses and the existence of gaps (Jimenez 2020; Tucker 2020; Finn 2020; Washington Post Editorial Board 2021).

The learning loss narrative has a number of flaws, however (Matsuda and Russell 2021). For example, some children have actually made gains in learning by having more opportunities to learn and play outside, being relieved of the replacement of learning time with standardized test and high school examination preparation, and by being shielded from threats and harms such as in-person bullying or classroom disruptions that distract from academic learning (Whitley 2020; Mintz 2020; Doyle and Sahlberg 2020; Christakis 2020). Previous school closures due to natural disasters like the Christchurch, New Zealand, earthquake have sometimes revealed that learning losses ultimately did not occur as expected, and indeed some gains took place instead (Hattie 2020).

Second, learning losses and catch-up requirements are typically calculated in relation to prepandemic benchmarks of mainly tested literacy and mathematics that are really somewhat arbitrary norms or averages of proficiency for their time rather than absolute standards that must be retrieved at all costs.

Third, learning gaps have widened, in part because of learning gains among some children and young people in more privileged or affluent families, who have gained support, encouragement and even a bit of competitive nudging from on-hand family members during virtual school (Bielski 2020; Braff 2020). These gains may even persist if some of these children switch to home schooling, private schools, or other locally organized and (possibly) publicly funded alternatives once the pandemic is over (Hargreaves and Fullan 2020a).

Fourth, the narrative of lost learning also tends to focus on losses in easily tested core skills that form part of students' learning experience, but that are far from including all of it. So, while allocating more time or testing requirements after the pandemic might help identify or rectify measured losses in literacy and mathematics, for example, such measures might reinforce or even incur greater losses in other valuable aspects of learning such as deeper learning, problem-solving, social and emotional learning, learning in nature, digital proficiency, and learning to be democratic citizens (Shirley and Hargreaves 2021; Hargreaves and Shirley, 2021; Westheimer 2021). Such a shift might then drive frustrated affluent families into private and semi-private alternatives such as online learning options and locally organized learning pods.

There is at least one other flaw in the learning loss narrative. Within schools at least, learning losses, gains, and transformations will not occur without parallel losses, gains, and transformations in teachers and teaching. While a lot of the postpandemic debate has focused on adding learning time, increasing technology use, and retaining or reintroducing testing as ways to compensate for learning loss, far less attention has been paid to the short-term and long-term impact of the pandemic on teachers and teaching.

COVID-19 has underlined the inalienable importance of in-person schools and their teachers for student well-being, for students who have learning difficulties or emotional challenges, and as places of care and protection while parents and other caregivers are working or out of the home for other reasons. Teachers matter. The most significant in-school factor affecting student achievement is the

quality of the teacher (Rivkin et al. 1998; Carey 2004; Hattie 2009). Leaving learning to the home, and cutting it adrift from qualified teachers, increases inequities, as studies of homework and learning during long summer vacations have shown (Rothstein 2020). Independent learning is inequitable learning. It's not testing or technology that holds out the greatest chance for increasing and equalizing student achievement. It is investment in the quality or in what Michael Fullan and I have called the professional capital of teaching. (Hargreaves and Fullan 2012).

## Teaching losses and gains

Studies of and reports on high performance across different countries point to systems in East and Southeast Asia, Northern Europe, and also Canada that have deliberately built strong teaching professions. In these systems, teaching has high status, is well paid, is founded on rigorous processes of professional preparation, and provides positive working environments for its members who feel trusted and valued and who are actively involved in collaborative decision-making (OECD 2011). Canada ranks among those high performing systems, with its four highest achieving provinces—Ontario, Alberta, British Columbia, and Quebec—often singled out for attention (Hargreaves and Fullan 2012; Jensen et al. 2016; Campbell 2020).

Given this association between a strong and capable teaching profession, and effective learning outcomes, and Canada's positioning as an international high performer, then the short- and long-term effects of the pandemic on teachers and teaching are of great importance. The clear links between conditions and cultures of teaching and the quality of student outcomes call for inquiry into how the pandemic has influenced actual and potential losses, gains, and transformations in teachers and teaching.

## Four pandemic changes that have affected the nature of teaching

Among the many educational changes that have occurred during the pandemic, four have had significant implications for the nature and experience of teaching and for the work that teachers do.

First, across all parts of Canada, sooner or later, children were taken out of school to experience learning, in some form or another, from home. Until COVID-19, less than 1.5% of Canadian children were home-schooled (Van Pelt 2017). Now, practically all young people have experienced at least several weeks of learning remotely for up to a year or more. For some children, this experience was sporadic, because schools opened and closed as the virus advanced and receded in successive waves. Parents and guardians of other students took up the virtual school option for the duration of the pandemic. Even when there was in-person learning, health and safety considerations regarding social distancing, and associated space requirements, often meant that blended arrangements were introduced with students being at home and then in school on alternate days, for example.

Remote learning is not identical to virtual learning. Remote learning may occur with or without digital access. Initially, some provinces discovered that around one-third of their students had no devices or internet access and had to be provided with hard copy materials instead (ASCD 2020). A lot of digitally based learning can and does also occur within an in-person teaching environment, with advice and support from teachers on how to access and process knowledge, information, and learning tasks. By contrast, digital learning in a remote environment provides uneven and uncertain levels of support from teachers, tutors, and mentors. Remote learning also presents teachers with challenges of how to maintain relationships and establish emotional connections with students, and how to sustain student engagement with learning, especially among those who are most vulnerable (Hagerman and Kellam 2020). At the same time, where school has been an unpleasant and

unrewarding experience for some students, learning away from it might actually provide relief from harms and threats (Whitley 2020). This can then translate into increased learning and well-being.

Second, as well as learning to teach remotely, all teachers had to switch much or all their teaching to a virtual environment—at least during the worst periods of the pandemic. This meant having to acquire or increase their own digital proficiency which ranged from mastering technical tools to developing new pedagogies such as managing group work and assessments online. It also meant developing digital proficiency with learning among their students and trying to cultivate capacities for self-direction and self-determination among these learners so they could work independently, at home, while their teachers were working with other students or while students themselves were working on asynchronous tasks.

Third, when students could return to school under conditions of physical distancing, this too, called for profound changes in teachers' work. These included spending time enforcing mask wearing and sanitizing procedures, teaching students who were separated from each other by distances exceeding those in regular classes—often with the additional protections of Perspex shields, trying to sustain cooperative learning activities in physically distanced environments, learning to teach outdoors more where infection was less likely to spread, and endeavouring to sustain an emotionally supportive environment when physical contact and proximity were limited (Campbell et al. 2020).

Last, teaching today is a collaborative and social profession. The work of teaching draws on the social and moral support of colleagues in the school building. It also depends increasingly on moving ideas, knowledge, and teaching practices around in professional communities and networks of shared professional learning. Remote learning has typically translated into remote teaching too. It has cut teachers off from the routine conversations and interactions, and not just meetings, that make up regular school life. Yet, teaching in a remote and virtual environment also has the potential to extend and expand teachers' collegial interactions beyond the immediate school setting, through online networks, for example.

These changes in teachers' work during COVID-19 have not only led to losses, gains, and transformations during the pandemic itself, but many commentators also expect, and in some cases are advocating for, some of these changes to continue in some form or other once the pandemic is over. Some of this is guided by the realization that climate change may make interruptions to regular schooling incurred by pandemics or other natural disasters more likely in the future—and that more flexible and responsive systems of teaching and learning may need to be established now for when those eventualities arise (World Health Organisation 2018; International Council of Educational Advisers 2020). But particular changes during the pandemic have also drawn people's attention to longer-term opportunities that exist. These include possible increases in rates of home-schooling among children for whom in-person schooling had previously been unfulfilling or damaging; more use of virtual and digital learning within in-person school environments; shifts to hybrid patterns of curriculum delivery, especially among high schools students, that mix learning in school with online learning at home; more use of outdoor learning spaces both on and off the school site; and new, virtual, forms of professional collaboration with educators in other schools, and (or) at more convenient and flexible times in relation to teachers' own schools too.

At the same time, threats to learning and well-being of teachers as well as students during the pandemic have reminded educators, policymakers, and society, about the importance of teachers and teaching. Pandemic conditions have underlined the value of teachers' earned expertise that is not readily replaced by the improvised support of parents and families when learning takes place at home; of the importance of emotions, relationships and identity and not just cognitive learning in

the work and contributions of teaching; and of the value of social relations and in-person communication and collaboration among students and among the educators who teach and support them.

The rest of this article does not evaluate the overall pros and cons of these four pandemic changes that have affected teachers work. Rather, it looks at how these changes have led and, in the future, may lead to losses, gains, and transformations in three core characteristics of teaching and its work culture. These are changes in teachers' professional and especially pedagogical expertise, changes in the emotional dynamics of teaching and learning, and either increases in or depletions of the professional capital, and especially social capital in teaching that is associated with students' learning outcomes.

The paper draws on research literature on these three core aspects of teaching in relation to the findings of surveys, policy commentaries and other testimonies that were collected and reviewed, as I compiled 12 opinion articles for major public and educational outlets in three countries, in real time, during the pandemic. As the ensuing analysis unfolds, it is as well to bear in mind that among these sources, analyses, surveys, and commentaries that are produced by national and international policy specialists and by major thought leaders who also act as entrepreneurs and consultants, tend to be more optimistic about bright spots, silver linings, and other educationally positive implications of the pandemic, than data collected and reported by teachers' organizations about their own members' experiences and perceptions.

## Teacher expertise

Public school teachers in Canada are certified professionals who develop expertise over time that enables them to make effective and informed judgments about what to teach and how to teach it, in relation to the contexts in which they work and the students they serve. Expertise is developed through formal and informal learning, experience, and practice with the assistance of colleagues who provide ideas, advice, feedback, and support through mentoring, coaching, and teamwork (Berliner 1995; 2001).

Teaching during the coronavirus pandemic presented teachers with at least three significant requirements for and challenges to expanding and deepening their professional expertise. These were developing their own and their students' digital competence for learning, enabling students to become self-directed and self-determined learners in remote learning environments, and knowing how to teach material in outdoor environments of physical distancing that had never been offered in that manner before.

## Teaching digitally

There is widespread recognition that postpandemic education will involve more arrangements that draw on digital modes of access and delivery. Post-secondary institutions are already rethinking how they can move beyond full-time, in-residence students as the norm, to offering online and part-time alternatives for a more diverse range of students (Royal Society of Canada 2021). These include students who live in remote locations, who want to study from overseas, who come from low-income families where combining study with paid work is the only option, or who have health or disability concerns that create challenges for conventional physical access.

Some, but not all school systems are already heading in the same direction. Ontario is one of many North American systems that has signaled an intention to provide more hybrid arrangements involving digital forms of delivery once schools are back in session full-time (Alphonso 2021). There are undoubtedly some advantages to be gained from such developments. Children who are seriously ill may no longer need to be separated from their peers or be dependent on visiting tutors for all their learning. Transnational students who retain deep family, cultural, and educational

attachments to their countries of origin as well as the countries that receive them, may be able to use technology not only to stay in touch with their families, as is already commonly the case, but also to connect up the schools and teachers who serve them in their different countries (Skerrett 2015). The same technology will make it possible to connect these students' teachers too. Politicians, philanthropists, and Big Tech lobbyists have also become enthused about a postpandemic educational world that may transform learning far beyond the physical environment of conventional schools (Strauss 2020).

By contrast New York City and several US states have already announced that all learning from September will take place in-person, that remote learning will only be provided in special cases, or that strict limits will be placed on the availability of remote learning because of risks to the mental health of children separated from their peers, because middle class parents working from home may benefit disproportionately from these arrangements, and because staffing provisions and projections would be unreasonably complicated to manage (Shapiro 2021). Critics are also warning that we will still need physical schools and in-person teachers to care for young people, to build community, protect democracy, ensure equity, and help young people develop senses of identity. (Hargreaves and Shirley 2021; Barnardo's 2020s; OECD 2020)

Bearing in mind these opportunities and threats, it is nonetheless clear that whether it's in school or out, a postpandemic educational system will expect and assume that digital proficiency is an integral part of all teachers' pedagogical repertoire.

Digital learning and digital proficiency entail much more than mastering apps and tabs. They go far beyond knowing how to use digital tools like drop-down menus, chat-boxes, breakout rooms, methods of posting completed assignments, etc. In *The Digital Classroom*, Michaelsen (2021) noted that when students are literally left to their own devices, they don't learn very much, they make less progress in reading than they do in books, and they end up distracting their peers around them. After reviewing the often confusing and contradictory research on digital learning, Michaelsen (2021) concluded that digital tools "are less important for students' learning than the ways teachers are able to use these tools". Yet, until now, newly qualified teachers typically had a limited repertoire related to digitally supported teaching. The topic was also accorded minimal attention in teacher preparation and ongoing professional learning and development, Michaelsen (2021) noted.

Digital proficiency and ability to teach online as well as in-person should now be a mandatory part of teacher preparation, and something in which all existing teachers should become fully competent within five years. Before the pandemic, the teaching profession was scarcely a body of digital dinosaurs, however. Indeed, according to a 2019 OECD report, out of 48 countries and other systems, about one-third indicated that 60% or more of teachers already allowed students to use digital technology for their projects (OECD 2019). In Alberta's case, almost two-thirds of students used technology in this way—placing it in the top 10 systems in the world.

Teachers' organizations and transnational policy organizations have reported that teachers rapidly developed their digital skills when the shift to at-home schooling occurred. An Australian journalist noted how, in time, "the tech worked more smoothly, teachers became more comfortable in front of the camera, and principals incorporated parent feedback" (Black 2020). With help, teachers started to master even some of the more daunting challenges of online remote teaching, like managing emotions and building relationships. In their guide to online teaching, for example, Hagerman and Kellam (2020) listed simple strategies like using gifs and memes as part of providing student feedback, initiating one-to-one interactions with students, inviting students to press links or other buttons with cheeky prompts like "you know you want to", and encouraging students to contact their teachers when they had problems.



Yet, as teachers' digital proficiency expanded and deepened during COVID-19, there was less evidence of discussion about the risks involved in taking a sharp digital turn. The standout exception was concern about the harm incurred by excess screen time among children. During COVID-19, this more than doubled and even tripled (McGinn 2020). Even before the pandemic, Nature Canada (2018) reported that 76% of preschoolers exceeded the recommended maximum of 1-hour daily advised by the Canadian Pediatric Society (2019). During the pandemic itself, children aged 5–11 were spending about 5 hours a day on screens in ways that experts declared were inflicting harm on their mental, emotional, physical, and social health (Buck 2020). These issues are discussed more fully in other parts of this report. The point here is that digital proficiency must incorporate a self-reflective and critical approach towards areas of considerable risk on the part of students and their teachers alike. These risks include but are not restricted to excess screen time, digital addiction, digital perfectionism among adolescent girls who enhance their own online images, and the ways that algorithms not only reinforce consumer preferences, but also threaten democracy and diversity by amplifying prejudices and conspiracy theories through repetitions and reinforcement of in-group opinions (Chenine 2020).

Before COVID-19, my Boston College research team and I interviewed 222 Ontario educators in 10 school boards about their implementation of various changes, including digitally related innovations (Hargreaves et al. 2018). Alongside great enthusiasm for the innovations were parallel concerns about premature introductions of very young children to screen-based activities, negative impact of an increasingly online environment to adolescents' mental health, rushed and chaotic introductions of digital tablet use across whole schools, and tendencies to equate the deep learning skills that digital innovation was meant to stimulate with skills in using digital technologies (Hargreaves and Shirley 2021). After complaining about the impact on her children of "junk tech" packed with "digital 'snacks' that require no cognitive effort" including "insatiable checking for likes, comments and forms of approval that make us hungry for further validation," journalist Belinda Parmar (2020) argued that every school should have a tech officer who focuses not just on how children might misuse technology, but also on the deliberately addictive designs that are incorporated into the technology.

For these reasons, the Centre for Change, Engagement and Innovation in Education (CHENINE) at the University of Ottawa has set out a digital learning charter that challenges educators and educational systems to develop deeper digital proficiencies in a postpandemic world. *The Chenine Charter* raises questions about the best ways to promote educational innovation both with and without digital technology and about how to realize the innovative potential of digital learning technologies while developing clear strategies to manage and mitigate the risks for students such as digital addiction and excess screen-time (Chenine 2020). These questions should be posed deliberately and persistently by professional learning communities of inquiry and action, within every school and system in Canada.

## Teaching naturally

In its *Screen Time versus Green Time* report, Nature Canada (2018) reviewed research on the impact on children of learning, playing, and simply being in nature. Spending time in nature, it found, benefits physical health through cardiovascular stimulation and improved sleep patterns; it improves mental health by reducing stress, anxiety, and depression; it builds resilience and self-confidence through "risky" play in naturally rough environments; it enhances social development by building sense of belonging and capacities to solve problems and resolve conflicts; and it also improves learning through increased memory, ability to concentrate, and greater creativity.

Richard Louv (2005) argued that urban living, over-testing, and excess screen time have trapped many children indoors for long periods of time, leading to "nature-deficit disorder". The pandemic, of

course, exaggerated all these tendencies. This trend has left young people with little sense of belonging to local physical space and has had adverse effects on their learning and their well-being.

The Netflix documentary *The Beginning of Life 2* (2020) draws together Louv and other global experts, such as primatologist Jane Goodall, to show how children are calmer, fitter, and learn more when they spend time outdoors in nature. Children featured in the documentary report that they take more responsibility for nature and care about it more when they spend time in it. This establishes foundational commitments to environmental sustainability. Elsewhere, Goodall notes that “it is only when you care for nature that you protect it” (Watts 2021).

Learning outdoors also helps young people make a spiritual connection with their humanity as part of nature. Indigenous communities and traditions emphasize how it is important to realize that because we are part of nature, by understanding it, we also develop more insight into ourselves. St. Denis (2016), an Indigenous educator of Mohawk, Maliseet, and Mi’kmaq background, claims that schools must enable students to grow towards “adopting Indigenous ways of knowing, being, and doing.” As expressed in the First People’s Principles of Learning developed by the First Nations Education Steering Committee (2014) in British Columbia, “Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.” Nature and culture are interconnected. Nature is a spiritual entity, bound up with a sense of meaning and value in life. In this respect, what is essential for the learning and well-being of Indigenous students, is good for all students.

In their research on how teachers in a network of isolated rural schools in poor communities in the US Pacific Northwest sought to increase student engagement, Shirley and Hargreaves (2021) have reported how these teachers realized that securing greater student engagement in learning also required increasing the depth of engagement with their local rural communities. Projects developed through the network included taking and sharing time-lapse videos of the local environment to strengthen senses of local pride and build awareness of communities elsewhere, investigating disputes between businesses and environmentalists over local land use, researching into the use of drones in local agriculture, and studying salmon fishing and doing salmon dissections in biology as ways to link to traditions of the local Indigenous community and also to attempt to regenerate the local economy.

Concerns about excess seat time and screen time have, of course, already led to the widespread introduction of regular “body breaks” and yoga stretches in class time and to calls, as in one of this report’s accompanying chapters, for outdoor recess time to approach Scandinavian norms of occurring every 50 minutes or so in the school day. But the pandemic also brought the outdoors and nature to the forefront in another way—not just as a break from formal learning, but also as a means to pursue that learning more often and more effectively. Concerns about health risks for children and teachers of returning to in-person schooling during the pandemic led countries like Denmark that already valued outdoor activity and play as integral to the curriculum, to increase the amount of time that students learned and that teachers taught in outdoor spaces, where the risks of infection would be reduced (Noack 2020; BBC News 2020).

In one example, “forest schools” that started in Denmark and that involve learning while getting dirty, wet, falling over, and climbing trees, embraced learning outdoors as a healthy option to virtual schooling (Child and Nature Alliance of Canada 2021). In Scotland, which had already made outdoor play a significant part of the early childhood curriculum, the Shetland school district created 10 “Nature Nudge” videos ([blogs.glowscotland.org.uk/sh/digitalschoolhub/pupils/nature-nudge/](https://blogs.glowscotland.org.uk/sh/digitalschoolhub/pupils/nature-nudge/)) during the pandemic, one per week, to “nudge pupils outdoors to learn in nature.” “The project connected all ages with their local landscape and wildlife, provided a sense of community and increased the chances of a good engagement with education.” (Education Scotland 2021) Drawing on these experiences, in



April 2021, Nova Scotia assigned \$7 million for every elementary school to be able to construct a space for outdoor teaching and learning (not just a playground or space for recess) ([Nova Scotia Education and Early Childhood Development 2021](#)).

Denmark has shown how it is possible for teachers not to oppose green against screen learning, but to balance and combine them productively. [OECD \(2019\)](#) data show that Danish teachers allow young people to use digital technology for their projects more than in any other country. At the same time, before and during the pandemic, Denmark has also been a global leader in outdoor learning. High-quality teaching and learning can be more digital and more natural. Although many educators position virtual versus physical learning as opposites, in a pandemic, and as a whole, learning and teaching needs to involve both these things.

A December 2020 report by Scotland's [International Council of Education Advisers \(2020\)](#) on a postpandemic vision for education, advised that learning needed to be not only more digital where necessary, but also more physical and natural than at present. In terms of developing teachers' expertise in this area, it recommended that "the capacity to teach one's subject or curriculum in an outdoor environment should become part of all teachers' training and certification". It also recommended that: "outdoor learning options should be included in online curriculum guides" and that "school designs should be modified and enhanced to encompass greater possibilities for outdoor learning"—a provision that inspired Nova Scotia to introduce its outdoor learning space strategy. Moves are already being made to include online teaching as part of many teachers' initial training qualifications. Similar requirements should be added in relation to teaching more of the curriculum outdoors where possible, necessary, or desirable.

## Teachers and self-determined learners

One aspect of digital proficiency is being able to be a responsible, self-directed, and self-regulating learner. A weakness of online and remote learning before and during the pandemic is that it typically offers less support than in-person teaching for vulnerable students with weaker skills who lack confidence, have learning difficulties, or who live in challenging family circumstances ([Dynarski 2018](#)).

Some students do possess self-directed learning habits, but these are unevenly and unequally distributed and cannot be left to chance. They must be taught and developed among everyone. [Hattie \(2021\)](#) pointed out that many learners developed skills and habits of self-direction during the pandemic because necessity required them to, or because they had previously been prevented from being self-directed in their schools. But this hasn't been true of all learners. We must now make deliberate efforts to make learning more self-directed for all.

Self-directed learning has many elements. These include time management, capacity for self-assessment, ability to screen out distractions, ability to judge when assistance is required, self-regulation, and self-motivation.

In an oncoming era of more blended and personalized learning, innovative and problem-based approaches in a digital environment echo long-standing traditions of project-based, topic-based, and child-centred learning by proposing that teachers become facilitators rather than presenters of information. Self-directed learning environments are led by the student, and supported by their teachers, within scaffolded frameworks that enable the students to progress through advancing levels of expertise and mastery.

Arguably, this kind of teaching and learning is already well advanced within the policy frameworks of many Canadian provinces and in a range of long-established networks of innovation in teaching and learning affecting thousands of schools, such as the Spirals of Inquiry network in British Columbia

(Kaser and Halbert 2017), the Alberta Initiative for School Improvement (Hargreaves et al. 2009), Ontario's Teacher Leadership and Learning Project (Lieberman, Campbell and Yashkina 2017), and the New Pedagogies for Deep Learning project that includes schools in several provinces within a global network exceeding 1000 schools (Fullan et al. 2018). The more that Canadian schools and their teachers can support and embed self-directed learning and skills and habits system-wide, then the more protected and supported students will be when they have to work online in a pandemic, during other social crises, because of challenges in their own life, or out of personal choice or preference.

Deeper than the concept, skill and strategy of self-direction is the closely related one of self-determination. The theory of self-determination was created by Deci and Ryan (1985). Building on the 1940s research of Harry Harlow (1950), who invented the concept of intrinsic motivation, Deci and Ryan used experiments to study how people's motivations for doing inherently interesting tasks affected their performance. Although short-term performance could be boosted by external rewards, they found intrinsic rewards mainly worked better, especially on tasks that were creative, complex, or ambiguous. Self-determination happened when inherently interesting tasks were combined with high degrees of autonomy in completing them.

Self-determination is important and effective in many fields. Experts in sports coaching, for example, have successfully employed models that avoid win-at-all-costs mentalities in favour of team-based strategies that favour "cooperative learning, improvement, decision/election, social relations, competence, autonomy, (and) self-determined motivation" (Cecchini et al. 2014). Wehmeyer and Zhao (2020) also testified to the value of self-determination in the modern work environment. "Gig work and side hustles afford people a high degree of self-determination and self-expression", they say, "even as they demand diligence, flexibility, creativity, tolerance for uncertainty, and self-confidence" (Zhao and McDiarmid, in press).

Self-determination is ultimately about much more than the self-management that is entailed in being self-directed. It is about being empowered and having voice and choice in one's learning. These skills and dispositions can be especially valuable during a pandemic and after it.

Zhao and McDiarmid, (in press) recommend that teachers should leave at least 40% of school time for students to develop their own interests and abilities. Kieran Egan (2010) has proposed that true learning in depth can be achieved if students study one particular topic in great depth for a day each week for their entire educational careers. The late Sir Ken Robinson (2006) was one among many who insisted that standardization, one-size-fits-all curricula, and high-stakes testing crush children's creativity and fail to develop their unique talents.

Interviews with over 200 Ontario educators revealed that not only did the province's large-scale test create anxiety, contain cultural bias, and lead to curriculum narrowing and test preparation, it also drove teachers to avoid engaging in innovative projects during and even immediately before the years when children were tested (Hargreaves 2020b). These research results justify why large-scale testing of whole cohorts of students should not be reintroduced after the pandemic. Such testing constrains both learning and teaching and undermines the higher-level competences of innovation and self-determination on which the economic and social future of Canada depends.

Coming out of the pandemic, every student, not just those with identified disabilities, could be provided with a negotiated individual learning plan, Zhao and McDiarmid, (in press), in which those students have a significant stake, so they can take self-determined ownership of their own learning. This will foster "creativity and entrepreneurial spirit". "Creating value for others, for the community, and for the world" will result from greater self-determination, they say (Zhao and McDiarmid, in press).

Self-determined learning is also about pursuing learning that has meaning and purpose for one's present and future life, and for one's understanding of and wider contribution to the world.

Being a facilitator does not mean abandoning being a teacher. It doesn't and shouldn't put an end to direct instruction or give up on inspiring students through the use of brilliant storytelling or other intriguing forms of delivery when the moment calls for it. The fashionable switch to facilitation sometimes overstates its case. Square roots, the theory of relativity, great literature, the histories of our Indigenous Peoples, and necessary awareness of genocide or racism, for example, are not going to happen solely through self-directed or self-determined learning. The teacher doesn't have to and indeed shouldn't relinquish teaching to be a facilitator (Biesta 2013). But in a more digitally infused learning environment especially, becoming a better facilitator of learning, and becoming a teacher who can let go of some of their own power to embolden greater self-determination among their students, will be an essential aspect of every teacher's expertise.

## The emotional practice of teaching

Teaching is an emotional practice, not just a cognitive and intellectual one (Hargreaves 1998). It arouses, inflects, and engages with the emotions of others and with teachers' own emotions too. The rewards that teachers find in their work include a significantly emotional dimension. They are what Dan Lortie (1975), in his highly cited book, *Schoolteacher*, called "psychic".

Lortie (1975) found that teachers he studied in the greater Boston area gained rewards and satisfaction when they got feedback showing that they were having a positive impact on their students. Teachers do not just pass on knowledge and information to students and help them make sense of it. Nor do they stop at guiding students through their own projects and inquiries. They also care for young people's personal and social development. Working conditions that threaten these emotional rewards have damaging consequences for teachers and for their students in turn.

In his analysis of the psychiatry of leadership, Kets De Vries (2006) pointed out that people in organizations are unlikely to be well or stay well for long if their leaders are unwell. Teachers are leaders of children and sometimes of other adults like colleagues and parents too. Teachers as leaders can hardly pull other people together if they are falling apart themselves. If teachers or educational leaders are not well, it is unlikely their students will be well.

Teacher well-being and student learning and well-being are interconnected (Harding et al. 2019). Therefore, to uplift the people we serve, we also have to uplift the people who serve them. Even before the pandemic, the well-being of teachers and leaders all over the world was in jeopardy. For example, a survey report on over half of Ontario's principals in 2014 indicated that 86.5% of principals never seemed to have enough time to get their work done, and 72.1% felt pressured to work long hours (Pollock et al. 2014). Approximately 72% of Ontario vice-principals reported their work often or always put them in emotionally draining situations, and almost 30% of them said they self-medicated to deal with the stresses of the job.

In another survey in England, "69% of primary and 78% of secondary teachers feel their workload is not manageable" (Education Business News 2018). In its 2018 report of the International Summit on the Teaching Profession on teacher well-being, the OECD reported that over 40% of teachers had high levels of stress in Australia and the United States, rising to over 80% among UK teachers who reported experiencing "anxiety, depression, and stress" (Schleicher 2018). Conversely, the OECD's (2019) Teaching and Learning International Survey (TALIS) studies about teachers' working conditions (which include data on Alberta) show that teachers in higher-performing countries are more satisfied with their jobs and experience better working conditions compared to lower-performing systems.

COVID-19 cut deeply into the psychic rewards of teachers and teaching. The experience of COVID-19 has intensified many of the existing problems with educators' well-being. The combined effect of these stresses has been to make anxiety, depression, and overall ill-being among educators even worse.

Forty-four percent of a large sample of teachers surveyed in South Carolina said that they were not adjusted or only somewhat adjusted to the massive changes in their working lives and responsibilities (Berry et al. 2020). A May 2020 survey of over 2500 Alberta educators revealed that over 50% felt fatigued when they got out of bed and had to face distance learning in a morning, 57% felt depressed in general, and over 70% felt exhausted at the end of the day (Alberta Teachers Association 2020).

A repeat survey one year later with a slightly larger sample found that only 12% of respondents felt somewhat or very happy, over 90% were stressed, nearly 66% were extremely concerned about their own mental health, over 87% were extremely or moderately concerned about their students' mental health, almost 75% were extremely or moderately concerned about catching COVID, and over 93% reported feeling exhausted at the end of each day (Alberta Teachers Association 2021).

Another survey of almost 7500 teachers in England and Wales reported high or very high levels of stress among 77% of the sample (NASUWT 2020). A study of child-care teachers in Louisiana found that the incidence of depressive symptoms had doubled during the coronavirus pandemic (Markowitz et al. 2020). A Canadian Teachers Federation (2020) study of over 1300 members found that the percentage of teachers concerned about their mental health and well-being increased from 44% in June to 69% by October of 2020. Thirty-seven percent of the teachers were "barely coping" or "not coping at all".

Principals were also severely affected by the pandemic. In Ireland, 78% of a sample of 600 primary school principals felt "drained at the end of the work-day due to challenges on a daily basis" (O'Brien 2020). The US National Association of Secondary School Principals (2020) discovered that principals' experiences of leading in a pandemic had prompted 45% of them to think about leaving the job for the first time, or as soon as possible, or earlier than they had previously planned. Meanwhile, 43% of teachers who responded to a Canadian Principals' Association survey, complained that they "didn't get overall support" for themselves during the pandemic (Schroeter and Youmans 2020). In response to these kinds of trends globally, Harris and Jones (2020) recommended that: "self-care and consideration must be the main priority and prime concern for all school leaders".

A unique challenge of COVID-19 for teachers was working from home, often in the midst of competing family demands, including having to supervise children of their own. Teachers were concerned about "lack of time to respond to remote learning" properly (Berry et al. 2020). More than half the teachers surveyed in Alberta said they did not feel "invigorated" working online (Alberta Teachers Association 2020). one-third of teachers in the Canadian Teachers Federation (2020) survey found working on digital devices all day to be "very" or "severely" draining. Almost 40% of teachers in the Canadian Teachers Federation (2020) study reported that opportunities to be physically active were "infrequent" and that these became even scarcer as the pandemic progressed. It was also hard to "turn off" when students were contacting them at all hours for individual help. Overall, children and families have not been the only victims of a secondary pandemic of mental health, educators have been too.

In their report on the sustainability and nonsustainability of educators' well-being in 10 Ontario school districts before the pandemic, Shirley et al. (2020) found that in addition to the commonly cited challenges of excessive workload, educators' well-being was also threatened by being required to teach in ways they didn't approve of or believe in, feeling that their professional judgment and

discretion were being undermined by standardization and top-down micromanagement, and being left to solve problems alone rather than with colleagues. We will now examine these factors affecting the emotions of teachers' well-being in terms of teachers' purposes, teachers' judgments, and teachers' professional cultures, respectively. We address the first two of these factors in this section, and professional cultures of teacher collaboration in the final section.

## Purpose and accomplishment

There are fewer glaring examples of teachers finding themselves having to teach in ways that feel alien to them and that they regard as reducing their effectiveness than enforced remote teaching. During COVID-19, it was exceedingly difficult to engage students online who were stuck at home, often with little support, especially in poorer, overworked, and overcrowded families. The survey of a stratified random sample of almost 2600 Alberta teachers in May 2020, recorded that more than 75% of respondents disagreed with the statement that they felt the same emotional connection to their students as they did before COVID-19. One teacher reported "feeling unmotivated to teach through a distance when more than 50% of my class is not participating and parents are taking out their frustrations on me" ([Alberta Teachers Association 2020](#)). By May 2021, 76% of Alberta educators who had been surveyed were concerned that students in their classes were struggling with learning ([Alberta Teachers Association 2021](#)). In the first week of May 2020, in a survey of 908 teachers and district leaders, the US magazine, *Education Week* reported that 42% of teachers felt that levels of student engagement had dropped compared to before the coronavirus—worse than a month previously ([Herold and Kurtz 2020](#)).

Teachers who care about their students and about making a difference in their lives grieve the loss of their ability to connect with them emotionally online, because, as we saw earlier, reading emotional cues in a digital environment is difficult. Even worse was just losing touch with vulnerable students altogether. Seventy-five percent of the teachers in the [Alberta Teachers Association \(2020\)](#) survey felt they had lost that connection. One of the teachers in a Southern California study described this grieving in terms of "various levels of loss" ([Bintliff 2020](#)). One commented that: "Some, just 'boom' checked out, and some I've no idea what happened." Students just "turned into ghosts".

The psychic rewards of teaching come from taking responsibility for all children's learning and well-being. When they could not do this in the COVID-19 environment, teachers started to feel like failures as professionals who, despite their best efforts, could no longer meet their own standards for teaching and care. Over one-third of the teachers in the [Canadian Teachers' Federation \(2020\)](#) study felt that being unable to uphold their own professional standards "greatly affected" their emotional health. The authors of the study concluded that "maintaining a positive and energetic attitude while teaching, managing student behaviour and juggling multiple responsibilities, as well as providing emotional support for students were indicated to greatly affect over 30% of teachers' emotional health."

In a study of how teachers in under-resourced California school districts were coping during the pandemic, psychological trauma specialist, [Bintliff \(2020\)](#) concluded that many of the teachers in their sample were actually experiencing "secondary trauma" as a result of witnessing trauma among their students, yet feeling powerless to do much about it.

Even as teachers despaired over their own capacity to fulfill the basic moral and emotional purposes of their work due to the pandemic and to the ways in which it was being managed, they also often felt that parents and the public just did not understand what they were going through. The UK *Guardian* newspaper interviewed 200 teachers who reported how it was hard enough to deal with young people's anxieties and disillusionment every day, without also having to cope with parents'

frustrations (Weale 2020). More than two-thirds of the teachers sampled by the Canadian Teachers' Federation (2020), for example, felt that "negative public perceptions" of their job during the pandemic had been "very" or "severely" frustrating. Teachers' work was becoming visible to parents in the worst possible way. Teachers had to teach in ways they did not especially value, that they felt were far less than optimal, and in which it was hard to be successful or to experience the basic psychic rewards that normally defined the job. Yet, they were also under everyone else's microscope, all the time.

This is why, after the pandemic, there needs to be caution about ramping up online learning, not just because of the students, but because of the teachers too. Instead, those elements of teaching and learning that provide teachers as well as students with positive senses of accomplishment, that honor teaching and learning as emotional practices and not just cognitive ones, and that grasp how important in-person relationships in schools are as a foundation for learning and well-being, must be strengthened. We need to build our teachers back better as well as our students.

## Professional judgment

For professional work to feel fulfilling, people need to feel trusted and able to exercise judgments on behalf of those they serve. This is especially important when local circumstances and needs vary, and when professionals have to draw on their expertise to provide unique responses to each group or situation. Judgments are emotional as well rational in nature. If judgments were purely cognitive, they could be made by algorithms. But human judgment is inherently emotional. For it is emotional attachments and preferences that narrow down the mathematically infinite scope of decision-making into a manageable set of options (Damasio 1994).

During COVID-19, however, Bintliff (2020) noted how "in some cases, districts did not allow teachers to exercise their judgment to connect with students in real-time online due to concerns with legal privacy issues." This was extremely frustrating for the teachers, who wanted to be the trusted first responders for their vulnerable students.

Much of the success of policy strategies in education during COVID-19 depended on the capacity of governments to value and harness educators' professional judgments as part of the decision-making process. In their report of the *International Summit on the Teaching Profession*, the OECD noted from their TALIS studies of teachers' working patterns that "when teachers reported more . . . collaborative relationships with other teachers, they also reported significantly higher levels of self-efficacy" (teachers' self-efficacy is, in turn, a predictor of student achievement) (Schleicher 2018). In addition, "the extent to which teachers can participate in decision-making has a strong, positive association with the likelihood of reporting that teaching is valued by society."

After several months of educational turmoil due to the pandemic, the OECD (2020) published a policy review of how countries were managing COVID-19 in education with different degrees of effectiveness. Many of the systems that seemed to have had the greatest success had established collaborative teams, working groups or committees, including with teachers' and principals' associations, and then collected and analyzed data together, at the highest levels of policy, to determine and lead the response. Less effective systems, by implication, issued what often seemed like arbitrary, shifting, and contradictory edicts from governments to which the teaching profession and school districts then had to respond (OECD 2020).

In the 2021 Alberta Teachers' Association survey, for example, teachers referred to a political environment that one of them described as "demoralizing". To take one instance, over 90% of the sample



were moderately or very concerned about the provincial government's introduction of a controversial draft new curriculum in the midst of an unprecedented and already deeply disruptive pandemic.

It is essential, the authors of the report remark: "to recognize and build on teachers' expertise and professionalism, by drawing on their feedback, practices, and beliefs, to shape an adapted response to the crisis." This, they continue, "will foster ownership, and ultimately determine teachers' and school principals' willingness to assume responsibilities, risks, and personal sacrifice." ([Alberta Teachers Association 2021](#))

In some cases, though, at a time when teachers returning to schools were afraid of catching COVID-19 themselves and passing it onto their families, political decisions insisting on returns to school that were not properly informed by health expertise, or that had not been developed in collaboration with education professionals, made educators feel afraid, alone, and out of control.

In England, for example, teachers were forced back into schools under threat of government sanction, when they believed schools had not been properly resourced to meet all the necessary health requirements for children. Teachers feared for their lives. The 200 teachers who had been contacted by the *Guardian* newspaper graphically described what it felt like to work in constant fear of catching the virus. "We really have been thrown to the lions," said one ([Weale 2020](#)). Teaching in the midst of a raging pandemic felt like "a slow walk to madness or death," another one said. A third conjured up an image of a work environment that was both frantic and dangerous—"like a hamster on a wheel with a sharp sword poised above me," she remarked. In the [Canadian Teachers' Federation's \(2020\)](#) survey, many teachers reported being immuno-compromised, having family members who were immuno-compromised, or living with essential workers who returned home from high-risk environments. Around half the educators in the [Alberta Teachers Association \(2021\)](#) survey knew a friend or a family member who had become seriously ill with COVID-19, or died as a result of it.

By contrast, just North of the border from England, Scotland established a *COVID-19 Education Recovery Group*, that met weekly, online, and was chaired by the Deputy First Minister (equivalent to Deputy Prime Minister) who was also the Education Minister. Over several years, after an [OECD \(2015\)](#) review of Scotland's *Curriculum for Excellence*, and with the assistance of ten international advisers, there had been a systematic effort to strengthen collaboration at all levels throughout the Scottish education system. When COVID-19 hit, this prior commitment to collaborative ways of working paid dividends.

The Executive Director of one local authority (school district), for example, remarked how they had been "fortunate" to "enjoy good relationships with staff groups and key partners such as trade unions and the National Health Service" ([Education Scotland 2021](#)). "Dealing with the pandemic pulled the council together," he added. "We are clearly one team." University of Glasgow Professor Christopher Chapman, noticed how "practice in these (local) settings evolved very quickly" that was "faster than national policy because of the need to respond on the ground in real time." Power and judgment were moved as close to those responsible for decision-making as possible. "It is really important that school communities are empowered to work together to support each other," said the head of the government's Learning Directorate.

The 30 local authorities in Scotland capitalized on the existing capacity of schools to work together and share strategies ([Education Scotland 2021](#)). In another district, programs were launched to support school principals and their deputies by providing regular meetings where they could share problems as well as strategies. "It was good to know that my worries are not mine alone," one of the participants said. "I did leave the session knowing that I was doing a good job, that I had ideas about further improvement in my practice and I could contact other head teachers if I had any other

questions.” From the beginning of 2021, leadership coaches were offered to any principal or system leader who wanted or needed them.

The report including all the preceding data on Scotland’s response to the crisis concluded that: “key parts of building back better are strong collaborative relationships, robust communication, connectedness and compassion” (Education Scotland 2021). Especially in a pandemic, but also in ordinary circumstances, these dispositions that nurture empowered judgment, do not happen by chance. They are promoted by deliberate policy actions, developed over many years, before, during, and after crises like COVID-19.

It is hard to have self-determined learners without self-determined and empowered teachers, who are able to use their expertise and use their professional judgment together, in high-trust environments, on behalf of the children they know best. These judgments must consider and include other stakeholders too, of course, which systems like Scotland have attended to exceptionally well during and even before COVID-19. Professional judgments should be neither individually autonomous nor administratively ignored, but they should be shared among colleagues and with other partners.

However, while remote learning increased many people’s overall respect for and commitment to public education (OECD 2020), the unprecedented phenomenon of teachers having to perform their work in difficult circumstances while the world’s parents were often watching, also created tensions and undermined rather than enhanced teachers’ psychic rewards. The post-pandemic era should, in this respect, not be a time for educators to retreat to the “psychic kingdom” of the classroom, punctuated only by report cards and periodic parent–teacher meetings (Hargreaves and Fullan 2020a). It should be a time to make more teaching and learning truly visible by sharing school artefacts online, sending pictures back and forth of students’ work, and presenting some in-person lessons simultaneously online so that parents can be invited to watch.

## Professional capital

A third area in which changing conditions of work due to COVID-19 provided insights into and had implications for the organization of teaching after the pandemic was in relation to teachers’ professional capital (Hargreaves and Shirley 2021). Professional capital is defined as a group’s professional worth that enables it to achieve its goals (Hargreaves and Fullan 2012). The professional capital that accrues in teaching comes from investment of human and material resources in teaching. There are few professional returns in teaching without proper investment.

Professional capital has three components: human capital, decision-making (or decisional) capital, and social capital. Human capital comprises the knowledge, talents, and capabilities of individual teachers. It is accrued by selecting and recruiting highly qualified and dedicated teachers, providing them with sufficient monetary rewards and status in the society, and expecting them to engage in continuous professional learning and development throughout their careers. Human capital becomes depleted when low status and diminished rewards fail to attract the best talent, when resources that are essential to high quality work are withheld, and when self-determined professional learning and development is replaced by mandated compliance with government directives.

Decisional or decision-making capital consists of the professional judgment and expertise that teachers develop over time, through repeated yet also varied experience, continuous professional learning and development, and effective coaching and mentoring. Decisional capital is depleted when teachers’ judgments are not trusted, when they are excluded from important decision-making processes, and when their expertise is not valued.

During COVID-19, some areas of teachers' human and decision-making capital have been enriched. Preceding evidence indicated that most teachers developed new digital proficiencies. Some acquired new capabilities for teaching their classes or their subjects in outdoor environments. The suspension of examinations and testing in some systems has also enabled teachers during the spring months to replace usual test-preparation periods with lessons and learning that are more interesting and engaging.

At the same time, considerable quantities of human and decisional capital have been squandered. Only some provinces incorporated and included the professional judgment and expertise of their teachers when decisions were made to close or re-open schools, conditions for opening were decided, and particular arrangements for remote learning were set up. The sheer novelty, difficulty, and complexity of working in online learning environments where students' digital resources were scarce, home circumstances were un conducive to student engagement and self-determination, and virtual communication robbed teachers of their capacity to connect fully with all their students depleted, suspended, or wasted the stockpiles of human and decisional capital within the teacher workforce.

In the third and final component of professional capital, though, experiences during the pandemic were initially more promising and positive. This component—social capital—is about the professional capital that is circulated among teachers and shared by them (Leana 2011; Bryk and Schneider 2002; Day et al. 2007). It is about relationships of trust that speed up and strengthen decision-making, about the effectiveness of judgments that are made collectively rather than individually, and about knowledge and ideas in teaching that are disseminated throughout the profession via collaborative cultures and professional networks.

From the early 1990s onwards, research has demonstrated a clear connection between teacher collaboration and improved student outcomes (Rosenholtz 1989; Hargreaves 2019). In this respect, collective social capital adds value to human capital. Some elements of collaboration have a more positive impact than others, but the overall benefits are consistent. OECD (2019) data on high performing systems show that these systems are characterized not only by high trust for the teaching profession, but also within it. Collective efficacy—the shared belief that all students in a school can succeed with the right support—has one of the highest effect sizes in relation to student achievement (Donohoo 2017). Teachers are more likely to sustain their commitment to teaching if they feel valued by each other and by their leaders as trusted colleagues (Sahlberg and Walker 2021). Collaboration also builds resilience to adversity when teachers work with students in challenging family circumstances of poverty, for example (Gu and Day 2013).

Collaborative cultures in teaching are deeply embedded in Canada, and Canadian researchers and consultants are among the world's leaders in this field of study. In 2016, the Ontario Ministry of Education enshrined the importance of collaboration in an agreement between the government and the professional associations that defined what it called collaborative professionalism as:

Professionals—at all levels of the education system—working together, sharing knowledge, skills, and experience to improve student achievement, and the wellbeing of both students and staff. Collaborative professionalism values the voices of all and reflects an approach in support of our shared responsibility to provide equitable access to learning for all (Ontario Ministry of Education 2016).

Canadian researchers have noted that collaborative professionalism, as defined in Ontario, is flourishing (Campbell 2016; Sharratt 2016). Indeed, it has progressed beyond this official definition to encompass professional learning communities that are teacher led and extensive adoption of rigorous processes of collaborative inquiry that identify and resolve students' problems with learning and

well-being (Hargreaves and O'Connor 2018). Through collaboration, educators' well-being becomes embedded in the job, rather than being a relief from it, through individual yoga or mindfulness exercises, for example. But collaboration that is enforced, imposed, or contrived can lead to negative and counter-productive consequences. Collaborative professionalism ultimately has to be self-determined wherever possible, in relation to an agreed common purpose, within an empowered system of people working together.

We have already seen how some systems built collaborative decision-making among teachers and other partners to implement educational responses to COVID-19. Some systems, like South Korea, created national networks involving one nominated teacher from every school, to design curriculum implementation for remote learning (South Korea Ministry of Education 2020).

Elsewhere, teachers have turned to each other for help, support, and ideas. The Alberta Teachers Association (2020) survey referred to earlier, for example, reported that 57.7% of respondents felt that "my teaching, resourcing and planning have become much more collaborative with my colleagues." Reports by other professional associations, the OECD (2020), and others (e.g., Fullan et al. 2020) have also found that, at first, teacher collaboration increased almost everywhere in relation to pre-existing levels within their system.

However, after a year, 80% of the educators surveyed in Alberta were worried about the loss of professional community once the immediate urgency had passed because of isolation and social distancing (Alberta Teachers Association 2021). Teaching at home, online, alone all day is not at all conducive to the impromptu initiation of yet more interaction to try and develop ideas and strategies once the instructional day is over. Social capital does not just emerge as a collective act of professional will. Working conditions of time, support, sustainable work demands, and overall leadership need to be right for the social side of professional capital to thrive and be sustainable over time.

Teachers' clear readiness to collaborate on their terms, for the needs of their students and themselves, especially when top-down solutions are insufficiently agile or responsive to local and rapidly changing conditions, is an immense asset of teachers' professional capital that must be saved with accruing interest once this pandemic is over. Given the clear association between social capital and student outcomes, this can and should be a policy priority across all provinces and territories once the pandemic has passed.

## Conclusion

When COVID-19 is mainly behind us, there will be many competing proposals about what to do next. Testing companies, and some governments, will want to retain large-scale testing of whole student cohorts as a way to calculate and pinpoint learning losses, despite the well-documented negative side effects on student engagement, motivation, and mental health. Technology companies and more governments will almost certainly campaign for a surge in online learning, hybrid learning, and other digital options but will mainly ignore the risks. Mental health specialists and health scientists will urge that well-being should be the first priority, partly for its own sake, and also because little lasting learning will occur without it—but important though well-being is as the paramount priority, it still provides no guarantee that learning will occur as a consequence.

Who, then, will speak for the teachers and their teaching, other than teachers themselves? This chapter has shown that we cannot serve our students by sacrificing our teachers. We must serve teachers well too. We must stimulate expansions in teachers' expertise that are a bit (but not excessively) more digital, and considerably more outdoor-oriented and natural. We must be more inclusive of teachers' professional judgments in every facet of policy making. We must be mindful of the psychic

rewards that teachers, like other professionals, need to accrue from their work if they are to do it successfully and sustainably. We must rethink relations between teachers and parents or other caregivers so that they become more transparent and enriching for all parties without leaving teachers feeling professionally naked and afraid in awkward online environments. And we must not squander the appetite for collaborative professionalism that teachers everywhere demonstrated when they faced the greatest crisis of their careers. Against policy inclinations to impose austerity, we must indeed invest in the professional capital of our teachers and leaders so they can promote prosperity of well-being and success for all our students (Hargreaves 2020a, 2020b).

My mother, Doris, was named after the nurse who risked her life to spare that of my grandfather over many months of hospitalization during the 1918 pandemic. She risked her life not just for my grandfather, but also, ultimately, of course, for his unborn daughter, and then her three sons, including me, and our children and grandchildren too. Sparing some people also means serving others. That is the essence of sustainability—to support everyone in the educational ecosystem, including our teachers, so that they can all thrive together, and so they can leave a legacy of learning and well-being, for generations to come.

## Recommendations

Twelve recommendations follow from this analysis of how COVID-19 has impacted the professional capital of teachers and teaching; and how it has posed new and lasting challenges for the teaching profession and for teacher policies in Canada and elsewhere. The recommendations are presented in no particular order of priority.

1. Improve digital expertise by including digital competence in all teacher preparation programs. Develop a clear plan and strategy so that all Canadian teachers will have full digital proficiency within 3 years. Digital expertise should not only include knowledge of apps, tabs, platforms, and other technical resources, but also the ability to determine when digitally- based resources do and do not provide unique added value for effective learning compared to other resources. Digital expertise should also include knowledge of how to identify, minimize, and manage the risks that often accompany digitally based learning.
2. Create and fund a national resource bank of digitally based curriculum materials on a federal platform, to be available, as required, by teachers and schools in all provinces and territories. This will supplement existing provincial curricula and be available whenever crises such as pandemics or other natural disasters interrupt in-person schooling.
3. Make all access to digital learning platforms, internet access, and digital devices for learning, public, universal, and free of charge, in both English and French (see also Whitley et al. 2020).
4. Establish a committee for ethical technology use in very school, school board, and provincial educational Ministry and also make it a contractual requirement of every technology company that provides services to the public education sector. This committee should identify and explore digital opportunities for learning, innovation and inclusion, and should identify and implement clear and evidence-informed strategies regarding digital risks. Risks include excess screen time, digital addiction, online bullying, image perfectionism on social media, and algorithmic reinforcement of in-group preferences and prejudices that can undermine democracy and diversity.
5. Expand outdoor and nature-based teaching and learning opportunities that improve learning and enhance young people's well-being (see also McNamara 2021). Shift some of the balance of resources and support from digitally based to nature-based innovation and improvement. Include capacity to teach in outdoor learning environments within teacher preparation programs and within ongoing additional qualifications and professional learning opportunities. Ensure every school has a suitable space for outdoor learning. The evidence indicates that a shift

of this kind will improve learning and achievement, engage with indigenous culture and heritage, enhance well-being, enrich play, and foster environmental responsibility and sustainability.

6. Manage crises such as COVID-19 by establishing collaborative policy working groups that meet regularly to make evidence-informed and expertise-based decisions together in a publicly transparent way. In addition to the government of the day, these groups in education should include leaders of professional associations, representatives of school boards, educational researchers, health and mental health professionals, members of parents and community groups, student representatives, members of especially vulnerable or marginalized communities, and other relevant experts depending on the nature of the crisis.
7. Provide all school leaders and system leaders with confidential executive coaching support from outside their own systems, to help improve their own judgment and capacities by managing their own stress, health, and well-being at times of crisis and disruption.
8. Make education systems less bureaucratic and more agile in their ability to respond to crises, complexity and uncertainty such as natural disasters or sudden arrivals of large numbers of refugees, by moving as much decision-making power as possible to local districts, schools, and communities. Lead more from the middle by leading differently at the top.
9. Initiate or enhance in-person and (or) virtual professional networks to leverage the professional capital developed collaboratively among teachers during the pandemic. This will promote innovation and improvement by circulating knowledge and expertise in a swift and agile way.
10. Continue to understand and insist that in-person schooling is the overwhelming public priority for the vast majority of students in schools to provide care and protection for all students; to build community, inclusion, and democracy among them; and to address the noncognitive as well as the strictly cognitive aspects of learning effectively.
11. Make engagement and re-engagement with learning the pathway to achievement. Do not use large-scale standardized testing of whole cohorts of students as the driver. The negative side effects will only distract from and jeopardize students' engagement.
12. Rethink and redesign relationships between teachers and parents and other caregivers, using digital technologies and images as well as words to increase the flow of communication, without exposing teachers to the kind of intrusive and unfair scrutiny of online teaching that sometimes occurred during the pandemic.

## Author contributions

AH conceived and designed the study. AH performed the experiments/collected the data. AH analyzed and interpreted the data. AH contributed resources. AH drafted or revised the manuscript.

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## Data availability statement

All relevant data are within the paper.

## References

- Alberta Teachers Association 2020. Alberta Teachers Responding to Coronavirus (COVID-19). Pandemic Research Study Initial Report, Edmonton, AB. [Online]. Available from [teachers.ab.ca/SiteCollectionDocuments/ATA/News%20and%20Info/Issues/COVID-19/Alberta%20Teachers%20Responding%20to%20Coronavirus%20%20ATA%20Pandemic%20Research%20Study.pdf](https://teachers.ab.ca/SiteCollectionDocuments/ATA/News%20and%20Info/Issues/COVID-19/Alberta%20Teachers%20Responding%20to%20Coronavirus%20%20ATA%20Pandemic%20Research%20Study.pdf).
- Alberta Teachers Association 2021. Reporting on the third acute wave of Covid-19 in Alberta K-12 schools, Spring [Online]: Available from [Users/hargrean/Desktop/RSC%20draft/Reporting-on-the-Third-Acute-Wave-of-COVID-19-in-Alberta-Schools-Spring-2021%20\(1\).pdf](https://Users/hargrean/Desktop/RSC%20draft/Reporting-on-the-Third-Acute-Wave-of-COVID-19-in-Alberta-Schools-Spring-2021%20(1).pdf).
- Alphonso C. 2021. Ontario considers move to make remote learning permanent for all boards going forward, Globe and Mail [online]: Available from [theglobeandmail.com/canada/article-ontario-considers-move-to-make-remote-learning-permanent-for-all/](https://theglobeandmail.com/canada/article-ontario-considers-move-to-make-remote-learning-permanent-for-all/).
- ASCD. 2020. Ed Advantage: Low tech-No tech [online]: Available from [dropbox.com/s/rzwzn7qm2z9f5bn/Matheson%20Redmond%20Collaborating%20to%20Ensure%20Access%20for%20ALL%20Students%20During%20a%20Global%20Pandemic%204.22.mp4?dl=0](https://dropbox.com/s/rzwzn7qm2z9f5bn/Matheson%20Redmond%20Collaborating%20to%20Ensure%20Access%20for%20ALL%20Students%20During%20a%20Global%20Pandemic%204.22.mp4?dl=0).
- Balingit M. 2021. Unprecedented numbers of students have disappeared during the pandemic. Schools are working harder than ever to find them, Washington Post [online]: Available from [washingtonpost.com/education/pandemic-schools-students-missing/2021/02/25/f0b27262-5ce8-11eb-a976-bad6431e03e2\\_story.html](https://www.washingtonpost.com/education/pandemic-schools-students-missing/2021/02/25/f0b27262-5ce8-11eb-a976-bad6431e03e2_story.html).
- BBC News 2020. Coronavirus: Denmark lets young children return to school. BBC News [online]: Available from [bbc.com/news/world-europe-52291326](https://bbc.com/news/world-europe-52291326).
- Barnardo's. 2020 Generation Lockdown: A third of children and young people experience increased mental health difficulties. [online]: Available from [barnardos.org.uk/news/generation-lockdown-third-children-and-young-people-experience-increased-mental-health](https://barnardos.org.uk/news/generation-lockdown-third-children-and-young-people-experience-increased-mental-health).
- Berliner D. 1995. Teacher expertise. International Encyclopedia of Teaching and Teacher Education. 46–52.
- Berliner D. 2001. Learning about and learning from expert teachers. International Journal of Educational Research. 35: 463–482. DOI: [10.1016/S0883-0355\(02\)00004-6](https://doi.org/10.1016/S0883-0355(02)00004-6)
- Berry B, Dickenson T, Harrist, J, Pomey K, Zheng J, Irvin M., et al. 2020. Teachers and teaching in the midst of a pandemic: Implications for South Carolina's policy leaders. South Carolina Teacher Education, Columbia. [online]: Available from [sc-teacher.org/wp-content/uploads/2020/08/TG\\_POLICY\\_FINAL\\_AUG5.pdf](https://sc-teacher.org/wp-content/uploads/2020/08/TG_POLICY_FINAL_AUG5.pdf).
- Bielski Z. 2020. Social media awash with bragging about pandemic productivity. The Globe and Mail. [online]: Available from [theglobeandmail.com/canada/article-social-media-awash-with-pandemic-productivity-bragging/](https://theglobeandmail.com/canada/article-social-media-awash-with-pandemic-productivity-bragging/).
- Biesta GJJ. 2013. The Beautiful Risk of Education. Paradigm, Boulder, CO.

Bintliff AV. 2020. How COVID-19 has influenced teachers' well-being: A new study shows decreases in teacher well-being during the pandemic, Psychology today [online]: Available from [psychologytoday.com/ca/blog/multidimensional-aspects-adolescent-well-being/202009/how-covid-19-has-influenced-teachers-well](https://psychologytoday.com/ca/blog/multidimensional-aspects-adolescent-well-being/202009/how-covid-19-has-influenced-teachers-well).

Black S. 2020. Learning in lockdown: 'The largest social experiment we've ever done'. The Guardian. [online]: Available from [theguardian.com/australia-news/2020/sep/06/learning-in-lockdown-the-largest-social-experiment-weve-ever-done](https://theguardian.com/australia-news/2020/sep/06/learning-in-lockdown-the-largest-social-experiment-weve-ever-done).

Braff D. 2020. The new helicopter parents are on Zoom. New York Times. [online]: Available from [nytimes.com/2020/09/28/parenting/helicopter-parent-remote-learning.html?referringSource=articleShare](https://nytimes.com/2020/09/28/parenting/helicopter-parent-remote-learning.html?referringSource=articleShare).

Bryk A, and Schneider B. 2002. Trust in schools: A key resource for improvement. Russell Sage, New York.

Buck N. 2020. Children face a deluge of excess screen time – inside the classroom, Globe and Mail [online]: Available from [theglobeandmail.com/opinion/article-children-face-a-deluge-of-excess-screen-time-inside-the-classroom/](https://theglobeandmail.com/opinion/article-children-face-a-deluge-of-excess-screen-time-inside-the-classroom/).

Campbell C. 2016. Collaborative professionalism: Of, by and for Catholic School Leaders. Principal Connections, 20(1): 6–7.

Campbell C. 2020. Educational equity in Canada: the case of Ontario's strategies and actions to advance excellence and equity for students, School Leadership & Management, DOI: [10.1080/13632434.2019.1709165](https://doi.org/10.1080/13632434.2019.1709165)

Campbell C, Baumann R, Kidder A, and Daniel BJ. 2020. A Gentle Return to School: Go Slow to Go Fast. People for Education, Toronto. [online]: Available from [peopleforeducation.ca/wp-content/uploads/2020/08/Gentle-Re-opening-of-Ontario-Schools.pdf](https://peopleforeducation.ca/wp-content/uploads/2020/08/Gentle-Re-opening-of-Ontario-Schools.pdf).

Canadian Pediatric Society. 2019. Digital media: Promoting healthy screen use in school-aged children and adolescents. [online]: Available from [cps.ca/en/documents/position/digital-media](https://cps.ca/en/documents/position/digital-media).

Canadian Teachers Federation. 2020. Teacher Mental Health Check-In Survey. Canadian Teachers Federation, Ottawa, Ontario. p. 8. [online]: Available from [vox.ctf-fce.ca/wp-content/uploads/2020/11/Doc-13-1-Pandemic-Research-Report-Teacher-Mental-Health-Check-in-Survey.pdf](https://vox.ctf-fce.ca/wp-content/uploads/2020/11/Doc-13-1-Pandemic-Research-Report-Teacher-Mental-Health-Check-in-Survey.pdf).

Carey K. 2004. The real value of teachers: Using new information about teacher effectiveness to close the achievement gap, Thinking K-16, 8(1). The Education Trust, Washington DC.

Cecchini JA, Fernandez-Rio J, Mendez-Gimenez A, Cecchini C, and Martins L. 2014. Epstein's TARGET framework and motivational climate in sport: Effects of a field-based, long-term intervention program. International Journal of Sports Science & Coaching, 9(6): 1325–1340. DOI: [10.1260/1747-9541.9.6.1325](https://doi.org/10.1260/1747-9541.9.6.1325)

Chenine. 2020. The Chenine Charter for ethical technology use. Change. Engagement, and Innovation in Education, University of Ottawa. [online]: Available from [chenine.ca/en/about/](https://chenine.ca/en/about/).

Child and Nature Alliance of Canada. 2021. [online]: Available from [childnature.ca/](https://childnature.ca/).

Christakis E. 2020. School Wasn't So Great Before COVID, Either, The Atlantic. [online]: Available from [theatlantic.com/magazine/archive/2020/12/school-wasnt-so-great-before-covid-either/616923/](https://theatlantic.com/magazine/archive/2020/12/school-wasnt-so-great-before-covid-either/616923/).

Day C, Sammons P, Stobart G, Kington A, and Gu Q. 2007. Teachers matter: Connecting lives, work and effectiveness. Open University Press, Maidenhead, England.

Damasio A. 1994. Descartes' Error: Emotion, reason and the human brain. Grosset/Putnam, New York.

Deci EL, and Ryan RM. 1985. Intrinsic motivation and self-determination in human behavior. Plenum, New York.

Donohoo J. 2017. Collective teacher efficacy research: Implications for professional research. *Journal of Professional Capital and Community*, 2(2): 101–116. DOI: [10.1108/JPCC-10-2016-0027](https://doi.org/10.1108/JPCC-10-2016-0027)

Dorn E, Hancock B, Sarakatsannis J, and Viruleg E. 2020. COVID-19 and student learning in the United States: The hurt could last a lifetime. McKinsey & Co. [online]: Available from [mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime#](https://mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime#).

Doyle W, and Sahlberg P. 2020. A proposal for what post-coronavirus schools should do (instead of what they used to do). Washington.

Dynarski S. 19 January 2018. Online courses are harming the students who need the most help. *New York Times*. [online]: Available from [nytimes.com/2018/01/19/business/online-courses-are-harming-the-students-who-need-the-most-help.html](https://nytimes.com/2018/01/19/business/online-courses-are-harming-the-students-who-need-the-most-help.html).

Economist Leader. 2020. The risks of keeping schools closed far outweigh the benefits. *The Economist*. [online]: Available from [economist.com/leaders/2020/07/18/the-risks-of-keeping-schools-closed-far-outweigh-the-benefits](https://economist.com/leaders/2020/07/18/the-risks-of-keeping-schools-closed-far-outweigh-the-benefits).

Education Business News. 2018. 78 per cent of secondary teachers think workload is unmanageable, Education Business News. [online]: Available from [educationbusinessuk.net/news/04102018/seventy-eight-cent-secondary-teachers-still-think-workload-unmanageable](https://educationbusinessuk.net/news/04102018/seventy-eight-cent-secondary-teachers-still-think-workload-unmanageable).

Education Scotland. 2021. What Scotland Learned: building back better. Livingstone, Scotland. [online]: Available from [education.gov.scot/media/nwibvl2q/what-scotland-learned-building-back-better.pdf](https://education.gov.scot/media/nwibvl2q/what-scotland-learned-building-back-better.pdf).

Egan K. 2010. Learning in depth: A simple innovation that can transform schooling. University of Chicago Press, Chicago.

Finn C. 2020. How badly has the pandemic hurt K-12 learning? Let state testing in the spring tell us. *The Washington Post*. [online]: Available from [washingtonpost.com/opinions/2020/11/25/how-badly-has-pandemic-hurt-k-12-learning-let-state-testing-spring-tell-us/](https://washingtonpost.com/opinions/2020/11/25/how-badly-has-pandemic-hurt-k-12-learning-let-state-testing-spring-tell-us/).

First Nations Education Steering Committee. 2014. First People's Principles of Learning. [online]: Available from [fnesc.ca/first-peoples-principles-of-learning/](https://fnesc.ca/first-peoples-principles-of-learning/).

Fullan M, Quinn J, and McEachen J. 2018. Deep learning: Engage the world to change the world. Corwin, Thousand Oaks, CA.

Fullan M, Quinn J, Gardner M, and Drummy M. 2020. Education Reimagined: The Future of Learning. A collaborative effort between 'New pedagogies for deep learning' (npdl), and Microsoft Education.

Gu Q, and Day C. 2013. Challenges to teacher resilience: conditions count. *British Educational Research Journal*, 39(1): 22–44.

Hagerman MS, and Kellam, H. 2020. Learning to teach online: An open educational resource for pre-service teachers. [online]: Available from [onlineteaching.ca](https://onlineteaching.ca).

Harding S, Morris R, Gunnell D, Ford T, Hollingworth W, Tillin K, et al. 2019. Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *Journal of Affective Disorders*, 180–187. DOI: [10.1016/j.jad.2018.08.080](https://doi.org/10.1016/j.jad.2018.08.080)

Hargreaves A. 1998. The emotional practice of teaching, *Teaching and Teacher Education*, 14(8): 835–854. DOI: [10.1016/S0742-051X\(98\)00025-0](https://doi.org/10.1016/S0742-051X(98)00025-0)

Hargreaves A. 2019. Teacher collaboration: 30 years of research on its nature, forms, limitations and effects, *Teachers and Teaching*, 25(5). DOI: [10.1080/13540602.2019.1639499](https://doi.org/10.1080/13540602.2019.1639499)

Hargreaves A. 2020a. Austerity and inequality; or prosperity for all? Educational policy directions beyond the pandemic. *Educational Research for Policy and Practice*.

Hargreaves A. 2020b. Large-scale assessments and their effects: The case of mid-stakes tests in Ontario. *Journal of Educational Change*, 21: 393–420. DOI: [10.1007/s10833-020-09380-5](https://doi.org/10.1007/s10833-020-09380-5)

Hargreaves A, and Fullan M. 2020a. How to ruin a world-class education system [online]: Available from [thestar.com/opinion/contributors/2020/09/23/how-to-ruin-a-world-class-education-system.html](https://thestar.com/opinion/contributors/2020/09/23/how-to-ruin-a-world-class-education-system.html).

Hargreaves A, and Fullan M. 2020b. Professional capital after the pandemic: revisiting and revising classic understandings of teachers' work, *Journal of Professional Capital and Community*, DOI: [10.1108/JPC-06-2020-0039](https://doi.org/10.1108/JPC-06-2020-0039)

Hargreaves A, and Fullan M. 2012. *Professional Capital: Transforming teaching in every school*. Teachers College Press, New York, NY.

Hargreaves A, and O'Connor MT. 2018. *Collaborative Professionalism: When teaching together means learning for all*, Corwin, Thousand Oaks, CA.

Hargreaves A, and Shirley D. 2021. *Wellbeing & Socio-Emotional Learning: Building Everyone Back Better*, Alexandria, WA, ASCD.

Hargreaves A, Crocker R, Davis B, McEwen L, Shirley D, and Sumara D. 2009. *The Learning mosaic: A multiple perspectives review of the Alberta initiative for school improvement*, Boston College, Chestnut Hill, MA, USA.

Hargreaves A, Shirley D, Wangia, S, Bacon C, and D'Angelo M. 2018. *Leading from the middle: Spreading learning, well-being, and identity across Ontario*. Council of Ontario Directors of Education, Toronto, ON.

Harris A. and Jones M. 2020. COVID 19 – school leadership in disruptive times, *School Leadership & Management*, 40(4): 243–247. DOI: [10.1080/13632434.2020.1811479](https://doi.org/10.1080/13632434.2020.1811479)

Harlow HF. 1950. Learning and satiation of response in intrinsically motivated complex puzzle performance by monkeys. *Journal of Comparative and Physiological Psychology*, 43(4): 289–294. PMID: [15436888](https://pubmed.ncbi.nlm.nih.gov/15436888/) DOI: [10.1037/h0058114](https://doi.org/10.1037/h0058114)

Hattie J. 2009. Visible learning: A synthesis of over 800 meta- analyses relating to student achievement. Routledge, London.

Hattie J. 2020. Visible learning effect sizes when schools are closed: What matters and what does not. [online]: Available from [opsoa.org/application/files/2215/8689/0389/Influences-during-Corona-JH-article.pdf](https://opsoa.org/application/files/2215/8689/0389/Influences-during-Corona-JH-article.pdf).

Hattie J. 2021. What can we learn from COVID-era instruction? *Educational Leadership*, 78(8): 14–17.

Herold B, and Kurtz HY. 11 May 2020. Teachers work two hours less per day during COVID-19: 8 key EdWeek survey findings. *Education Week*. [online]: Available from [edweek.org/ew/articles/2020/05/11/teachers-work-an-hour-less-per-day.html](https://edweek.org/ew/articles/2020/05/11/teachers-work-an-hour-less-per-day.html).

International Council of Education Advisers. 2020. International Council of Education Advisers Report 2018-2020. Scottish Government, Holyrood. Edinburgh.

Jensen B, Sonnemann J, Roberts-Hull K, and Hunter A. 2016. Beyond PD: Teacher Professional Learning in High-Performing Systems. National Center on Education and the Economy, Washington, DC.

Jimenez L. 2020 Student assessment during COVID-19. *Center for American Progress*. [online]: Available from [americanprogress.org/issues/education-k-12/reports/2020/09/10/490209/student-assessment-covid-19/](https://americanprogress.org/issues/education-k-12/reports/2020/09/10/490209/student-assessment-covid-19/).

Kaser, L., and Halbert, J. 2017. The Spiral Playbook: Leading with an inquiring mindset in school systems and schools. C21 Canada. [online]: Available from [c21canada.org/wp-content/uploads/2016/10/Spiral-Playbook.pdf](https://c21canada.org/wp-content/uploads/2016/10/Spiral-Playbook.pdf).

Kets de Vries, M. 2006. The leader on the couch: A clinical approach to changing people and organizations. Wiley, San Francisco, CA.

Leana CR. 2011. The missing link in school reform. *Stanford Social Innovation Review*, Fall, pp. 29–35.

Lieberman A, Campbell, C. and Yashkina, A. 2017. Teacher learning and leadership: Of, by and for teachers. Routledge/Taylor & Francis, London, UK.

Lortie D. 1975. Schoolteacher: A sociological study. University of Chicago Press, Chicago.

Louv R. 2005. Last child in the woods: Saving our children from nature-deficit disorder. Algonquin Books, Chapel Hill, NC.

McNamara L. 2021. School recess and pandemic recovery efforts: ensuring a climate that supports positive social connection and meaningful play, *FACETS*, 6: 1814–1830. DOI: [10.1139/facets-2021-0081](https://doi.org/10.1139/facets-2021-0081)

McGinn D. 2020. Parents struggle to wean children off ‘perfect storm’ of screen time during pandemic. *The Globe and Mail*. [online]: Available from [theglobeandmail.com/canada/article-parents-struggle-to-wean-children-off-perfect-storm-of-screen-time/](https://theglobeandmail.com/canada/article-parents-struggle-to-wean-children-off-perfect-storm-of-screen-time/).

Markowitz AJ, Bassok D, Smith A, and Kiscaden S. 2020. Child Care Teachers’ Experiences with COVID-19: Findings from the Study of Early Education in Louisiana. EdPolicyWorks at the

University of Virginia & UCLA Graduate School of Education and Information Studies. [online]: Available from [see-partnerships.com/uploads/1/3/2/8/132824390/seela\\_covid\\_teacher\\_report.pdf](https://see-partnerships.com/uploads/1/3/2/8/132824390/seela_covid_teacher_report.pdf).

Matsuda M, and Russell D. 2021. What we've lost and what we've learned, Washington Post. [online]: Available from [washingtonpost.com/education/2021/05/11/whats-weve-lost-and-what-weve-learned/](https://www.washingtonpost.com/education/2021/05/11/whats-weve-lost-and-what-weve-learned/).

Michaelsen AS. 2021. The digital classroom: Transforming the way we learn. Routledge, London and New York, NY.

Mintz V. 2020. Why I'm learning more with distance learning than I do in school. New York Times. [online]: Available from [nytimes.com/2020/05/05/opinion/coronavirus-pandemic-distance-learning.html?searchResultPosition=1](https://www.nytimes.com/2020/05/05/opinion/coronavirus-pandemic-distance-learning.html?searchResultPosition=1).

NASUWT. 2020. Covid-19 Pressures Risk Damaging Education. [online]: Available from [nasuwt.org.uk/article-listing/covid-19-pressures-risk-damaging-education.html](https://nasuwt.org.uk/article-listing/covid-19-pressures-risk-damaging-education.html).

National Association of Secondary School Principals. 2020. "Overwhelmed" and "Unsupported": 45 percent of principals say pandemic conditions are accelerating their plans to leave the principalship. [online]: Available from [nassp.org/news/overwhelmed-and-unsupported-45-percent-of-principals-say-pandemic-conditions-are-accelerating-their-plans-to-leave-the-principalship/](https://nassp.org/news/overwhelmed-and-unsupported-45-percent-of-principals-say-pandemic-conditions-are-accelerating-their-plans-to-leave-the-principalship/).

Nature Canada. 2018. Screen Time vs Green Time: The health impacts of too much screen time. Ottawa, ON [online]: Available from [naturecanada.ca/wp-content/uploads/2018/12/NOV-23-FINAL-Contact-Info-Nature-Canada-report-Screen-Time-vs-Green-Time.pdf](https://naturecanada.ca/wp-content/uploads/2018/12/NOV-23-FINAL-Contact-Info-Nature-Canada-report-Screen-Time-vs-Green-Time.pdf).

Noack R. 2020. In Denmark, the forest is the new classroom, *Washington Post*. [online]: Available from [washingtonpost.com/world/2020/09/16/outdoor-school-coronavirus-denmark-europe-forest/](https://www.washingtonpost.com/world/2020/09/16/outdoor-school-coronavirus-denmark-europe-forest/).

Nova Scotia Education and Early Childhood Development. 2021. New Outdoor Learning Fund for Nova Scotia's Elementary Schools. Government of Nova Scotia, Halifax. [online]: Available from [novascotia.ca/news/release/?id=20210413001](https://novascotia.ca/news/release/?id=20210413001).

O'Brien C. 2020. Most primary school principals 'overwhelmed' by Covid-19 challenges, *Irish Times*. [online]: Available from [irishtimes.com/news/education/most-primary-school-principals-overwhelmed-by-covid-19-challenges-1.4379658](https://www.irishtimes.com/news/education/most-primary-school-principals-overwhelmed-by-covid-19-challenges-1.4379658).

OECD. 2011. Strong performers and successful reformers in education: Lessons from PISA for the United States. OECD, Paris, FR.

OECD. 2015. Improving schools in Scotland: An OECD perspective. [online]: Available from [oecd.org/education/school/Improving-Schools-in-Scotland-An-OECD-Perspective.pdf](https://oecd.org/education/school/Improving-Schools-in-Scotland-An-OECD-Perspective.pdf).

OECD. 2019. *TALIS 2018 Results*. Volume 1. Table 1.2.4. Change in teaching practices from 2013-2018. OECD, Paris.

OECD. 2020. Education and COVID-19: Focusing on the long-term impact of school closures. [online]: Available from [oecd.org/coronavirus/policy-responses/education-and-covid-19-focusing-on-the-long-term-impact-of-school-closures-2cea926e/](https://oecd.org/coronavirus/policy-responses/education-and-covid-19-focusing-on-the-long-term-impact-of-school-closures-2cea926e/).

Ontario Ministry of Education. 2016. Collaborative professionalism. Policy/Program memorandum No. 159. [online]: Available from [edu.gov.on.ca/extra/eng/ppm/ppm159.pdf](https://edu.gov.on.ca/extra/eng/ppm/ppm159.pdf).



- Parmar B. 2020. Screen time is as addictive as junk food—how do we wean children off? *The Guardian*. [online]: Available from [theguardian.com/commentisfree/2020/oct/12/screen-time-addictive-social-media-addiction](https://www.theguardian.com/commentisfree/2020/oct/12/screen-time-addictive-social-media-addiction).
- Pollock K, Wang F, and Hauseman C. 2014. *The Changing Nature of Principals' Work*: Final Report. Ontario Principals' Council, Toronto, ON. [online]: Available from [principals.ca/en/professional-learning/resources/Documents/Changing-Nature-of-Principals-Work—K-Pollock—2014.pdf](https://principals.ca/en/professional-learning/resources/Documents/Changing-Nature-of-Principals-Work—K-Pollock—2014.pdf).
- Rivkin SG, Hanushek EA, and Kain JF. 1998. Teachers, schools, and academic achievement. National Bureau of Economic Research, Working Paper 6691.
- Robinson K. 2006. *Do schools kill creativity?* [Video file]. [online]: Available from [ted.com/talks/sir\\_ken\\_robinson\\_do\\_schools\\_kill\\_creativity?language=en](https://www.ted.com/talks/sir_ken_robinson_do_schools_kill_creativity?language=en).
- Rosenholtz SJ. 1989. Teachers' workplace: The social organization of schools. Addison-Wesley Longman Ltd, Harlow.
- Rothstein R. 2020. Why COVID-19 will “explode” existing academic achievement gaps. *Washington Post*. [online]: Available from [washingtonpost.com/education/2020/04/17/why-covid-19-will-explode-existing-academic-achievement-gaps/](https://www.washingtonpost.com/education/2020/04/17/why-covid-19-will-explode-existing-academic-achievement-gaps/).
- Royal Society of Canada. 2021. Investing in a Better Future: Higher Education and Post-Covid Canada; an RSC policy briefing, Ottawa, Ontario.
- Sahlberg P. and Walker TD. 2021. In teachers we trust: The Finnish way to world-class schools. Norton, New York.
- St. Denis N. 2016. Reclaiming my Indigenous identity and the emerging warrior: An autoethnography. *Journal of Indigenous Social Development*, 5(1): p. 8.
- Schleicher A. 2018. Valuing our teachers and raising their status: How communities can help. International summit on the teaching profession, OECD Publishing, Paris. p. 99 DOI: [10.1787/9789264292697-en](https://doi.org/10.1787/9789264292697-en)
- Schroeter E. and Youmans A. 2020. Teacher perception of principal support amid the Covid-19 spring school closures. Canadian Association of Principals. Kanata, Ontario. [online]: Available from [cdnprincipals.com/teacher-perception-of-principal-support-amid-the-covid-19-spring-school-closures/](https://cdnprincipals.com/teacher-perception-of-principal-support-amid-the-covid-19-spring-school-closures/).
- Shapiro E. 2021. NYC will eliminate remote learning for next school year. *New York Times*. [online]: Available from [nytimes.com/2021/05/24/nyregion/nyc-schools-reopening-remote-learning.html](https://www.nytimes.com/2021/05/24/nyregion/nyc-schools-reopening-remote-learning.html).
- Sharratt L. 2016. Setting the table for collaborative professionalism. *Principal Connections*, 20(1): 34–37.
- Shirley D. and Hargreaves A. 2021. Five paths of student engagement: Blazing the trail to learning and success. Solution Tree, Bloomington, IN.
- Shirley D, Hargreaves A, and Washington S. 2020. The sustainability and non-sustainability of teachers' and leaders' wellbeing, *Teaching and Teacher Education*, 92(June). DOI: [10.1016/j.tate.2019.102987](https://doi.org/10.1016/j.tate.2019.102987)
- Skerrett A. 2015. Teaching transnational youth. Teachers College Press, New York.

South Korea Ministry of Education. 2020. Responding to COVID\_19: Online Classes in Korea: A Challenge Toward the Future of Education. Seoul, South Korea.

Strauss V. 2020. Cuomo questions why school buildings still exist—and says New York will work with Bill Gates to ‘reimagine education’. Washington Post. [online]: Available from [washingtonpost.com/education/2020/05/06/cuomo-questions-why-school-buildings-still-exist-says-new-york-will-work-with-bill-gates-reimagine-education/](https://www.washingtonpost.com/education/2020/05/06/cuomo-questions-why-school-buildings-still-exist-says-new-york-will-work-with-bill-gates-reimagine-education/).

The Beginning of Life 2: Outside. 2020. Produced by Ana Lúcia Villela, Estela Renner, Marcos Nisti and Luana Lobo, Netflix, Los Gatos, CA.

Tucker M. 2020. COVID-19 and Our Schools: The Real Challenge. Tucker’s Blog. National Center for Education and the Economy, Washington, DC. [online]: Available from [ncee.org/2020/06/covid-19-and-our-schools-the-real-challenge/](https://ncee.org/2020/06/covid-19-and-our-schools-the-real-challenge/).

UNESCO. 2020. COVID-19 Impact on Education. [online]: Available from [en.unesco.org/covid19/educationresponse](https://en.unesco.org/covid19/educationresponse).

Van Pelt D. 2017. Homeschooling in Canada continues to grow. Fraser Forum, Fraser Institute, Vancouver, British Columbia.

Vegas E. 2021. Unexcused Absence: The pandemic, school closures and the rise of inequality. *Foreign Affairs*. [online]: Available from [foreignaffairs.com/articles/dominican-republic/2021-05-20/unexcused-absence?utm\\_medium=promo\\_email&utm\\_source=lo\\_flows&utm\\_campaign=registered\\_user\\_welcome&utm\\_term=email\\_1&utm\\_content=20210529](https://www.foreignaffairs.com/articles/dominican-republic/2021-05-20/unexcused-absence?utm_medium=promo_email&utm_source=lo_flows&utm_campaign=registered_user_welcome&utm_term=email_1&utm_content=20210529).

Washington Post Editorial Board. 2021. Why we shouldn’t abandon student testing this spring. *Washington Post*. [online]: Available from [washingtonpost.com/opinions/why-we-shouldnt-abandon-student-testing-this-spring/2021/01/08/839eb860-4ed4-11eb-83e3-322644d82356\\_story.html](https://www.washingtonpost.com/opinions/why-we-shouldnt-abandon-student-testing-this-spring/2021/01/08/839eb860-4ed4-11eb-83e3-322644d82356_story.html).

Watts J. 2021. Jane Goodall: “Change is happening: there are many ways to start moving in the right way”. *The Guardian*. [online]: Available from [theguardian.com/environment/2021/jan/03/jane-goodall-change-is-happening-there-are-many-ways-to-start-moving-in-the-right-way](https://www.theguardian.com/environment/2021/jan/03/jane-goodall-change-is-happening-there-are-many-ways-to-start-moving-in-the-right-way).

Weale S. 2020. ‘It’s been tumultuous’: Covid-19 stress takes toll on teachers in England, *The Guardian*. [online]: Available from [theguardian.com/education/2020/dec/14/covid-stress-takes-toll-on-teachers-in-england](https://www.theguardian.com/education/2020/dec/14/covid-stress-takes-toll-on-teachers-in-england).

Wehmeyer ML, and Zhao Y. 2020. Teaching Students to Become Self-Determined Learners. ASCD, Alexandria, VA.

Westheimer J. 2021. The virus of disinformation threatens democracy and education is the cure. *Toronto Star*. [online]: Available from [thestar.com/opinion/contributors/2021/01/25/the-virus-of-disinformation-threatens-democracy-and-education-is-the-cure.html](https://www.thestar.com/opinion/contributors/2021/01/25/the-virus-of-disinformation-threatens-democracy-and-education-is-the-cure.html).

Whitley J. 2020. Coronavirus: Distance learning poses challenges for some families of children with disabilities. *The Conversation*.

World Bank. 2021. Urgent, effective action required to quell the impact of COVID-19 on education worldwide [online]: Available from [worldbank.org/en/news/immersive-story/2021/01/22/urgent-effective-action-required-to-quell-the-impact-of-covid-19-on-education-worldwide](https://www.worldbank.org/en/news/immersive-story/2021/01/22/urgent-effective-action-required-to-quell-the-impact-of-covid-19-on-education-worldwide)

World Health Organisation. 2018. Managing Epidemics: Key facts about major deadly diseases. World Health Organisation, Luxembourg. [online]: Available from [who.int/emergencies/diseases/managing-epidemics-interactive.pdf](https://www.who.int/emergencies/diseases/managing-epidemics-interactive.pdf).

Zhao Y, and McDiarmid W. in press. Future Tense: Rethinking Education in an Uncertain World. Routledge, New York, NY.