

THE CORONAVIRUS AS BREAK BOUNDARY: NAVIGATING NEW LANDSCAPES IN NEW BRUNSWICK EDUCATION

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Article History: Submitted 20 Sep 2022 | Accepted 16 Jan 2024 | Published 13 Jul 2026

ABSTRACT. The coronavirus caused a break boundary in public schooling. High school teachers in New Brunswick, Canada, were forced to confront a sudden shift in how they educated students – from classroom to computer screen. This qualitative interpretive case study investigated the reshaping of New Brunswick high school pedagogy prompted by an intensive turn toward digital technologies as a response to the pandemic. Data was thematically analyzed from the interviews of eight high school teachers who taught in a blended learning environment during the first full year of the pandemic. By listening to the voices and experiences of teachers, educational scholars and curriculum reformers can better understand how this unique educational event impacted teaching and learning and its implications for public schooling.

LE CORONAVIRUS COMME FACTEUR DE RUPTURE : EXPLORATION DE NOUVEAUX HORIZONS DANS LE DOMAINE DE L'ÉDUCATION AU NOUVEAU-BRUNSWICK

RÉSUMÉ. Le coronavirus a entraîné une rupture dans le système scolaire public. Cette étude de cas qualitative et interprétative a examiné la refonte de la pédagogie dans les écoles secondaires du Nouveau-Brunswick provoquée par un virage soudain et marqué vers les technologies numériques en réponse à la pandémie. Les données issues des entrevues menées auprès de huit personnes enseignantes du secondaire ayant enseigné dans un environnement d'apprentissage mixte au cours de la première année complète de la pandémie ont fait l'objet d'une analyse thématique. En prêtant attention aux témoignages et aux expériences des personnes enseignantes, les spécialistes de l'éducation et les responsables de la réforme des programmes scolaires peuvent mieux comprendre l'impact et les répercussions de cet événement éducatif unique.

We are at a point in time that could be described as a “break boundary” in New Brunswick (NB) education. Marshall McLuhan borrowed this phrase from Boulding in the 1960s to describe a transformative point at which “a system suddenly changes into another or passes some point of no return” (Boulding, 1956, in McLuhan, 1964/2003, p. 58). When in the 2020s the coronavirus forced NB schools to close, students faced a “break boundary”; they were left with no access to formal education. Over the next few months, the NB Department of Education and Early Childhood Development (EECD) responded by investing millions in electronic devices (Poitras, 2020), software tools (Brown & Young, 2020), and infrastructure upgrades (Van Horne, 2020), as well as a range of professional learning resources for teachers (EECD, 2020). New Brunswick (like many other districts) has been designated as an exclusively Microsoft province, and therefore much effort and emphasis was placed on providing educators with the skills and tools needed to move their practice from traditional place-based classrooms to computer-mediated virtual environments. In the fall of 2020, a new landscape in NB schools emerged. Most high school students embarked on a blended education model, rotating between learning at school and learning remotely (EECD, 2020) via Microsoft Teams (Teams). All schools would eventually receive wireless infrastructure upgrades to allow for a new province-wide bring-your-own-device (BYOD) program. The province’s high school teachers were forced to confront what was likely the most jolting and sudden shift of their career: transitioning from classroom to computer screen, from co-presence to distance, from hands on to hands off. While *what* they were teaching may not have shifted, *how* they taught did. These investments were perceived as a stopgap solution at a time of crisis; however, I argue, they have fundamentally changed the NB education system and educational landscape.

The escalated use of digital tools by schools during the pandemic has generated excitement and concern from a broad range of voices. Some say this increased use in technology has allowed us to reimagine education (CPAC, 2020; Tam & El-Azar, 2020). Others have expressed greater caution, warning that teachers (Tutton, 2020) and students (Barret-Fox, 2020) are simply not ready for this transition and advocating for educational leaders to “consider the conditions that would need to be in place for students to learn and for teachers to teach in these new conditions” (Osmond-Johnson et al., 2020, para. 2). Although research focusing on educator experiences continues to emerge (see Lei & So,

2021; Marek et al., 2021), noticeably absent are the voices of NB teachers, who have had to make sense of this shift and change their practices.

Through a series of interviews, this case study (which is based on my doctoral research) captures eight NB high school teachers' experiences and interactions with educational technologies in a blended learning environment during the first full school year (2020–2021) of the coronavirus pandemic. Rather than take a for/against approach to educational technology, I bring to light potential implications of the shift to blended education and digital tools. I investigate how the blended learning environment influenced and guided the ways in which teachers constructed, presented, and shared knowledge, and as a result, the manner in which students learned and came to make meaning. Shifting to a new classroom environment ultimately entailed deep changes to the landscape of education in NB, breaking traditional boundaries and reorganizing social, emotional, psychological, and sensorial responses from teachers and students. I conclude by petitioning curriculum reformers to consider the voices and experiences of teachers and students, those who have been the ones relied upon to traverse this “break boundary” and make a new trail in this new educational terrain.

THEORETICAL FRAMEWORK

Media ecology is the study of technologies as environments. Not only machines and tools, the term *media* refers to humanity's inventions, innovations, and processes that mediate the human experience, how these things change the power, speed, and functionality of our human capabilities, and in doing so, how they also change us (McLuhan, 1964/2003). The term *ecology* refers to the interactions that take place within mediated physical, social, emotional, and intellectual environments. Postman (1970) explains:

An environment is, after all, a complex message system which imposes on human beings certain ways of thinking, feeling, and behaving. It structures what we can see and say and, therefore, do. It assigns roles to us and insists on our playing them. It specifies what we are permitted to do and what we are not. (p. 161)

I look through the lens of media ecology to examine the new environments that were created by digital tools and blended learning approaches. I interweave Charlotte Danielson's (2007) Framework for Teaching. Specifically, I draw on the framework's four components: instruction, classroom environment, planning and preparation, and professional responsibilities. Danielson's (2007) framework is “a research-based set of

components of instruction that are grounded in a constructivist view of learning and teaching” (p. 202). While Danielson’s work is over a decade old, it has been critically linked to improving student learning (see Buck, 2018; Jeremy-Greene, 2023; Marion-Howard, 2016) and is still widely used and cited, particularly in NB. For example, Danielson’s framework has been used by the University of New Brunswick’s Bachelor of Education program since 2008 for their foundational courses and as the basis for students’ practicum assessment (Kristmanson, professor, University of New Brunswick, personal communication, March 27, 2021).

METHODOLOGY

At the end of the 2020–2021 school year, an email was sent to all high school teachers in an anglophone school district in NB inviting them to participate in this ethically approved research. Eligible research participants needed a minimum of 5 years’ teaching experience at the high school level, and to have taught full-time in the blended learning environment during the first full year of the pandemic. Of the 13 high school teachers who completed an online survey, eight participants met the research criteria and responded to the request for an interview. The eight research participants represented a wide variety of years of service, subject areas, urban and rural regions, and six out of the seven high schools that participated in the district’s blended learning environment.

In the online survey, all research participants identified digital technology as being an essential tool for learning in high school. Choosing from a list of Likert scale descriptors including *basic*, *novice*, *intermediate*, *advanced*, and *expert*, the participants identified themselves as having at least an intermediate proficiency level of teaching with educational technologies, particularly with Teams. Participants’ self-identified comfort levels of teaching in the blended learning environment spanned a wide range of proficiency levels, from novice to advanced. I note that while an online survey was the only possible means for conducting research at the time, the format may have deterred those with basic or novice proficiency levels from participating in this research.

Following the online survey, the eight research participants were asked to prepare for a virtual interview by thinking broadly about how the coronavirus pandemic influenced their teaching practices and philosophies. To guide their reflections, I invited them to consider what opportunities and limitations they encountered in their pedagogy, what benefits and challenges they experienced teaching with educational technologies in the blended learning environment, and to what extent the

digital technologies used during the pandemic had influenced and reshaped their pedagogy. Interviews took place within 3 weeks after the end of the school year. Each interview was 2 hours and took place over a Teams video call, beginning with predetermined questions and moving to discussions directed by interviewee responses. Associated high schools and subject areas taught have been omitted to ensure participant anonymity. Pseudonyms are used for all research participants.

Interviewed teachers had recently finished their first full year of teaching in a blended education model, at times teaching in their classrooms to two groups of students – half physically present in the classroom and the other half joining virtually from home through Teams. Each day, these two groups rotated between learning at school and learning remotely (EECD, 2020). To help facilitate blended learning, a new province-wide BYOD program was introduced to students. To effectively teach in both environments, teachers had to be present in the classroom while connected to devices.

I also offer commentary from my own field notes, observations, and experiences. It is important to note that I was the school district's technology subject coordinator during the time of the interviews. This measure of authority may have conjured up certain ideals and expectations around technology that influenced or guided participants' responses. In this work, I intermittently reflect on my efforts to provide guidance and support to teachers, even as I share some of the challenges and opportunities we faced in our work during the first full school year of the pandemic. Excerpts from teachers' responses to the interview questions and my corresponding analysis are presented in this work.

FINDINGS

As mentioned, I drew on Danielson's (2007) theoretical framework to shape my interview questions. Themes from participants' responses were organized under the four components of Danielson's framework. Several other themes were identified from teacher interviews in McGuire (2023) but not included in this paper, such as the enhancement of anytime / anywhere learning, the obsolescence of co-present learning, the retrieval of teacher lectures, and the reversal of connectedness to disconnectedness.

1. Instruction

The core component of Danielson's (2007) framework for effective teaching is *instruction*, which is described as "the critical interactive work that teachers undertake when they bring complex content to life for their students" (p. 77). At the heart of effective instruction is engagement,

which includes communicating with students, using questioning and discussion techniques, supporting students in meaningful learning, using assessment in instruction, and demonstrating flexibility and responsiveness. My findings began with this important theme of engagement, which is central to Danielson's instructional domain.

1a. Engagement

As part of my doctoral research, I inventoried 150 educational journals and magazines regarding the impact of educational technologies on teaching and learning. The theme that resonated in 25% of the articles was that educational technologies increased student engagement. What was unclear about this finding was what defined or characterized engagement. Technology was not identified as a means to measure or improve academic performance in most of the publications I inventoried. Only one article connected student engagement to academic achievement. I became intrigued by this idea that digital technologies increase student engagement in the classroom, and I began to question why teachers and schools employ the use of educational technologies if they could not be linked to academic success. I asked the eight NB high school teachers to reflect on what engagement looked like in the blended learning environment of the 2020–2021 school year.

To facilitate the new blended learning model, high school students were required to provide their own laptop or tablet for learning, an initiative EECD said would “help avoid interruptions in learning that may result from COVID-19 and allow for more personalized learning opportunities” (Anglophone School District West, 2020, para. 1). Yet, despite teachers' efforts to encourage students to use their laptops for learning as part of the newly instated BYOD program, many chose to bring their smartphones to class instead. Teachers reported that rather than preventing interruptions in learning, student devices caused distractions and disruptions, both in the physical classroom and the Teams virtual environment.

Engagement in these high school classrooms resembled the type of engagement reported in the articles I inventoried: increased student engagement in the use of screens rather than using devices to improve learning goals. Melody, a fine arts teacher, used to enjoy students entering her classroom offering a greeting before finding their seat. Now, with a provincial BYOD program in place giving students full access to their own devices, students would enter the room with heads down in their phones, intuitively navigating to their desks without looking up. She said it was like experiencing a reversal of evolution, comparing students' disposition to

the famous depiction of humans as apes hunched over with devices in hand. Melody expressed concern over her students' addiction to their phones and said, "This year only heightened their addiction." She struggled with students using Snapchat during class, and eventually gave up trying to regulate their behaviour after students brazenly and boldly resisted her requests. Like Melody, Jason, a science educator, observed most students were deeply engrossed in their phones at any given moment, but rather than using them as a vehicle to engage in learning, he went as far as saying when students unlocked their phones, they metaphorically "left the room."

Along with the distracting allure of the devices, teachers reported typing as being a significant setback because of the tiny keyboards, but that students were willing to sacrifice speed and functionality for convenience. Jason remarked that even though the functionality of Teams and other applications in the Microsoft Office suite were far superior for learning on a laptop or tablet, students still preferred to access them via their phones. When I asked Jason why students preferred their phones even though there were far better tools available to them, he speculated: students' sheer comfort with their phones and the increased accessibility of social media and other communications apps. All teachers bemoaned that student engagement levels with these devices increased substantially, but in the form of sending personal messages to friends and scanning social media. Despite their attempts to have students use these phones for learning, engagement in classroom discussion and overall learning greatly diminished.

Because teachers had to attend to students in both the physical classroom and the virtual environment, they had to be tethered to their devices. Taylor, who teaches skilled trades courses, used two devices at one time while teaching via Teams. She walked around the room with her iPad in hand so she could conference with students in class while monitoring those in the virtual world. To blend the virtual and physical classrooms, she displayed her laptop screen through the smartboard. Sophie, a math and science teacher, would have three devices always running: a laptop for class meetings, an iPad to receive submitted assignments, and her phone to message with students at home. She joked saying her students said it looked like she worked for the FBI, and she said being "always connected felt strange."

Eventually, the amount of screen time teachers and students were accumulating became overwhelming for some. Sophie's students "absolutely despised the amount of screen time they were getting." They

admitted to cutting back on their video game playing in favour of going outside because they were in front of screens for so long. Learning through a screen for 4 to 5 hours a day was “too much for them.” Sophie was troubled by the amount of screen time being consumed during the pandemic and feared not only for her students’ health, but also for her own children’s.

Sophie was not alone in her concerns as an educator. Teachers were reporting the effects of a heightened exposure to screens and other digital media in the classroom, indicating negative impacts on student learning (see Reish, 2021; Walker, 2021), inappropriate student behaviour (Sparks, 2022), and poor sleep and work habits (McGuire, 2023). A Canadian study (Plamondon et al., 2023) comparing the screen time duration of children between the ages of 7 to 12 reported daily screen time outside of school hours increased from 1.4 hours before the pandemic to 2.7 hours during the pandemic. Other studies in Canada showed an increase of over 3 hours a day for students during the pandemic (see Cardy et al., 2021; Rucchin, 2021). The American non-profit educational media organization Common Sense Media released a report in 2021 indicating screen use for youth between the ages of 8 to 18 spiked 17% between 2019 and 2021, exceeding the increase from the 4 years before the pandemic (Rideout et al., 2022). Screen use rose by more than an hour and 15 minutes for teenagers to 8 hours and 39 minutes per day; such increases do not include students’ screen time in class or for homework.

1b. The Chat Box

Over 20 years ago, Jaron Lanier (2001), one of the founders and global experts in virtual realities research, made the comment that “human interaction has both verbal and nonverbal elements, and videoconferencing seems precisely configured to confound the nonverbal ones” (p. 68). The experiences shared by these high school teachers would suggest that videoconferencing tools such as Teams still confound some non-verbal elements of communication, such as eye contact and body language (see McGuire, 2023). But many of today’s videoconferencing tools like Teams are now equipped with a chat box, which promotes the use of nonverbal communication (text, symbols, and images) and discourages verbal communication, as these teachers reported.

Despite teachers’ best efforts to engage students in conversation through audio and video, most students resorted to the chat box to contribute to class discussions. Aligning with the observations of his colleagues, Boz, a language arts teacher, contended: “A lot of the students didn’t like audio chime-ins,” and “their preferred method was typing in the chat box, which

limited the types of student interactions and responses." To the frustrations of teachers, Teams chat often occupied students' attention and engagement through text, images, emojis, memes, and GIFs while they were teaching. Because of this, many educators believed their teaching became "less personal," expressing how difficult it was to engage with students who would never turn their camera or microphone on. Terra was challenged to engage students in oral discourse and referred to her efforts as "pulling teeth." She felt Teams discouraged students from contributing orally and rather encouraged them to contribute through the digital communications tools of their smartphones (e.g., emojis, GIFs, stickers). After numerous times reminding students that they needed to turn their microphones on and speak out to get her attention while she was teaching, students still resorted to the chat box to ask questions or make comments. She noted that students expressed frustration, feeling like they were being ignored, but she also felt frustrated by not being able to be "in two places at once," only seeing students' questions and comments after the teachable moment had passed. She found it "interesting that students were intimidated by the Teams environment," refusing to turn their microphones on or raise their virtual hands, which she saw as equivalent to being in class and speaking out or raising one's hand.

There were also shared observations from these teachers that the Teams' chat box did give voice to students who would normally avoid class discussions. Taylor believed the chat feature gave these students an extra measure of comfort, and so she often encouraged students to share one meme in class. Taylor believed the Teams chat allowed her to make connections quicker by following up on previous conversations through check-in messages. Rain, a social studies teacher, felt that the Teams chat increased her communication with students, giving her an extra avenue by which to strengthen rapport. The chat box gave her "more time to be silly and fun" by sharing photos and memes with her students.

Teachers reported students using the chat box as a catch-all means for answering questions, reacting to statements, engaging in polls, and corresponding with teachers, peers, and guest speakers. Students even used the chat box for submitting work, despite teachers' having set up the Assignments tab. Perhaps this exclusive use of the chat box was due to Microsoft designing the Teams platform to position chat "at the center of whatever you do in Teams" (see Florida Gulf Coast University Information Technology Services, 2025, para. 1; Franklin Pierce University, 2021). This central positioning includes a multitude of functionalities, resembling a one-stop-shop for sending messages that

include “files, links, stickers, and GIFs — whatever you need to get your point across” (Microsoft, n.d.).

What is important to note about the chat box is that while it offered new ways to get one’s point across, it also changed the meaning of one’s point. McLuhan’s (1964/2003) notion that the content of any technology is not nearly as important as how it guides the things we do, how it makes us feel, how it changes the way we think, and what things we come to value through its use is important to consider in education. According to Meyrowitz (1999), different media have unique ranges of expression, attributes that make them physically, psychologically, and sociologically different from other media. Therefore, when conversation changes from oral communication to symbol use, new freedoms as well as impositions are placed on human beings, and as a result, new ways of thinking, feeling, behaving, and knowing are developed. What can be written in a chat box is different than what can be said through oral conversation, and therefore the meaning changes.

2. Classroom environment

Danielson (2007) describes the *classroom environment* as a key component of a teacher’s ability to effectively teach and promote learning, writing that “teachers create an environment of respect and rapport in their classrooms by the ways they interact with students and by the interaction they encourage and cultivate among students” (p. 64).

2a. Two environments in one

All teachers bemoaned having two environments in which to attend to the needs of two sets of learners — the physical classroom where students learned in co-presence and students’ homes where they learned in isolation. Each environment provided different tools and resources, and teachers and students were constantly challenged to adapt to the unique challenges, opportunities, and supports within each environment. Teachers reported that most households were often unable to support student learning (see Barron et al., 2021), and most students preferred learning at school than from home. Sophie and Rain both commented that students “hated learning from home” and found it difficult to get motivated. Teachers said students were challenged with more distractions at home than at school, as homes were busier and noisier environments. Student siblings were often seen and heard, dogs barked in the background, cats crawled across keyboards, and parents competed for devices, bandwidth, and quiet spaces.

Microsoft addresses the issues of busy and noisy environments through software tools that create pseudo environments: Backgrounds can be blurred or images can be placed behind users to avoid seeing what is happening around them, while noise suppression software can be used to eliminate disruptive noises that “keep meeting participants focused” (Microsoft Support, n.d., para. 1). While these tools help limit the distractions through the screen, they do not cancel or suppress the sights and sounds that surround users in their true environments.

Poor living conditions of students that were previously unseen to teachers and peers became visible. At one point in our conversation, Sophie commented that “COVID-19 has shone a light on the students we’re leaving in the dark,” and that “we’ve provided these kids with the technology to connect from home but that doesn’t mean we’ve improved their home environment, and some students don’t want to share that with us.” Teachers pointed out that, in the blended learning scenario, students who had support from home had a greater advantage than students who did not, but those advantages were not as prominent within the walls of the school, as students learned in the same classroom with the same supports.

In addition to the disruptions and disparities caused by students’ home environments, teachers were frustrated because they had to convey the same messages, activities, and lessons twice in the same period. Whatever they said in class had to be repeated for those online. Classroom discussion was also greatly affected in the blended learning environment. Rain regretted not having built-in time for a one-on-one or whole-group discussion due to the struggle of managing two classrooms at once. Rain shared:

This year, it was hard because I felt torn between the students who were in class and the ones who were at home. The students at home would be messaging me and asking questions while I was trying to have a one-on-one discussion with a student in class.

She apologized to students in the class when she had to cut their conversations off short to respond to the students in the digital world and admitted, “It never felt quite right to do that, but we did it because we had to.” She observed that the students in the classroom could see when she was conversing with students online, and they would respectfully wait for her attention, but the students at home with no eyes or ears privy to the ongoings of the physical classroom would call upon her with an immediate need, expecting an immediate response. Melody noticed students in her physical class would not listen when students in Teams chimed in with

comments and questions, and that this implicitly signalled instead a time for them to tune out.

2b. The spotlight

During Teams virtual calls, student faces were seldom seen, and their voices rarely heard. Teachers reported two reasons for this. The first was due to administrators from two high schools directing teachers to “keep student cameras off for fear of causing anxiety, seeing something inappropriate, or opening a window into the socio-economic differences of families” (McGuire, 2023, p. 109). The second reason was that many students did not want to turn their cameras and microphones on. Teachers called attention to a change in mindset between the co-present classroom and the Teams environment, stating even students who were regularly active in the physical classroom somehow lost their voice in a Teams call.

Why were most high school students who would normally speak out freely in the physical classroom less apt to share their voices and faces with others in the Teams virtual environment? Jason believed that “there is a spotlight shone on students when they speak in the Teams digital world,” and as a result, many experienced a type of “stage fright” by being put on the spot. Not just a metaphorical analogy, Teams creates a visual representation of a spotlight. When someone speaks in Teams, their encircled avatar lights up and glows, creating a striking spotlight that calls attention to them. Depending on the enabled settings of a Teams call, people who speak hold the largest real estate on the screen because their avatar or video becomes enlarged and showcased. The spotlight was an uncontrollable feature that put students on the spot and could make them feel uncomfortable. For example, if an unexpected noise came from the busy environment of a student’s home, the spotlight would also call visual attention to the noise, indicating to everyone who had caused the disruption. Students learned that if their microphones and cameras remained off, they would avoid the spotlight and receive less attention on the screen, keeping them housed in the bottom bar of the screen. Being there eventually relegated them within the ellipsis, only to be noticed if someone went looking for them. Given this environment, Jason’s analogy of a spotlight is a fitting one. Those who spoke in Teams stepped into a spotlight for all to see and those who stayed silent remained completely hidden.

Jason wondered why this feeling of a spotlight was absent from the physical classroom. Teachers noticed that when students were asked to turn on

their camera or microphone, they felt isolated because it felt as if everyone was looking at and listening to them only. Jason compared turning one's microphone or camera on during a Teams call to getting up out of one's seat in class, walking to the front of the room, and making an announcement to the group. And while some students feared speaking out in any environment, Jason remarked that other students who craved this way of contributing to an in-person class discussion avoided speaking in the Teams environment. Terra called particular attention to one student who previously contributed frequently to in-class discussions but somehow lost their voice in the Teams meeting. Sophie remembered some students feeling awkward or self-conscious because of the way the camera angle made them look on the call. The spotlight created in Teams seemed to cause students to anxiously focus on themselves during a call rather than feel like they were learning as a collective with their peers.

3. Planning and preparation

Danielson (2007) describes the domain of *planning and preparation* as "the critical, behind-the-scenes work of organizing for classroom instruction," which involves "teachers put[ting] considerable effort into transforming [the] curriculum so it is accessible to their students" (p. 43). In the following section, I examine how teachers used Teams to organize the content of their assigned curricula. Most notable were changes in teachers' organizational practices involving the transition from print to digital forms of representation.

3a. Organization of resources

When I asked teachers how their planning and preparation changed from the previous year, some teachers appreciated how Teams served as a hub for all course materials and its ability to make resources "readily available" for students. Melody went so far as calling this new form of digital resource allocation "the new norm." Teams improved Jason's practice of organizing resources for students. He used to keep a file folder at the back of the room where students could sift through and find paper resources, but Teams changed his practice, allowing him to house digital resources like projects, class notes, lesson plans, and assignments, all under one roof. Jason recalled a time when one of his students forgot their textbook, and another student simply took a picture of the required pages from the text and sent the picture through the Teams chat. "High school students still developing their organizational skills need not inconvenience the teacher for lost assignments or resources," one teacher added, "as required resources sit waiting for them in Teams."

Almost all the teachers I interviewed made explicit reference to never going back to paper resources again, as everything could be housed digitally via Teams. Taylor found preparing learning resources was easier through the Teams environment. Rather than photocopying documents and scaling them to fit the confines of a piece of paper, she could easily upload things online and let the software do the resizing. Taylor used to keep paper copies of her assessment and attendance records, but with Teams, she would only use digital records moving forward. Sophie said Teams made her planning easier because it synced to Word, allowing her to adjust lesson plans in real time rather than having to erase or rewrite content using pencil and paper. Having things organized and developed digitally also allowed her to easily share resources and plans with colleagues. Melody said her students appreciated that they could access Teams to see their grades. They often used the platform to determine what assignments had been completed and which were due without having to ask teachers or wait for report cards. In this way, Teams allowed for student assessment to be more accessible and transparent.

3b. Choice overload

Not all teachers and students appreciated the accessibility of Teams, and many reported having too many avenues to organize resources. Sophie admitted that "there were so many different ways teachers were putting things on Teams." Teachers uploaded materials to a channel, the Files tab, and the Assignments folder, and this lack of consistency made it confusing for students, as they did not know where to find things. During my own efforts to support teachers, I found it difficult to explain that resources uploaded in the chat box of a specific Teams channel would also appear in its Files tab, but materials uploaded to a channel's Files tab would not appear in the chat box of that channel. There were also varying levels to which teachers created and used channels in Teams. Some teachers created a channel for everything, which made the number of channels overwhelming and difficult to determine if topics needed a channel or not. Other teachers did not create enough channels, and the few they did use became saturated by information without themes. While the Teams search field made it easy to locate files (if one knew what they were named), it did not offer a means to understand where files belonged. Some teachers reported feeling more disorganized in this system because resources could be anywhere and everywhere without rhyme or reason.

The multiple locations of learning resources were not the only source of frustration. Teachers found it difficult to receive assignments from students in multiple ways (handing in a paper copy, uploading through the

Teams Assignments tab, posting in the chat box, or placing a picture of their work in a Teams channel), and they remarked that this new submission process cost them considerably more time and effort than their traditional submission practices. Teachers then had to locate the assignment, grade it, record it in Teams, and transfer grades and comments into PowerSchool, the official NB provincial grading system that gives parents access to grades, attendance records, scheduling, and other resources (CBC News, 2014). Rather than the traditional methods of handing out assignments and having students return physical paper copies of their work, students now had several convenient ways to submit work through multiple avenues, but which made life more inconvenient for some teachers. Rather than teachers having the autonomy of reorganizing their teaching practices to meet the challenges of the pandemic, it was Microsoft's software tools that dictated a reorientating of teaching and learning.

3c. The desire for print

Some teachers were surprised at their students' disdain for converting print to digital forms of representation. At one point in the year, Sophie's students echoed others in the media (see Kelly, 2020) that they had "had enough" of digital resources and "were done looking at the screen" and wanted "paper copies" instead. They did not want to go through the process of logging on to Teams and searching for resources. Sophie's students argued that print was an easier medium to access and submit. As the year progressed, every single one of Sophie's students kept a hard copy of everything in their binders. They acknowledged the convenience of the compact, light, and resourceful smartphone, but reported having difficulties focusing on and absorbing information from its screen. Sophie validated their concerns, as she noticed her own eyes jumping around the screen, unable to focus like they could while reading print. Hazel, a technology teacher, related to students' need to write notes on paper, as she found that she learns best by writing things down, representing information on her own terms, in her own hand. Rain believed students liked receiving written responses from her and reminisced to her time as a master's student, and the gratification she felt at receiving written feedback from her professors. She felt students were now longing for the same personal connection and tactile experience.

4. Professional responsibilities

The transformative effects of the digital tools used during the first year of the pandemic also impacted teachers' *professional responsibilities*, the component Danielson (2007) refers to as the roles and duties of teachers

outside the classroom. While no official direction came from the Department of Education and Early Childhood Development or the New Brunswick Teacher's Federation, the teachers I interviewed reported a significant changing of teacher roles and responsibilities during the 2020–2021 school year. “There was so much more required of teachers this year — new roles, responsibilities, and practices that extended beyond the traditional boundaries of the classroom and the profession,” Sophie affirmed.

4a. Always on, always there

All teachers made explicit reference to the blurring of personal and professional boundaries through the exacerbated use of networked devices outside of regular school hours. Whereas the correspondences between teachers and students were previously reserved for the classroom, students now began messaging teachers at all hours, and many felt obliged to respond regardless of time or location. Sophie affirmed that teachers are frequently told “you are a teacher 24 hours a day, seven days a week, always in the public eye, so act professional and responsible,” a mantra she is fine with, but “teachers should not have to stay connected 24/7, which became a stark reality this year.” “Always being connected was an issue,” she said, because many teachers communicated with students from dawn till dusk. Being *always on* made many teachers feel *off*.

4b. New roles and responsibilities

Not only did the traditional boundaries of time and space become broadened by Teams, but teachers were faced with additional duties they felt unqualified to perform, new needs from students they were unable to meet, and an overall loss of professional autonomy. Melody said teachers were asked to be a “jack of all trades this year ... more so than ever.” Teachers felt they were now expected to be technology teachers, teaching students how to use and troubleshoot hardware and software even though they were still learning how to use the tools themselves.

Teachers reported that while technology was supposed to improve their practice and help them grow professionally, technical requirements and incompatibility issues between devices and software often caused more work for them. Hazel struggled with BYOD because she had to troubleshoot all the nuances of each unique device students brought to class. She is “not a Mac user,” so troubleshooting Apple computers became a nightmare. Even the same software program looked and operated differently across devices. “It was very challenging getting programs downloaded onto the various computers,” she added, and “it would have

been easier to use the computers in the computer lab because we all would have been using the same devices.”

Hazel was not alone in her frustrations. The other side of teacher frustration can be discerned from the perspective of my technology team, which struggled to provide pedagogical support to teachers because most of their time was spent troubleshooting the wide variety of devices, operating systems, and apps being used. Most notably, the majority of students used smartphones to learn, while teachers used their assigned laptops, and each medium had its own set of unique functions and rules. Microsoft added to these discrepancies by creating browser, desktop, and mobile versions of Teams with unique affordances and limitations for each. There were technical idiosyncrasies across platforms (e.g., Teams would only function using certain web browsers and not others), so as a starting point to troubleshooting issues, we created a flow chart for each platform. There were only nine of us to support over 1,500 teachers, so teachers often had to stall, shift, or forgo lessons until help arrived. Further, students used Teams in the way smartphones are designed to be used, communicating mainly through text, images, emojis, GIFs, and memes on small screens from anywhere at any time. Meanwhile, all the professional learning teachers received around video conferencing was based on using Teams through a laptop, looking at larger screens with web cameras on, ready to engage with students through the camera and microphone. Each medium created a different environment with its own set of rules, structures, and biases, and the biases of each medium often caused communication discrepancies between teachers and students.

Sophie and her students also experienced many technical issues (e.g., files would not upload, documents appeared but would not open, pages would not load properly). Many older student devices proved to be incompatible with the Teams platform. “I’m here to teach music, not solve students’ computer problems,” Melody retorted, expostulating that:

We can’t be everything all at once. There will come a time when we need to ask: do you want me to teach kids or fix computers? We are going to need IT support for students in the building if this is the direction we’re headed.

Along with IT specialists, teachers spoke of taking on many non-teaching roles. During our interview, Melody closed her eyes and said, “I am beyond exhausted. I have been a mentor, nurse, councillor, social worker, IT specialist, teacher, and everything else. I’m not immune to the pandemic, I’ve had to be things for my own family, too.” Indeed, teachers reported receiving requests for support that were outside of the scope of their

teacher training. Teachers had to respond to concerning issues of student mental and physical health, noting that the Teams chat feature facilitated a way for students to reach out. Terra called attention to the vulnerable positions teachers found themselves in — the responsibility to care for their students' social-emotional needs without the formal training to do so. Melody recalled a time when she could not get the attention of one student in class who left their microphone on, and “a lot of violent screaming was going on in the background.” She did not know whether to mute the student's microphone or listen in hopes that she might somehow support them. She eventually brought the disturbance to the attention of her guidance and administrative team.

4c. Loss of teacher autonomy

Teachers felt a loss of autonomy with the digital tools available to them, not because they were not open to learning about potential ways to enhance their practice, but because they felt limited by the technical designs and features, and they were seldom consulted on which tools might best support their pedagogy. Jason felt power and control were taken from him and given instead to Microsoft, telecommunications companies, and the government because they now determined *how* students would be educated. Jason's concerns were not unfounded. Teachers reported finding out about significant changes to the education system (e.g., returning to in-person instruction) through their students and social media before they were advised themselves. As a technology coordinator, I received daily requests from teachers to access digital tools like Google Classroom and Seesaw, but those requests were denied because NB is a Microsoft province, and these tools were incompatible with Teams and unsanctioned by the province. Decisions as to which pedagogical features in Teams would be available to teachers were made at the department and district levels. Teachers thus often had to adapt belatedly to changes in the tools that directly affected teaching and learning. When the Teams chat feature was turned on, allowing students to send private messages to each other, I received requests from principals to turn the new feature off, at least until teachers and students could be educated on how to use them responsibly. But the changes had already been made and teachers needed to shift their practices immediately. In some instances, these changes caused significant problems. In my field notes, I recorded an instance where a group of students from another city messaged a student from my school district with threats and abusive messages, only to find out later that they had misidentified her for someone at their school with the same name. Other than reporting the incident to the authorities, there was little

the principal or I could do, and we never found out what came of the matter.

While unsanctioned tools were not permitted in classrooms, teachers felt vulnerable because Teams allowed unsanctioned and unknown guests to join a call. Terra reluctantly shared that one student's partner drew a penis and uploaded it to the chat during one class, and Sophie was mortified retelling the story of the entire class seeing one student's father getting out of the shower. Hazel's colleagues were worried that students might record them teaching sensitive subject matter (e.g., sex education), take it out of context, and share it across social media.

Rain acknowledged the shift in teacher responsibilities that took place over the school year, noting that "for the first time, teachers were responsible to support students' physical and mental well-being. Everything has been put under a microscope [and] COVID-19 has forced us to self-reflect on our roles as educators." "There is a shared experience this year," Rain added, expressing the hope that this changing of responsibilities would be examined and addressed, not only by teachers, but also by policy makers, instructional designers, and curriculum developers.

CONCLUSION

Significant investments in infrastructure upgrades and educational technologies bring with them significant changes to the way teachers teach and students learn. The accounts shared by the teachers I interviewed suggested that new technologies do redefine the nature of engagement, alter perceptions of self and others, change the means and meaning of communication, expand the roles and responsibilities of educators, and create new classroom environments that foster new approaches to teaching and learning. Indeed, a new digital mindset is being conditioned. But as new educational technologies make older ones obsolete, they also risk obsolescing the thoughts, emotions, values, and behaviours we learn through them even as new ones are learned. And while these new practices might open new possibilities, the impacts on education and society are yet to be realized. These new learning environments have created a petri dish in which to study a potentially changing culture in education. Questions remain. To what extent has the classroom environment and the landscape of education been fundamentally changed with the intensified adoption of digital technologies? What impacts will this shift have on teaching and learning? To better understand the complex and unforeseen challenges and opportunities brought by this break boundary in NB education,

educational reformers should listen to the voices and experiences of school administrators, teachers, and students who navigate this new educational terrain and try to make sense of these changes.

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