Supports and Obstacles to School Reform in the 21st Century: Strategies for Educational Change

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Abstract/Resumé

This manuscript-style thesis compiles four papers centred around observing and analyzing reform initiatives in eastern Canada. Three of these papers focus on NEXTschool, an attempt to facilitate systemic change in English-language secondary schools in Québec. NEXTschool aims to increase student engagement and adapt educational structures to align with 21st century learning aims. The fourth paper looks at a similar attempt at reform that proved unsuccessful, considering why change was not achieved in this case. All four papers look at reforms that are being facilitated with design thinking, an approach that aims to disperse control for the change amongst teachers, administrators, and other educational partners in their local contexts. This approach intends to build momentum, support, and ensure that reform attempts are suitably adapted for different school contexts. These four papers explore the nuances of educational change and the supports or barriers that are important to consider when facilitating school reforms. This thesis is particularly focused around reforms that—like NEXTschool—aim towards interdisciplinarity, reimagining the disciplinary divisions of classes. There is also a focus on the way digital technologies are discussed and used in schools and how this may be changing as schools adapt to 21st century demands.

The four papers that compose this manuscript (i) define and clarify the concepts of educational reform and interdisciplinarity, (ii) unpack and analyze the authors' experiences participating in the design year of NEXTschool (2017-2018), (iii) consider how digital technologies were discussed by educators participating in the NEXTschool Summer Institute (Summer 2018), and (iv) look at the barriers faced at a school exploring a similar design process as part of a different reform initiative. Major themes or concepts that come up across all four

papers include educational change or reform, autonomy, power dynamics, design thinking, and 21st century learning goals.

Cette thèse de style manuscrit rassemble quatre articles centrés sur l'observation et l'analyse des initiatives de réforme dans l'est du Canada. Trois de ces articles traitent de NEXTschool, une tentative visant à faciliter un changement systémique dans les écoles secondaires anglophones du Québec. NEXTschool vise à accroître l'engagement des élèves et à adapter les structures éducatives aux objectifs d'apprentissage du 21e siècle. Le quatrième document examine une tentative de réforme similaire qui s'est avérée infructueuse, en considérant pourquoi le changement n'a pas été réalisé dans ce cas. Les quatre documents traitent des réformes facilitées par la conception, une approche visant à disperser le contrôle du changement parmi les enseignants, les administrateurs et les autres partenaires de l'éducation dans leurs contextes locaux. Cette approche vise à créer une dynamique, à soutenir et à garantir que les tentatives de réforme soient adaptées aux différents contextes scolaires. Ces quatre articles explorent les nuances du changement éducatif et les appuis ou obstacles qu'il est important de prendre en compte lors de la facilitation des réformes scolaires. Cette thèse est particulièrement axée sur les réformes qui - comme NEXTschool - visent l'interdisciplinarité, réinventant les divisions disciplinaires des classes. L'accent est également mis sur la manière dont les technologies numériques sont discutées et utilisées dans les écoles et sur leur évolution possible à mesure que les écoles s'adaptent aux demandes du 21e siècle.

Les quatre articles qui composent ce manuscrit (i) définissent et clarifient les concepts de réforme de l'éducation et d'interdisciplinarité, (ii) décrivent et analysent les expériences des auteurs participant à l'année de conception de NEXTschool (2017-2018), (iii) examinent

comment les éducateurs participant au NEXTschool Summer Institute (été 2018) ont examiné les technologies et (iv) ont examiné les obstacles rencontrés dans une école explorant un processus de conception similaire dans le cadre d'une initiative de réforme différente. Les principaux thèmes et concepts abordés dans les quatre journaux incluent le changement ou la réforme de l'éducation, l'autonomie, la dynamique du pouvoir, *design thinking*, et les objectifs d'apprentissage du 21e siècle.

Research Ethics Certificates

This research was completed under two certificates of ethical acceptability of research involving humans from the research ethics board (II). I am the principal investigator on one of these certificates (#502-0518), titled "Transcending Disciplinary Approaches to Education: Supporting Systemic Change and Grassroots Deviation." The approval period for this certificate is August 2, 2018 to August 1, 2019. My supervisor, Dr. Lisa Starr, is the principal investigator on the second certificate (#457-0418) titled "NEXTSchool: Innovative learning for Québec Secondary Schools." The approval period for this certificate is July 24, 2018 to July 23, 2019. According to both certificates, "[t]he REB-II reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans."

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This thesis was a collaborative effort in many ways. I would like to recognize that I am able to be a student at McGill and living in Canada because of the history of indigenous displacement and genocide. The colonial projects of Canada and McGill University exist at the expense of many communities, including the Haudenosaunee and Anishinabeg nations who are the traditional stewards of the territory in which I learn and live. I have tried to include indigenous epistemologies in my research and writings but I am not doing enough. I include this acknowledgement as a commitment to figure out how to do more.

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Introduction

For my thesis study, I have compiled four manuscripts that investigate innovative reform efforts in Canadian secondary schools. All the reform efforts analyzed aim to support educators and educational organizations engaged in change. Three of these focus on an initiative in Québec called NEXTschool and the fourth looks at a similar reform project that I am dubbing 'New Design' in order to protect the identity of those involved. All four pieces share concerns around educational change, analyzing contextual features that can be framed as barriers and/or supports for school reform.

(i) The first paper, "Educational Change and Rethinking Disciplinarity: A Concept Analysis," specifically analyzes the concept of educational change as it relates to reforms that rethink the conventional disciplinary divisions of high school programs. NEXTschool, as one such reform, is explored as the model case in this concept analysis. This paper uncovers patterns and details of educational or organizational change efforts, especially those that rethink disciplinarity. It frames these findings in ways that can support educators involved in similar efforts. Although not a literature review, this concept analysis includes an extensive survey of literature on educational or organizational change and on interdisciplinarity. The understanding of literature gained in this paper formed a foundation for the literature engaged in the other papers that compile my manuscript-style thesis. This concept analysis was co-authored by Lisa Starr who introduced the idea of framing the paper as a concept analysis. Her contributions include the way the paper was framed, the section in the introduction that clarifies what a concept analysis is, and extensive additions to and revisions of the rest of

the paper. This paper has been submitted for publication in the *McGill Journal of Education*.

(ii) The second paper, "Realizing Educational Change Through Shared Autonomy: Design Thinking and the NEXTschool Design Phase," analyzes design thinking as introduced during the early stages of the NEXTschool rollout. Design thinking is a model for organizational change that attempts to engage multiple stakeholders in various positions within an organization (Liedtka, Azer, & Salzman, 2017). This approach aims to disperse authority and design changes that reflect the perspectives and energies of those involved and impacted (Liedtka et al., 2017). This paper looks into NEXTschool—specifically NEXTschool's design phase that developed into its current explore phase—as a way to unpack some supports or obstacles to educational change that may arise through a design thinking approach. This discussion highlights strategies that can overcome obstacles to systems changes and support sustainable and context-appropriate educational reform. This paper was co-authored by Amy Caesar who was responsible for the initial draft of the section that defined design thinking. She also helped revise the rest of the paper. This paper will be submitted for publication in the *Journal of Design Thinking.*

(iii) The third paper, "The Supports of Digital Technology as Barriers to Student Autonomy: Towards a Critical Digital Literacy," specifically considers how digital technologies relate to student engagement and learning. It uncovers how digital tools may be involved in school reform and innovative educational models. Also focusing on NEXTschool, this paper is built around an exploration of

educators' attitudes around and experiences of digital technologies in relation to their teaching, as discussed at a summer institute that kicked off NEXTschool's explore phase. The perspectives shared at the summer institute are analyzed in order to build strategies for ensuring that digital technologies function as a support, not an obstacle, to student engagement and learning. This paper has been accepted for presentation at the annual meeting of the Society for Social Studies of Science in New Orleans, LA in September, 2019.

(iv) The fourth paper, "Authentically Sharing Control: Strategies for and Barriers to Facilitating Educational Reform," looks closely at one school that was involved in a reform project that I am calling 'New Design.' This school withdrew their commitment from the project after participating in some preliminary meetings and an initial facilitated design workshop. Their withdrawal uncovers how the power dynamics within a school or reform can support or challenge educational change efforts. This final paper contributes to an understanding of how the way reform is communicated and facilitated contributes to its potential success. This focus on power and facilitation can support other schools engaging in innovative reform projects.

Taken together, these four pieces can guide future schools, educators, and educational partners in attempts to unroll educational reforms that change their organizations in sustainable and context-specific ways; that rethink disciplinary divisions; that involve and benefit educators, students, and other stakeholders; that critically and responsibly involve digital technologies; and that navigate an organization's power dynamics to ensure effective facilitation of a reform. Although these four papers aim to support people involved in future or ongoing educational

reform projects, every school's context is unique and one must work diligently to ensure that lessons learnt from one reform model are carefully translated or adapted for new contexts. Working with this awareness though, I hope that educators and their partners can learn from the obstacles, supports, and strategies explored in these four papers as they pursue educational change in their own contexts.

Educational Change and Rethinking Disciplinarity: A Concept Analysis

Introduction

The purpose of this article is to understand and give meaning to the concept of *interdisciplinarity* within educational change and reform. The question guiding our analysis is, how are approaches to learning that combine, cross, or transcend disciplinary divisions related to theories of change in the context of secondary level education? Drawing from nursing research, four sub-questions have guided our analysis: (1) how is interdisciplinarity situated and/or defined within educational change?; (2) what predictions or explanations of interdisciplinarity "make possible what would be impossible otherwise" (p. 689)?; (3) in what causal generalizations or descriptions of patterns does interdisciplinarity appear?; and (4) if understanding educational change has immediate practical application, as it does in our research, how does the use of interdisciplinarity make a difference in that research (Risjord, 2009)?

Our motivation in undertaking a concept analysis, as opposed to a traditional literature review, is to ground a theoretical understanding of the concept of interdisciplinarity and its relationship with educational reform as we embark on a SSHRC funded research study, NEXTschool: Innovative Systems Change for Québec High Schools (LEARN, 2017). Whereas a literature review is a broad account of what has been published on a particular area, a concept analysis drills down to focus on how a specific concept is used both in literature and, more importantly, practice. In the case of the NEXTschool project, interdisciplinarity is a key concept. We have situated interdisciplinarity within educational reform because the NEXTschools project is ultimately an educational reform initiative where the connection between interdisciplinarity and educational reform is central. An interdisciplinary approach intends to educate students in flexible and adaptable competencies central to a world changing so profoundly (Fadel, Bialik, &

Trilling, 2015; Senge, 2012). The NEXTschool project has been designed to support the Québec Education Programme's (QEP) priorities including cross-curricular fusions and connections.. Beginning with five English-language high schools and one adult education centre, the NEXTschool project aims to discover what secondary school will look like when it "is the best it can be at engaging students and preparing them for the world ahead" (NEXTschool, 2018), and to implement the resulting vision.

The Purpose of Concept Analysis

The examination represented in this article draws from *concept analysis,* used widely in nursing research but less commonly in educational research. According to Botes (2002), concepts are the "building blocks of scientific or theoretical frameworks for any discipline" (p. 24). As our research progresses, having a solid conceptual understanding of interdisciplinarity is pivotal to the quality of the research process given the centrality of interdisciplinarity to our project. Several approaches to concept analysis have been taken up (Wade, 1998; Walker & Avant, 1995; Brilowski & Wendler, 2005) with the focus on representing concepts as "mental abstractions or units of meaning derived to represent some aspect or element of the human experience" (Hupcey & Penrod, 2005, p. 198). Turning again to literature from nursing, "nurses have also found that where theory does not yet exist, it is useful to start with the knowledge embedded in nursing practice" (Risjord, 2009, p. 690). Knowing this, we have looked to knowledge of interdisciplinarity embedded in understandings of educational change, specifically in four educational reform movements: systems change, ecological change/transformation, movement building/activism, and 21st century learning.

While the concept analysis used by Wade (1998) and Walker and Avant (1995) provided a clear structure for analysis and examination, it is ideal for a singular concept. We have

therefore employed an approach more in line with Hupcey and Penrod's (2005) discussion of concept analysis. We have engaged in a thoughtful, comprehensive analysis of what is known about interdisciplinarity by examining existing evidence found in the literature about educational change (Hupcey & Penrod, 2005). While the focus of concept analysis is often on what is known, Penrod (2007) advanced the importance of understanding gaps that provide "greater clarity and utility for research and practice" (Penrod, 2007, p. 659). By doing this, we will have created an evidence based understanding of how interdisciplinarity features within educational change so that we can apply that understanding to redesigning disciplinary frameworks for the NEXTschool project.

Context

Education that crosses curricular boundaries or connects various disciplinary perspectives motivates students towards relevant and transferrable content that cultivates creative, open-minded, and joyful learners (Barnes, 2012; Hargreaves, Earl, Moore, & Manning, 2001; Rennie, Venville, & Wallace, 2013). These types of connections, combinations, or holistic approaches to various school subjects have been practiced and promoted historically by theorists like Plato, Rousseau, and Dewey (Barnes, 2012), as well as within diverse indigenous communities (Battiste, 2002; Toulouse, 2015). Many leading contemporary curricular designs, like the Finnish education system (Vitikka, Krokfors, & Hurmerinta, 2012) and the International Baccalaureate program (Daly, Brown, & McGowan, 2012), further emphasize the value of integrating or relating disciplines in education.

In Québec, cross-curricular competencies are built across the elementary and high school grade levels, as well as across the subjects or disciplines of the curriculum. Québec high schools have remained primarily structured around a disciplinary framework (Gouvernement du Québec,

2004). Many high school teachers in the province have struggled to meaningfully engage in cross-curricular approaches beyond a superficial level (Hasni, Lenoir, & Froelich, 2015). Although the value of interdisciplinary approaches has been reiterated prolifically, more clarity is needed on how to support and enact educational reform that will entice and allow educators to embrace the value of interdisciplinarity.

Québec's curriculum, the QEP (Gouvernement du Québec, 2004), highlights the idea of rethinking disciplinarity and stresses the importance of cross-curricular competencies. With a curriculum that "identifies interdisciplinarity as one of its main orientations" (Hasni et al., 2015, p. 146), it became particularly vital and feasible to connect or combine disciplinary approaches in classrooms in Québec. However, the reform that accompanied the QEP did not effectively support or compel many educators to adjust their teaching. This has resulted in the privileging of disciplinary divisions over interdisciplinary approaches (Hasni et al., 2015).

In order to support reform efforts, like the NEXTschool project, that move high schools towards cross-curricular approaches to learning, it is helpful to clarify what it looks like for educators to work towards interdisciplinarity. In clarifying this concept in the context of Québec's educational reforms, one must consider possible reasons behind the struggle of the QEP to be innovated or "replicated reliably on a meaningful scale at practical costs" (Senge, 2006, p. 5). This clarification must include consideration of possible supports or obstacles that may help or hinder similar reform efforts.

Review of Literature

Terms for rethinking disciplinarity. When discussing teaching across disciplines in high schools, theorists use diverse terms to describe the nature of educators' varied approaches to embracing multiple disciplines within schools. The two most popular terms used to describe

teaching across disciplines are "interdisciplinary" (Applebee, Adler, & Flihan, 2007, p. 1002; Breunig et al., 2015, p. 267; Hendry et al., 2017, p. 4; Mathison & Freeman, 1998, p. 1; Venville, Wallace, Rennie, & Malone, 2002, p. 46) and "integrated" (Applebee et al., 2007, p. 1003; Breunig et al., 2015, p. 268; Hendry et al., 2017, p. 2; Lyster & Ballinger, 2011, p. 280; Mathison & Freeman, 1998, p. 1; Venville et al., 2002, p. 45). Distinguishing related terms, some *explicitly* relate to rethinking discipline-based structures: "multidisciplinary" (Hendry et al., 2017, p. 2), "cross-disciplinary" (Lyster & Ballinger, 2011, p. 285), "meta-disciplinary" (Applebee et al., 2007, p. 1005), "transdisciplinary" (Venville et al., 2002, p. 48), "'package' of courses" (Breunig et al., 2015, p. 267), or "integrative" (Mathison & Freeman, 1998, p. 7). Other terms *implicitly* describe ways to transcend disciplinary foundations: "holistic" (Venville et al., 2002, p. 47), "whole child" (Mathison & Freeman, 1998, p. 4), "student-centered" (Applebee et al., 2007, p. 1002), "inquiry-based" (Lyster & Ballinger, 2011, p. 284), "experiential" (Breunig et al., 2015, p. 268), or "project- and problem-based" (Hendry et al., 2017, p. 2).

Depending on which term is being used by which theorist, the way that disciplinarity is rethought can unfold very differently. Some of the terms—interdisciplinary, multidisciplinary, and cross-disciplinary, for example—describe practices and approaches that involve educators consciously working within disciplinary divisions in order to overcome them, or at least complicate them. More terms though—transdisciplinary, holistic, student-centered, inquiry-based, project- and problem-based, and others—are used to characterize approaches that are initiated or organized around an idea, experience, or student and that relate back to various disciplines.

Looking beyond the secondary school context, scholars studying educational and research approaches that rethink disciplinarity, especially at the post-secondary level, mostly

discuss their approach as interdisciplinary (Augsburg, 2005; Bailis, 2002; Henry, 2009; Klein, 2008; McMurty, 2011; Newell, 2001; Repko, 2008; Robinson & Beaver, 2009; Vickers, 1998). These researchers agree on a generous understanding of interdisciplinarity as an umbrella concept to discuss approaches that rethink conventional disciplinary divisions. McMurty (2011) explained that interdisciplinarity does not just refer to multidisciplinary combinations of disciplines but also transdisciplinary integrations of different subject areas. He claimed that this is the "widely accepted definition of interdisciplinarity" (p. 20). The NEXTschool educational reform initiative reflects McMurty's framing of interdisciplinarity and aims to combine disciplines or transcend disciplinary divisions (LEARN, 2017). In their research and development report, NEXTschool problematizes the overly compartmentalized structure of a high school student's timetable and uses the term "interdisciplinary" (LEARN, 2017, pp. 3, 8, 21) to describe their proposed alternative.

Four theories of change. In order to articulate various perspectives on educational reform and rethinking disciplinarity, four categories of change theories have been engaged: systems change, ecological change/transformation, movement building/activism, and 21st century learning. These are strategic categories that relate to rethinking educational structures; they are overlapping and are not an exhaustive list of categories related to theories of change. Before articulating the connection these four change theories have to educational reform, it is important to ascribe meaning to how this concept analysis is approaching and framing these categories of change.

Systems change. Systems change is a movement associated with complex systems and ways of thinking that try to work within this complexity without resolving it. Systems thinkers

value approaches that engage actors at various levels and advocate for reflection, transparency, balance, and collaboration (Fullan, 2011; Hargreaves, 2005; Senge, 2006; Stroh, 2015). The NEXTschool project explicitly names "systems thinking" (LEARN, 2017, p. 22) as their approach to navigating a "complex theory of change" (p. 22). They value systems thinking for the way it considers various relationships within a school, how the school relates to the community beyond the classroom, and particularly for its focus on "the interdependence of systems" (p. 22), such as those operating in educational organizations undergoing change.

Complexity is often seen as the basis for needing approaches to education and research that combine or transcend disciplinary divisions (McMurty, 2011; Newell, 1986; Nikitina, 2002; Phelps & David, 2005; Repko, 2008). If a problem or question is too complex to be solved with or within a single disciplinary focus, educational structures must develop beyond disciplines. As Phelps and David (2005) explain, acknowledging and working with complexity functions as an "interdiscourse" (p. 3) that can bridge various disciplinary perspectives "while never reducing or conflating them" (McMurty, 2011, p 21).

Ecological change. Ecological change or transformation is often associated with similar concerns to systems thinking, but framed within the complexity of environmental or ecological systems. Ecological change or transformation is also a theory associated with reflection and various scales of action, but ecological change is more sensitive to context, to non-human elements in systems, and to unknown or unknowable scales at which systems can be framed (Lotz-Sisitka, Wals, Kronlid, & McGarry, 2015; Ogbu & Simons, 2008; Bronfenbrenner, 1976). NEXTschool intends to reorganize the various phenomena that come together to compose a school by facilitating design labs with educators at each participating school. These educators are split into teams to understand and develop their local school context in relation to five aspects of

their school. These teams work on reiterating prototypes that negotiate and navigate the complex and diverse phenomena that come together to compose their school (LEARN, 2017).

Discussions about educational change that work towards rethinking disciplinary divisions are ecological discussions in their awareness of both the intricate educational structures within a school and the complex concepts that form a curriculum. There is a popular perspective of interdisciplinarity that frames the need for interdisciplinary approaches to learning as based on the irreducibly different phenomena that come together in any field of study (Barak, 1998; Bell et al., 2002; Henry, 2009; Newell, 2001; Robinson and Beaver, 2008). This perspective has been explained by Newell (2001) with the example of acid rain as "produced by human economic activity driven by a global economic and financial system, sanctioned by a political system, and embedded in a culture and history" (p. 16). Newell suggested that all of these different arenas or disciplines must be engaged if one is to improve their understanding of a complex phenomenon like acid rain. McMurty (2011) described this ecological approach to rethinking disciplinarity as attending to "the complexity of the phenomenon one is studying and its interrelationships with other phenomena" (p. 22).

Movement building and activism. Movement building and activism highlights the importance of local contexts or structures, the value of including voices that are often ignored, the role of collaboration, and the difficult reality that there are no shortcuts to complex reform (Olsen, 2009; Tuck & Yang, 2013; Choudry, 2015; Dhillon, 2017). NEXTschool's rollout through a series of design thinking labs (LEARN, 2017) has aimed to provide local educators with a high degree of control over what the NEXTschool reform will look like for their school's context. Movement building and activism rely on collaborations between diverse individuals, pointing to another need for a focus on embracing approaches to change that combine or

transcend disciplinary divisions. One popular perspective on the need for interdisciplinary approaches relates to the socio-cultural dynamics of researchers, learners, and educators (Abbott, 1988; Beattie, 1995; Hall, 2005; Klein, 1996). Instead of looking to phenomena beyond or bigger than ourselves (as discussed in the section on ecological change), a socio-cultural approach to the need for rethinking disciplinarity understands the world as "a neutral assortment of phenomena that are ordered through human thought and action" (Klein, 1986, p. 12). This subjective thought and action is complicated to negotiate considering "issues such as class, gender, history, [and] economic interests" (McMurty, 2011, p. 25). McMurty pointed out that those involved "must acknowledge that their knowledge is a construction necessarily shaped by their embodied, biological, social, cultural and political history" (p. 22). The perspective of interdisciplinarity related to movement building and activism assures that communities can come together with socio-cultural concerns addressed and interindividual subjectivities honoured.

21st century learning. 21st century aims of education, especially adaptability, are explicit objectives of the NEXTschool educational reform initiative (LEARN, 2017). NEXTschool has been working from the assumption that "[t]he current organization of the high school is out of step with the expectations of student learning, growth, and survival in the 21st Century" (p. 28). It proposes various holistic 21st century learning aims or objectives (Fadel, 2015, Project Tomorrow, 2011)—including interdisciplinarity—as the keys to making schools more relevant and in sync with students in the 21st century (LEARN, 2017).

Some of the most influential scholars see interdisciplinarity as a central and essential knowledge in educational change for 21st century learning (Klein & Newell, 1996). They base this assertion on "new developments in research and scholarship, the continuing evolution of new hybrid fields, the expanding influence of particular interdisciplinary methods and concepts,

and the pressing need for integrated approaches to social, economic, and technological problems" (p. 5). Beyond disciplinary subject matter, this relates to calls for an increased educational focus on communication, problem solving, and synthesis (Wagner, 2008).

Aspects of Change Theories that Impede Rethinking Disciplinarity

Based on the review of interdisciplinarity within literature on educational change, we have advanced two specific arguments.

Argument 1: *Educational change efforts that rethink disciplinarity cannot unfold when they are prescribed; they cannot be motivating, equitable, or meaningful unless they are shared. Educational leaders though have particular and diverse values they hope to affect change towards. Differences may therefore be resolved without dissolving them, engaged together without leading to a singular or imbalanced solution.*

When approaching change efforts that are meant to apply broadly across democratic educational systems, various individuals and groups are involved in determining whether the change is warranted and how it will be enacted. Establishing a shared vision of change for public and mandatory education systems across a broad group of people is complex but can be conceptually mapped within the interconnectedness of systems thinking (Fullan, 2011; Hargreaves, 2005; Stroh, 2015; Senge, 2006); the scales and contextual awareness of an ecological approach (Bronfenbrenner, 1976; Lotz-Sisitka et al., 2015; Morton, 2011; Ogbu & Simons, 2008); the demanding and sustained work of movement building (Olsen, 2009; Tuck & Yang, 2013); or the holistic collaboration of 21st century learning (Robinson & Aronica, 2016) and Indigenous models that share many of the same characteristics as 21st century approaches (Battiste, 2002; Howell, 2017; Munroe et al., 2013; Wilson, 2007).

In order to guard educational changes from becoming manipulative, superficial, or misrepresentative of the collective, there are many cautions to consider. This section lays out aspects of educational reform that impede rethinking disciplinarity, grouping them within the aforementioned four categories. Considering these cautions while aiming for effective and ethical educational change is not to suggest that change efforts are futile, nor is it meant as a shortcut to any individual's ideals for the future of schools; rather, this section aims to guide the slow, ongoing, collective process of and relationships between the various partners involved in educational reform.

Systems thinking. Systems thinking provides an overview to begin exploring aspects of educational change efforts that complicate rethinking disciplinarity. Systems approaches often demand critical awareness of the complexity of the interconnections between the many moving partners in educational systems (Fullan, 2011; Hoban, 2002; Senge, 2012, Stroh, 2015). Systems thinking highlights the issues with "repetitive change syndromes" (Hargreaves, 2005, p. 975) or superficial reform efforts that are not accompanied by reflection (Fullan, 2011; Hargreaves et al., 2001). Systems approaches also demonstrate the potential for manipulative or prescriptive educational reform efforts that are surreptitiously prescribed and subtly imposed by a particular leader or group (Allan & Evans, 2006; Baldwin, 2006; Simpson, 2017). Stroh (2015) goes as far as to suggest that when people are resistant to change within complex systems, one option is to "work around them" (p. 82). For rushing change within complex systems, working around resistant educational partners may be efficient, but it does not reflect authentic collaboration. Similarly, systems thinking opens up various moments of autonomy for actors at various scales and in diverse arenas. However, with such a dispersal of responsibilities, it is important not to fall into a blind approach that treats everyone as equally powerful despite differences in roles

within the education system or differences in social privilege (Battiste, 2002; de Wet & Schoots, 2016; Olson, 2009). Systems thinking facilitates reflection around rushed reform, overly prescriptive or discreetly manipulative changes, and power differentials.

Ecological approaches. Ecological approaches to thinking about education are similar to systems thinking, but often with a specific focus on contexts and the scales of or relationship between individual and shared realities, especially when these are at odds as in the case of marginalized actors (Bronfenbrenner, 1976; Cho, Crenshaw, & McCall, 2013; Gow, 1997; Lotz-Sisitka et al., 2015; Ogbu & Simons, 1998). The first caution that comes out of ecological thinking relates to educational reforms from other contexts that are superficially transplanted into a new context without the critical care necessary to navigate the differences between educational systems (Bronfenbrenner, 1976; Fullan, 2011; Hargreaves et al., 2001). Another issue that ecological thinking highlights is the difficulty of including the perspectives and ideas of marginalized members of an educational community (Cho, Crenshaw, & McCall, 2013; Gow, 1997), some of whom are so disenfranchised that they do not even see value in being part of the reform efforts (Ogbu & Simons, 1998). Finally, ecological approaches value seeing and transforming imbalances between collective imperatives for schools and personal or intrinsic priorities of people affected by education systems (Casey, 2012; Lotz-Sisitka et al., 2015). This imbalance reflects the way that impersonal and technocratic instrumentalisations of learning is valued through standardized assessments within results-based management approaches to education (Biesta, 2007; Klees, 2012; Steiner-Khamsi, 2012; Westheimer, 2015). Ecological approaches reflect a similar awareness of complex, interconnected, educational ecosystems as achieved through systems thinking. With an ecological attention to context and scales though,

change efforts can work with an understanding of the idiosyncratic importance of context, of marginalized educational voices, and of the balance between personal and collective imperatives.

Movement building or activism. Writing on the subject of movement building and activism often highlights a need for slow, sustained, and informed community organizing, not spontaneous, sensational, or rushed change efforts (Choudry, 2015; Dhillon, 2017; Hargreaves, 2005; Olson, 2009; Tuck & Yang, 2013). Activism is valued for being ongoing and responding to normalized issues, not to crisis narratives (Dhillon, 2017) or sensational leaders or texts (Choudry, 2015; Olson, 2009). The importance of historicizing change and connecting it with relevant past models or attempts is especially important when considering rethinking disciplinarity (Choudry, 2015; Hargreaves, 2005); there is a long history and rigidity to subject-specific structures—timetabling, teaching associations, professional development, standards or outcomes, and examinations (Hargreaves et al., 2001)—that cannot be ignored if changes to subject-specificity are to be possible. Finally, especially with such long standing subject-specific structures, it will take time to transform resilient educational ideas that various educators and their partners hold about what is acceptable within educational systems or reform (Fullan, 2011; Olson, 2009; Schnurer & Hahn, 2009).

21st century learning. 21st century approaches stress a few final hindrances to educational change efforts (Battiste, 2002; Howell, 2017; Robinson & Aronica, 2016; Wilson, 2007). These approaches must be process-oriented to acknowledge the non-prescriptive, unfolding of complex collaboration (Tuck & Yang, 2013; Wilson, 2007). This contrasts conventional matriculation standards and results-based cultures that treat education as a measuring tool for entrance into educational and social opportunities in the future (Hargreaves et al., 2001). Additionally, this approach is wary of any change efforts that lack a support network

to share resources and community (Battiste, 2002; Howell, 2017). Like the barriers framed from a community building or activist approach, 21st century approaches connect contemporary reforms with the contrasting conventions from which change can develop. Although reform efforts that rethink disciplinarity may be different than current educational realities, they can reflect previous realities with a supported shift from the individual to the communal or structural, and from the cumulative to the processual. The resulting changes that rethink disciplinarity may seem radical but must be part of a sustained and organically unfolding ecosystem of shared and conscientious action.

The limitations or barriers that hinder educational change efforts aimed towards rethinking disciplinarity may be frustrating, but they have meaning. Becoming aware of the various overlapping challenges discussed allows change actors to work within and, in a sense, overcome these hindrances through a sustained and process-oriented critical consciousness. Within such an engagement, each aspect that impedes rethinking disciplinarity appears as "an opportunity instead of an obstacle" (Allan & Evans, 2006, p. 9). Every issue becomes a point of caution and engagement—a hurdle, not a fence—becoming the complex course upon which an authentically collaborative change towards interdisciplinarity turns out to be possible.

Aspects of Change Theories that Support Rethinking Disciplinarity

Argument 2: *Educational change efforts that rethink disciplinarity unfold when they are distributed amongst all partners in ways that are mutually enriching, motivating, genuine, and shared—at least retroactively or in processual ways. Considering and working with historical precedents, community values, and other people can allow particular visions to—like a bird that takes advantage of opposing wind currents and even gravity towards flight—build in*

conversation (and reflection) with ongoing, dialectical streams of and aspirations for rethinking disciplinarity in education.

Looking again at the categories of systems thinking, ecological approaches, movement building, and 21st century learning, it becomes clear that the collective and ongoing work of reform is both possible and inevitable when a slow, genuinely communal and less-hierarchical, context-based effort is shared, engaged, and supported with resources and reflection. Honouring their processual and collaborative nature, educational change efforts engage the kind of continual collectivity that allows diversity to coexist as mutually enriching within a public and democratic system. As referenced earlier, Allan and Evans (2006) suggest that:

> Reconciling our difference does not mean obliterating them. Relationality in the sense relevant to life in a pluralistic society find our differences an opportunity instead of an obstacle...Learning to compromise our demands for the sake of a common good is not to sacrifice them but to transform them. In the long run, after all, the common good is our good. (pp. 9-10)

This ironic process—coming together by virtue of diversity—transforms individuals' understandings of educational systems, shifting culture at larger scales, and contributing to structural change. In the end, the aspects of educational change that support rethinking disciplinarity look a lot like the aspects impeding this work. They become supports as opposed to impediments with an openness to educational partners or 'the common good,' and to our own dialectical transformations.

Systems thinking. Systems thinking stresses that the fundamental building blocks that set the groundwork for educational reform are distributed amongst various people within complex educational systems (Stroh, 2015; Hoban, 2002). Educational reform efforts can thereby

promise more genuine and sustained change as various people and structures that are involved or effective are mutually and carefully engaged. Rethinking disciplinarity may be possible in Québec with the NEXTschool initiative because this current educational reform effort – aiming for authentically engaging with the QEP's insistence on cross-curricular competencies, amongst other goals – is working with and listening to the voices of various "people and organizations that affect and are affected by the issue" (Stroh, 2015). These include policy makers, administrators, educators, parents, community members, business leaders, and students, a "broad representation of educational stakeholders" (LEARN, 2017, p. 24). This is important both to ensure that "anyone that can make a contribution to the effort" (Stroh, 2015) is considered, and to ensure that anyone who could "possibly derail it if not on board" (Stroh, 2015) is also included. The complexity of the educational system necessitates an approach that "does not focus on independent elements … but instead focus[es] on the interrelationships that result from the dynamic interactions among multiple elements" (Hoban, 2002) or people.

Also from the perspective of systems thinking, time is a vital component for allowing the slow incubation of change (Senge, 2006). Despite the widespread belief that the QEP's implementation was unsuccessful (Potvin & Dionne, 2007), the QEP "informally ranks among the top five innovative curricula in the world" (LEARN, 2017, p. 3). It will take time for this innovative idea to become an established innovation. An incubation period provides space for individuals within the education system to affect their firmly held "mental models" (Senge, 2006, pp. 8-9) of what education should or can look like. This involves the mutual or collaborative process of "balanc[ing] inquiry and advocacy" (Senge, 2006, p. 8) such that educators and their partners "expose their own thinking effectively and make that thinking open to the influence of others" (Senge, 2006, p. 9).

Educational change theories that work towards rethinking disciplinarity can work with a systems thinking perspective—paying attention at a systems level—in order to find out "what is actually happening[, r]ather than imposing a single model or making a priori assumptions about what will work best" (Klein & Newell, 1996, p. 9). This focus can help reformers "to attain contextual understanding, to assess multifaceted problems, to gain a sense of the complexities and interrelationships of society, and to examine the human, social, and political implications" (Klein & Newell, 1996, p. 5) of what is being changed. In recent years, there has been a perceptual shift such that "interdisciplinary approaches have become essential, not peripheral" (Klein & Newell, 1996, p. 6) to educational organizations—both in terms of reforms and curriculum.

Ecological approaches. An ecological approach takes advantage of looking at successful models, but with an awareness of nuanced new contexts. Drake (2012) looked at various examples of effective programs that are meaningfully engaged in integrated curriculum organized around transdisciplinary projects or activities. Building off Drake, alternative disciplinary frameworks could focus around broad-based big ideas or themes, engage in student-centred and inquiry-based projects, synchronize class activities with out-of-class excursions, or with current or community events and partners, or take any other approach to developing focused transdisciplinary foundations upon and around which curricular outcomes will be connected (Drake, 2012). However, on their own or taken generically, these ideas are unlikely to be adopted; engaging the shared and collaborative approach described in relation to systems thinking means allowing local actors—educators and learners in a school and their partners—to adapt these approaches with critical care, mindful of local conditions (Fullan, 2011; Hargreaves et al., 2001).

With NEXTschool, the opening design year has looked at potentially successful educational models in a more universal and theoretical way. As schools who will actually attempt to apply these models come on board, their success will rely on taking the time within their own context to determine how to revise these approaches within the reality of their schools and communities. Because our communities and educational systems are currently undergoing unpredictable and rapid change (Fadel et al, 2015; Senge, 2012), it is not enough to simply adapt reform approaches or ideas for local contexts; these local contexts must be building flexibly and with an openness to ongoing change and revision as the needs and realities of these schools and communities change. The resulting programs and structures can honour this change by remaining open to further changes or by building educational approaches that nurture flexibility and adaptability within learners (LEARN, 2017).

Movement building or activism. Movement building or activism can navigate the variety of actors who must be involved in playing a role in educational change in order for it to be plausible, meaningful, and sustainable. Like systems thinking, having diverse partners engaged is crucial. These partners must be open to other educators' or to students' reflections on incidental learning opportunities that emerge. Educators must therefore be actively communicating with students and providing them with the information, tools, and support they need to independently identify curricular connections and relevant outcomes (Allan & Evans, 2006).

Discussing movement building and activism, some scholars suggest that this process of working collaboratively towards change and empowering young people as partners is itself a theory of change (Tuck & Yang, 2013). This distributed collaboration reflects the importance of making activism and movement or community building about the "difficult, slow" (Olsen, 2009)

shared organizing work and not "tales of strong, charismatic individuals, smart authors, and great ideas" (Choudry, 2015). This approach simultaneously honours each individual's unique perspective and reflects a structural view that looks beyond the individual for sustained and restorative movement building and justice (Dhillon, 2017).

21st century learning. As pointed out by Munroe, Borden, Murray Orr, Toney, and Meader (2013), trends in 21st century learning aim to be "holistic and interconnected" (p. 318) based "in context and experience" (p. 321), ideas "rooted in very old ideas embedded in Indigenous knowledges (p. 319). 21st century approaches remind us of the ethical dimensions—as reinforced by the Truth and Reconciliation Commission of Canada's recommendations—that urge Canadian educators towards rethinking disciplinarity (Truth and Reconiciliation Commission of Canada, 2015). Québec is home to almost 150 thousand Inuit, Algonquian, and Iroquoian people from eleven distinct ethnic groups (Gouvernement du Québec, 2011). Educational reform for the future of this province does not have to create from scratch and carry on colonial impositions, but can learn from past and indigenous epistemologies around education. In order to honour the Truth and Reconciliation Commission of Canada's recommendation to "provide the necessary funding to post-secondary institutions to educate teachers on how to integrate Indigenous knowledge and teaching methods into classrooms" (Truth and Reconciliation Commission of Canada, 2015, p. 7), our current educational approaches need to become more open to rethinking disciplinarity towards realizing more interconnected (Wilson, 2007), holistic (Howell, 2017), and interdisciplinary (Battiste, 2002) approaches. 21st century learning approaches often includes these foci, although without referencing the indigenous communities who have been advocating for them well before people began writing about 21st century learning (Munroe et al., 2013).

Looking at the 21st century approach, one often hears the term "knowledge-based economy" (OECD, 1996) to describe the way that educators are expected reorient their objectives to fulfill the needs of a labour market that requires "workers to acquire a range of skills and to continuously adapt these skills" (OECD, 1996). The term "knowledge-based economy" comes from the OECD attempt to characterize our economic era as based on "knowledge and technology" (OECD, 1996). This rhetoric advocates for educational systems to reorient their focus towards these shifting and uncertain economic ends. Although this reorientation may often be a neo-liberal push for techno-scientific management that limits learning in organizations (Casey, 2012), the insistence on focusing on knowledge and technology can be appropriated towards cross-curricular models that transcend disciplinarily discreet divisions to focus on knowledge and technology as the organizing tools of curriculum. Connecting conversations around knowledge-based economies to education that transcends disciplinary divisions presents a shared way forward for reform that favours holistic educational models that fulfil indigenous calls, and calls from scholars of 21st century learning for interconnected and interdisciplinary orientations of knowledge.

Interdisciplinarity is key to the adaptable and open-ended problem solving that grounds 21st century learning aims (Fadel, 2015; Project Tomorrow, 2011; Wagner, 2008). As Nikitina (2005) explains, interdisciplinary approaches involve carefully figuring out what tools will be most effective for solving complex problems or questions. This focus on teaching students how to solve any problem—across disciplines—reflects NEXTschool's 21st century learning goals and the way they hope to structure their reformed school curriculum; "[a]daptability is the universal skill for the 21st Century; and applies to both the learner's skillset and the continuous reorganization of the school experience" (LEARN, 2017, p. 28).

Defining Characteristics

The defining characteristics explored in this paper—the antecedents which come before educational change, the critical elements that must be in place for the change, and some consequences of it—reflect patterns derived from this concept analysis. The conceptual map (below) visually represents the ideas discussed here so as to clarify that these defining characteristics do not exist in distinct or separate ways, but in dynamic relationships.

Antecedents. Before a reform can be realized, much must already be in place. Considering first the school's context, the curriculum and building must serve as a legal and physical framework that can accommodate rethinking disciplinarity and collaborative teaching. The context of the school also includes the context of the teaching staff and administration (Hargreaves, 2005). For example, it will matter what research and information the staff have access to and what kinds of historical precedents members of the staff have been involved with that may be similar. For any educational reform, the time must seem appropriate, at least as reflected in educational and public discourses. For the NEXTschool reform—towards different approaches to disciplinarily organizing schools—there are various timely antecedents available: the rapid pace of change and uncertain work world of the future calls for adaptability, flexibility, and similarly "generic" (Hargreaves et al., 2001, p. 87) competencies (LEARN, 2017; Hargreaves, 2005; Robinson & Aronica, 2016); the technological changes towards a knowledge-based economy also call for developing similarly general competencies that value connecting various disciplines, and often working beyond them (Jenson et al., 2010; OECD, 1996); and the increasing support for embracing indigenous epistemologies in education stresses the importance of holistic learning (Battiste, 2002; Howell, 2017; Munroe et al., 2013). All these antecedents support the idea that it is time for a reform that rethinks disciplinarity. One last crucial

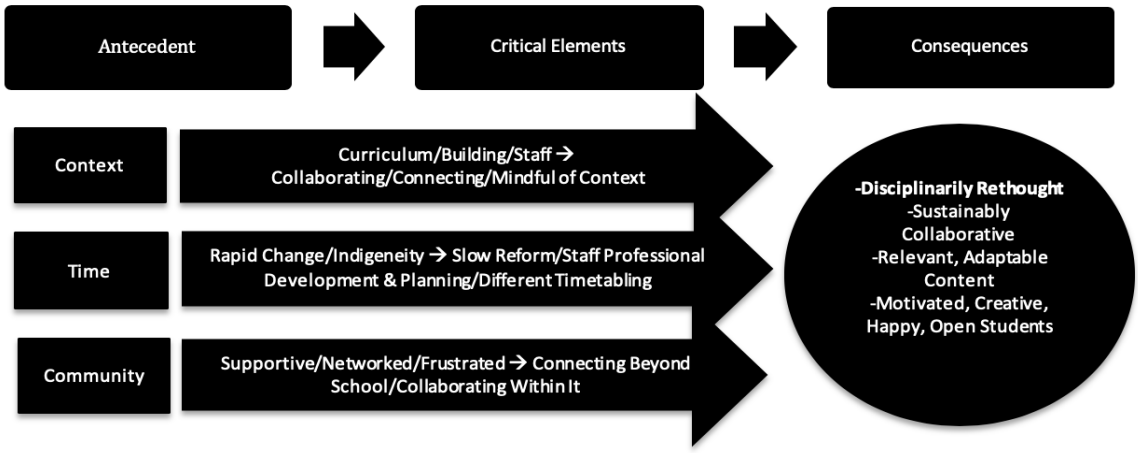
antecedent is a school's community. They must be supportive, both within the school and outside of it. The community must be frustrated with certain aspects of the current school system (Howell, 2017), networked with community partners who can connect or diversify class structure and focuses (Ewing, 2017), and the staff within the school need to be collegial and open to collaborating (Lotz-Sisitka et al., 2015).

Critical elements. The critical elements necessary for this reform can be organized in the same categories as the antecedents. Because rethinking disciplinarily involves people working together in more and in new ways, the context in the schools must include staff, students, and educational partners collaborating and reconciling differences by transforming them (Allan & Evans, 2006). The context in the classroom requires teachers maintain a connection to what is going on in the community and larger world so that they can find meaningful ways to connect lessons to the students' lives (Drake, 2012). It also works best if teachers understand that different degrees of integration may be more or less appropriate for different contexts (Applebee et al., 2007). Context is critical, not only for figuring out what kind or degree of disciplinary change to make, but for ensuring that the way the reform unfolds works within local contexts (Hargreaves et al., 2001; Levin, 1998; Mukhopadhyay & Sriprakash, 2011). The second category of critical elements is time. It represents the process of the reform, which many scholars suggest should not be rushed (Fullan, 2011; Olson, 2009; Schnurer & Hahn, 2009). Teachers need release time for professional development to support new approaches to unit planning and to plan collaboratively. Students need a timetable that is more flexible and open to cohort-based or team taught classes (Ewing, 2011). The final category, like its antecedent, involves a connected community, both for students and teachers taking their classwork beyond the borders of the

school (Robinson & Aronica, 2016), and for teachers rethinking the way they collaborate—mixing, fusing, or transcending disciplinary conventions (Applebee et al., 2007; Drake, 2012).

Consequences. The critical elements described above work with the aforementioned antecedents towards many positive implications, beyond just a disciplinarily dynamic school structure. The reform that results is sustainably collaborative (Senge, 2006; Stroh, 2015), and students become more passionate about school, they learn more personal and more adaptable content, and they become happier, more open, and more creative (Barnes, 2012; Hargreaves et al., 2001; Rennie et al., 2013).

Conceptual Map



Model Case

NEXTschool has been working with various groups that represent a diverse range of leaders and partners within the educational community. The importance of rethinking disciplinarity as a critical element to this reform has been reiterated by these groups. Now that some prototypes which facilitate more interdisciplinarity have been established, NEXTschool is working in pilot schools to allow the staff at those schools ample time to design their own vision for reform before rushing to implement it. During this planning stage, schools will be facilitated through a process of considering the research, ideas, and prototypes already gathered, and then

they will design their own local reform, mindful of their own school's context. This process, so far, has gathered even more interest than anticipated, perhaps reflecting its timeliness or the motivating potential of this collaborative approach to reform.

Conclusions

In the context of secondary level education, there is growing support for approaches to learning that combine, cross, or transcend disciplinary divisions. Engaging critically with theories of change can transform this research into momentum for achieving appropriate and sustainable educational reform. By meaningfully and actively addressing 21st century learning, the NEXTschool project and its focus on interdisciplinarity contributes to the continued growth and evolution of the Québec Education Program.

Educational reform efforts that rethink conventional disciplinary structures are a complex, collaborative, and contextual concept. There are universal elements to these reform efforts but the way they unfold in specific contexts is varied. Although the concept of educational change and reform is extensively addressed in educational research, a specific look at efforts to reform or change disciplinary structures has only been addressed in limited ways. It is vital to clarify this concept as more schools attempt these types of changes. This will allow dynamic and personalized roll-outs of educational changes that are slowly and diligently built within communities—inside and beyond a school. As curricular documents and physical school designs shift to accommodate more innovative approaches to structuring learning across disciplines, it is in the hands of local teaching staff to think and work together towards a shared vision for disciplinary reforms. Through efforts that reflect on and work mindfully with community, time, and context, schools can embrace a more meaningful, practical, and motivating approach to learning.

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Transition

The initial concept analysis unpacked barriers and supports for educational change, with a focus on change that rethinks the conventional disciplinary structure of schools. It reviewed various scholarly sources that formed a foundation of literature from which I was able to draw and build in the following papers. The second piece dives into a practical exploration of how educational change is supported or obstructed through an attempt at a design thinking approach. Although this second piece does not address interdisciplinarity, rethinking disciplinary structures is a central feature of the NEXTschool educational reform initiative (LEARN, 2017) explored in this paper.

This second part of my thesis is focused around a reform that works towards educational systems change through design thinking that shares autonomy amongst educational partners. Considering the strategies and cautions outlined in the concept analysis, this second paper engages my own experiences through discussion and heuristics on educational change, systems thinking, and design thinking in an attempt to unpack the value of sharing autonomy across a diverse group of educational partners. This paper builds on the ideas brought up in the first paper around engaging diverse partners, attempting to shift mental models, and establishing genuinely shared visions for educational change. The resulting reflections may be helpful to NEXTschool going forward or to other reform efforts that aim to engage systems change or design thinking.

Realizing Educational Change Through Shared Autonomy: Design Thinking and the NEXTschool Design Phase

As McLuhan and Fiore (1967) introduced in *The Medium is the Message*, the manner in which something is carried out—its formal features, structure, or medium—is a central factor in what is achieved—the content, result, or message. In educational reform, this can be seen in the way that the educational model coming out of a reform effort often reflects how the reform was enacted (Jenlink & Carr, 1996; Mallory & Thomas, 2003; Slee, 2007). For example, pushing through conventional top-down reforms can lead to conventional, top-down approaches to school, classrooms, and instructional practices (Andrew & Shah, 2003; Barker, 2010). While some of those top-down approaches may result in a changed structure or form, the success of the change may be less sustainable and scalable, as has been the case with Québec's ongoing curriculum reform since its inception in the early 2000's (Potvin & Dionne, 2007). This paper explores an early stage of the ongoing NEXTschool initiative as it works to change the way reform is achieved in Québec's secondary schools. NEXTschool has employed design thinking, a non-hierarchical approach, to encourage ownership of a reform through its promotion of shared autonomy between various impacted educational partners. Design thinking provides a unique opportunity to facilitate shared control for designers, even when being facilitated within schools with a top-down structure or culture. The design process is guided by expert facilitators, not dictated by experts on reform, pushing through a rigid, centrally-planned reform model. This paper considers the value and the challenges of design thinking in the early stages of the NEXTschool project. If the process of rolling out the NEXTschool model manages to follow a design thinking approach, this model—that shares autonomy amongst all affected partners involved in the reform effort—will be reflected in the classroom that results from the reform;

multiple stakeholders sharing control over reform can lead to multiple educational partners sharing control over classroom activities, providing opportunities for teachers to take ownership over their lessons and for students to take ownership over their learning in personalized ways.

Students and teachers benefit from having a more autonomous share in their learning as can be gained through a design thinking school reform. Having this autonomy can help teachers and students feel motivated and engaged in their work (Jang, Reeve, & Halusic, 2016; Pink, 2011). When students are able to take ownership over their learning in autonomous ways, they develop more than just content knowledge. Students also develop soft skills, like how to be effective leaders and team members (Conley & French, 2014; Honebein, Duffy, & Fishman, 1993; Kinchin, 2004; Reeves, 2008; Silén & Uhlin, 2008). More student autonomy—learning with and towards the 21st century skills of collaboration, leadership, and initiative (Wagner, 2008)—fulfills one of the central aims of NEXTschool, "student-centred...engagement" (LEARN, 2017, p. 35). This paper will analyze some ways in which attempts at design thinking have been engaged as a medium to support NEXTschool's ongoing messaging. Our discussions here will reflect on how design thinking may work to realize an educational model in Québec that can achieve—as NEXTschool hopes to—teacher-facilitated, student-centred, flexible, community-supported learning (LEARN, 2017).

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Background on NEXTschool

The NEXTschool reform initiative aims to facilitate a "culture shift" (LEARN, 2017) towards educational change in Québec's secondary schools. Facilitated by the Leading English Education and Resource Network (LEARN), the NEXTschool project is working to empower

teachers, students, and other educational partners as change agents, sharing autonomy and working in collaboration towards a shared vision for schools. As a public educational organization, schools are the result of collaboration (Björkman, 2015; Ferrier-Kerr, Keown, & Hume, 2015; Fullan, 2001; Searcey, Snodgrass, & Copple, 2010; Senge, 2006), with various stakeholders or core group members sharing a space and institution for diverse purposes (Stroh, 2015). To empower various educational partners towards facilitating changes, these core group members must not only collaborate and accommodate a rich mosaic of perspectives, but also feel an ownership—albeit shared—over the structures in schools that are being changed. As discussed, this ownership or autonomy can be motivating (Evans & Boucher, 2015; Jang, Reeve, & Halusic, 2016; Llopis & Foss, 2016; Pink, 2011) and is expected to be reflected in the NEXTschool initiative on at least four levels:

- During the initial design phase, for the various stakeholders from the community and from the university who created and refined broad-based prototypes for a NEXTschool.
- Leading up to the explore phase, for the facilitators who were hired to make a playbook detailing the process of designing a NEXTschool and turn it into a series of labs that they have begun facilitating in schools.
- During the explore phase, for the teaching and administrative staff at the schools who are considering enacting a NEXTschool model, and designing what that may look like in their context.
- At a NEXTschool, for the students working on student-centred, inquiry-driven projects.

This paper is based on our emic perspective of experiences we had as researchers and participants in NEXTschool's initial design phase. This understand is emic "with an insider view of the people, groups, organisations or cultures being studied" (Zuber-Skerritt, 2001, p. 9). As we

will explore, this initial phase was composed of workshops intended to facilitate a design thinking approach to creating a reformed vision of educational space, time, andragogy, relationality, and community (LEARN, 2017). Making sense reflectively from our emic perspectives of these workshops and of the design phase allows us "to provide knowledge and understanding of a particular, individual…case" (Zuber-Skerritt, 2001, p. 9): the NEXTschool initiative for systems change in education.

Key Concepts

Shared autonomy. Utilizing our unique vantage point as participants in the NEXTschool design workshops, this paper will reveal considerations that we hope will support the shared autonomy of the ongoing explore phase of the NEXTschool roll-out. *Autonomy* is here used in the liberal-humanist sense (e.g. Boud, 1981; Gibbs, 1979; Lindley, 1986; Raz, 1986) to refer to individuals' abilities to engage with, understand, and control their lives, making choices amidst various valid options (Wall, 2003). Discussing *shared autonomy* in this paper points to the way that the autonomy educational partners have within a collaborative school or school system is necessarily shared, or distributed amongst the various educational partners. If autonomy is shared in careful and balanced ways—as is intended through an approach like design thinking (Liedtka, Azer, & Salzman, 2017)—each educational stakeholder involved can experience autonomy without obstructing other partners' stake or share of control. Our belief is that examining shared autonomy in the NEXTschool context—by reflecting on our emic perspective as part of the design process (Zuber-Skerritt, 2001) and by relating what we noted to heuristics and concepts found in literature on systems change (Senge, 2006; Stroh, 2015)—can clarify the potential for design thinking and other similar approaches to facilitate culture shifts and educational reforms most effectively, and at a systems level.

Systems change. Systems change is a valuable concept for the NEXTschool reform as it involves changes to a defined system with many stakeholders (Riffle and Smith-Davis, 1991), in this case Québec's secondary school system. Because stakeholders within a system are interdependent, systems change has to work at various levels (Patton, 1990) and "involves active ownership of the change process by stakeholders" (Massey, 2006, p. 14) at all these levels.

As the NEXTschool Research and Development report articulated, while many successful school innovations have been initiated in Québec, they are often localized to the classroom, school, or board level (LEARN, 2017). As a result, innovative educational changes can be unsustainable and unscalable for any type of systems change that would significantly reform or improve the culture of high school education for the entire province. One of the important questions that we have asked as part of the NEXTschool project therefore is: how can education bring to fruition a substantive enough systems change to replace what so many people believe about and expect from schools?

Working with Senge's (2006) discussions of systems thinking and transforming mental models while building a shared vision, as well as Stroh's (2015) systems thinking ideas of engaging core group members, this paper provides a preliminary analysis of NEXTschool's initial design phase, with specific attention to the motivating potential of autonomy—as experienced through design thinking. Senge's and Stroh's analytic tools and ideas help illustrate and support the roles of individuals and teams who are attempting to navigate systems change with diverse groups. Exploring these tools and concepts in the context of the NEXTschool educational reform project helps clarify a flexible model for systems change based in design thinking. This model is suited for changes to schools in various contexts, driven autonomously

by local actors but aligning with research on best practices in innovative education and with provincially-mandated curricular objectives (LEARN, 2017).

Design thinking. This exploration will centre around the design thinking structure for reforming schools that is fundamental to the NEXTschool project. Design thinking (IDEO, 2015; Liedtka et al, 2017), a buzzword in industry and educational consulting (Cooper, Junginger, & Lockwood, 2009; Cornwall & Eade, 2010; Lahey, 2017), refers to an approach to organizational change that is compatible with the values and approach of systems change, as defined earlier by Massey (2006), Patton (1990), and Riffle and Smith-Davis (1991). Design thinking empowers various stakeholders through active ownership of the design process. One of the foundational values of this movement is that there are no knowledge experts, only expert design process facilitators (Liedtka et al., 2017). Diverse designers thereby all share autonomy over the process and have the authority to include their own perspectives. They are thus motivated by their equality and control amongst the other designers (Pink, 2011).

As we will explore, the shared autonomy amongst designers in design thinking can also help shift the deeply ingrained mental models (Senge, 2006) of groups working towards social change; "design thinking ... encourag[es] distinct shifts in mindsets and behaviors…[that] impact the individuals, teams, and extended group of stakeholders who do the designing" (Liedtka et al., 2017, p. 8). Design thinking “provides a common language and problem-solving methodology” (Liedtka et al., 2017, p. 8) that NEXTschool has engaged in order to imagine, create, and implement their framework for educational change. Design thinking in educational contexts highlights the value of teacher autonomy, multi-stakeholder engagement, and student-centred approaches for a process of redesigning a school that aims to similarly honour and centre

teachers, students, and other stakeholders in the redesigned school that results from a design thinking approach.

The NEXTschool Design Phase

Design phase process. Design thinking, while there are some variations, has been commonly described in three phases: inspiration, ideation, and implementation (IDEO, 2015). As identified in Table 2 (which will be unpacked in more detail later, in the section on Sengian 'Mental Models'), the NEXTschool process has used similar phases: initiate, inquiry, and imagine. The inspiration phase involves identifying the problem or goal of a project in one succinct sentence or question that "drive[s] toward ultimate impact, allow[s] for a variety of solutions, and take[s] into account constraints and context" (IDEO, 2015, p. 31). *How might we…* questions represent the design thinking approach to this phase; participants are encouraged to suspend reality in order to consider all options. The ideation phase is about prototyping solutions, which relies on the idea that "making an idea real reveals so much that mere theory cannot" (IDEO, 2015, p. 20). The implementation and testing phase that follows prototyping is the iterative process of solution testing. Design thinking recommends a quick implementation and repetitive or constant reiterations. These three phases—inspiration, ideation, and implementation or initiate, inquiry, and imagine—have provided opportunities for the diverse groups involved in the NEXTschool initiative to have a role in the design of the NEXTschool model. The design phase of NEXTschool was the first opportunity to analyze design thinking in action as it relates to the NEXTschool initiative; it allowed us to begin to develop ideas that can support future attempts at design thinking for educational change on a systems level.

Design phase partners. Through the process of engaging with the philosophies behind NEXTschool and designing prototypes and recommendations for its implementation, all the

people or partners involved were expected to experience ownership over the models being designed, even if their particular ideas were not included in resulting resources and facilitation guides. During the design phase, the main people involved fit into four categories:

1. The Exploration Guidance Group (EGG) was made up of approximately twenty educational leaders. These people were specifically invited to be involved as a "broad representation of educational stakeholders" (LEARN, 2017, p. 24). This group included people from schools, community organizations, academia, the private sector, and high level administration or policy makers from the board and ministry offices (LEARN, 2017, p. 31).
2. The *Innopod* design teams were made up of around 50 individuals from the local educational community who volunteered to be involved. Participants ranged from teachers and administrators to parents and members of community or business organizations and university institutions.
3. The university class design team was made up of approximately 30 individuals enrolled in graduate coursework in educational leadership. Five were graduate students and the rest were current administrators—mostly vice-principals—from a local school board. These individuals were taking this course as a requirement for completing a certificate or degree program in educational leadership.
4. Professional facilitators were hired to design and facilitate the labs by which NEXTschool is being imagined and implemented. These facilitators were brought on board by a non-profit educational organization.

What we noted in the design phase. During the design phase, we participated in the university class design teams and the Innopod groups described above. The design processes

facilitated for the community Innopod groups and the university class were not rigidly defined. Rather, they were flexible and open to structural adjustments for the different contexts. From the vantage point of seeing each workshop or lab run twice—once for the university class and once for the Innopod group of volunteer stakeholders—we noted the changes and differences between facilitations of the same lab, demonstrating the malleability and iterative nature of the design process. This reflected the emphasis design thinking puts on context-specific, collaborative, and fairly autonomous involvement from participants. The way the design labs were run also honoured the iterative nature of the design process. Although the participants in the NEXTschool design teams did seem to be optimistic and motivated, perhaps by their supported autonomous role in the design process, some—especially within the administrator cohort of the university design teams—expressed skeptical views about the open-endedness and messiness of the design process.

The design process' iterative, open-ended structure developed in flux with participants. We noted that this seemed well received by most of the partners involved. The skepticism that we noted from some participants may have resulted from their involvement being obligatory (as in the case of the administrators in the university class design teams) or it may have reflected the discomfort some educators and administrators have navigating ambiguity (Evans, McGuire, & Tihanyi, 2010; Inam, 2010). The discomfort that some educational partners feel towards ambiguity may relate to the culture of schools through which teachers become accustomed to clearly delineated roles and micromanaged teaching-minutes (Giles & Hargreaves, 2006; Useem, Christman, Gold, & Simon, 1997). The skepticism around the ambiguity may also have resulted from individuals expecting a more prescriptive, top-down, or outsider approach to managing educational change, as administrators and district officials are sometimes known to take (Bascia

& Hargreaves, 2014; Smith & O'Day, 1990). To address these concerns, the NEXTschool facilitators began their design labs by discussing and sharing videos about navigating ambiguity. Central to design thinking, navigating ambiguity is one of the eight core abilities advocated for by the d.school of design at Stanford (Hasso Plattner Institute of Design at Stanford University, 2017). Through our involvement, we noted that some NEXTschool design participants expressed an appreciation for this explicit discussion around embracing the messiness of a flexible design process that tries to honour autonomy at various levels. Others though—perhaps due, as described, to the resilient mental models of educators who have been trained within the conventional hierarchy of education—expressed resistance to the supported autonomy inherent to the NEXTschool design process. Design thinking aims to overcome the skepticism that accompanies the discomfort some feel navigating ambiguity.

Through our involvement with the Innopod and university class design teams, we noted that, although the facilitators of the NEXTschool design phase were working with the idea of design thinking, the process was not always able to leave space for participants to experience the autonomy that design thinking promises. This may have resulted from various complications including the way the NEXTschool Research & Development (R&D) report (LEARN, 2017) prescribed some aspects of the NEXTschool design before the designers had an opportunity to engage in empathy practices that would have brainstormed their own aspects for the NEXTschool design (IDEO, 2015). Other barriers to design thinking included the inconsistent teams of designers involved in the Innopod groups, the obligatory involvement of the students in the university class who may not have had a personal investment in the project, and the overwhelming nature of having so many diverse partners in the room (many with conflicting ideas, even internally). These obstacles, along with the aforementioned discomfort some have

navigating ambiguity, necessitated a fairly active role from facilitators of the design process. At times, the need for facilitators to get involved and actually hold the project—supporting these inconsistent teams, resistant involvement, diverse perspectives, and discomfort navigating ambiguity—overtook the facilitators' role as facilitators. Such overinvolvement may have foreclosed the potential for a genuinely collaborative design thinking approach that could authentically disperse authority and autonomy amongst the design teams. Learning from this early iteration of design thinking, the NEXTschool project can fine-tune their approach going forward. Considering the barriers to genuine design thinking in this context can support the authenticity of design thinking iterations as they learn from the intricacies and experience of the ones that came before it. As the next section of this paper explores, the authentic dispersal of authority and sharing of autonomy may be a key to shifting the mental models by which educational partners can affect change in schools.

The NEXTschool Culture Shift

Stroh's 'core group members.' The NEXTschool R&D report suggested that, in working towards making changes to the high school experience, "the most significant challenge is the 'culture shift' that will be required to achieve such a transformation" (2017, p. 3). The design phase for NEXTschool worked with the four aforementioned groups on this culture shift: the EGG, the university class, the Innopods, and the facilitators. Educators and other stakeholders were facilitated through "institutional learning, which is the process whereby management teams change their shared mental models of the company" (Senge, 2006, p. 8), or—in this case—of the school and school system. Design thinking is NEXTschool's strategy for attempting to transform mental models in order to achieve a culture shift in Québec schools.

The NEXTschool facilitation builds from a structuring of groups that reflects Peter Stroh's outline for who to bring together when engaging in systems thinking for social change (2015). Stroh asserted that it "helps to include the following core group members: Executive sponsors and key decision makers…Activists with a personal passion for the issue…Ultimate beneficiaries who usually have little or no voice…A professional consultant or facilitator" (Stroh, 2015, pp. 80-1). Table 1 outlines how these roles have all been accounted for in the NEXTschool initiative:

- The "[e]xecutive sponsors and key decision makers" are represented by the Exploration Guidance Group (EGG).
- The "[a]ctivists with a personal passion for the issue" are reflected in the Innopod design teams.
- The "[u]ltimate beneficiaries who usually have little or no voice" are engaged through the university class design team, composed mostly of school administrators who were asked to imagine the perspectives of their students. (The interviews of students that this group completed further engaged students' voices as ultimate beneficiaries.)
- Finally, "[a] professional consultant or facilitator" was hired to work with the NEXTschool teams, as outlined above, to facilitate the design process. This team involved three professionals from a consulting firm called "People Powered Innovation Labs" (http://ppi-labs.com).

Table 1. Groups of Diverse Educational Partners + Facilitators:

Stroh (2015, pp. 80-1) asserts that it "helps to include the following core group members":	NEXTschool's Equivalent:

"Executive sponsors and key decision makers"	Exploration Guidance Group (EGG) ● twenty individuals ● volunteers/specifically invited ● "broad representation of educational stakeholders" (LEARN, 2017, p. 24)
"Activists with a personal passion for the issue"	Innopod design teams ● 50 individuals ● mostly volunteers ● teachers, administrators, parents and members of community organizations and university institutions
"Ultimate beneficiaries who usually have little or no voice"	University class design team ● 30 individuals ● five Masters students and the rest administrators at Montreal schools ● this course is for credit towards completing a certificate or degree program and for most students, it's a required course ● assigned to interview students and bring their ideas to the designs
"A professional consultant or facilitator"	Noel Burke and Michael Canuel from LEARN and their teams of facilitators, including the People Powered Innovation Labs team

Engaging these groups in discussions about NEXTschool and its design generated ideas as prototypes and recommendations for creating and implementing NEXTschool models. Even if these ideas are not taken forward or presented to the decision makers though, another valuable consequence of engaging these groups is the way this involvement and shared autonomy can shift designers' mental models about schools (Senge, 2006), thereby activating the culture shift for which the R&D report advocates. As discussed, because the design phase took place in multiple diverse and siloed groups, the facilitators were sometimes able to let designers work autonomously but sometimes had to take ownership of the project in a way that went beyond just facilitating. By holding the project and bridging the content between inconsistent and diverse

teams, the facilitators' control made it more difficult for all participants to experience genuine autonomy in their design process. This challenged the potential for a genuine design thinking approach. In the future, facilitators should strive to create conditions in which they can be less prescriptive at all stages in the design process. This can allow the open collaboration necessary for design thinking and an authentically collaborative shared vision.

Sengian 'mental models.' As Peter Senge described in his book, *The Fifth Discipline* (2006), even when working with the NEXTschool presupposition that the education system urgently needs change (LEARN, 2017), there are "deeply ingrained assumptions…that influence how we understand the world and how we take action" (Senge, 2006, p. 8). These are what he called mental models. Senge pointed out that innovative changes to "outmoded organizational practices fail to get put into practice because they conflict with powerful, tacit mental models" (Senge, 2006, p. 8). Rigid mental models may be one of the key factors thwarting the effective implementation of educational reforms in Québec. By using design thinking, NEXTschool is attempting to engage diverse educational partners in change processes that give them a share of control in the reform. Implemented appropriately and authentically, design thinking facilitates a degree of autonomy that can influence change agents' mental maps that may not otherwise be open and flexible to change. As this paper has explored, obstacles to genuine design thinking can obstruct the effective transformation of mental models.

As members of the Innopod and university class design teams, we were facilitated through activities that reflected Senge's (2006) recommendations for "working with mental models" (p. 8). As Senge recommended, the NEXTschool design labs began "with turning the mirror inward" (p. 8). Through the initiate lab, participants learned "to unearth our internal pictures of the world" (p. 8). Participants were asked to think back to their own experiences of

school and of peak learning experiences. Then, sharing language with Senge, the "inquiry" (p. 8) lab involved widening the scope of the mirror and interviewing students and other educators. Finally, with prototyping designers' provocative ideas or solutions in the imagine lab, design team members were led through the culmination that Senge outlined for influencing mental models: through "that balance [of] inquiry and advocacy" (p. 8), "people expose their own thinking effectively" (p. 9). Ultimately then, the transformation of rigid or skeptical mental models is possible as this exposed thinking becomes "open to the influence of others" (p. 9). As outlined in Table 2, design thinking provides a structure for opening and negotiating mental models; NEXTschool's design labs were aimed at balancing the challenge of bringing together many voices towards a shared vision with the promise of dispersed control and shared autonomy.

Table 2. How NEXTschool Labs Transform Mental Models

Senge's System Thinking recommendations for "working with mental models" (2006, pp. 8-9)	NEXTschool/People Powered Innovation Lab(s)	Design Thinking (IDEO, 2015)
"turning the mirror inward; learning to unearth our internal pictures of the world"	Initiate/Inquire	Inspiration how might we...
"balance inquiry and advocacy"	Inquire/Imagine	Ideation "making an idea real"
"people expose their own thinking effectively and make that thinking open to the influence of others"	By the end Imagine	Implementation "rapid iteration"

It is vital to work with design team members who are part of or leaders within the educational system in order to achieve the aims of NEXTschool. Inviting these educational partners to be designers both includes diverse voices within the design process, and is also a way to influence mental models and achieve organizational change. By framing educational partners as designers and facilitating them through a process that involves their personal perspective and

shared autonomy, each individual feels more of a connection and commitment to the success of the design. The resulting design is also likely to reflect the needs, values, and ongoing involvement of the educational partners who helped facilitate it. By using a Sengian approach to design thinking, the facilitators of the NEXTschool design phase hoped to motivate designers to transform their mental models and collaborate towards a shared vision. We noted many instances of this working as planned, and we also noted moments that lacked a genuinely shared engagement with the design thinking approach (as a result of inconsistent, resistant, diverse, or uncomfortable designers and design teams). These instances in which design thinking unfolded less effectively may have made it difficult for some designers to meaningfully engage and transform their mental models and their vision for educational reform.

A Shared Vision for Change

The NEXTschool research and development (R&D) report (LEARN, 2017). The R&D report released to all design team members in preparation for the design process is another means of transforming mental models and establishing a shared vision. The R&D report explained the background and objectives of NEXTschool and its philosophies, as well as delineating next steps. The bulk of the report though utilized research, stories, and other heuristics to promote a vision for NEXTschool. Although specific models and prototypes are only a small part of this report, particular philosophies around systems thinking for 21st century learning goals are central to its vision. Another key component is that NEXTschools will be student-centred, providing more autonomy for students within their classes. Having this clear guiding document as the first thing that many designers in the Innopods and the university class encountered about NEXTschool may have shaped the shared vision designers were expected to develop (Senge, 2006).

In its clarity and elaboration on the benefits of particular types of 21st century learning, the R&D report may seem to be "trying to dictate a vision" (Senge, 2006, p. 9) for NEXTschools. Beyond just "21st century learning" (LEARN, 2017, p. 14), the report promoted a vision for NEXTschool around a "knowledge-based economy" (p. 5), the "flexible and interdisciplinary organization of learning experiences" (p. 3), and "student-centered, teacher-driven, globally connected, community engagement" (p. 5). As Senge pointed out, imposing a shared vision is counterproductive to the power of an authentically-shared vision, "no matter how heartfelt" (Senge, 2006, p. 9) the prescribed vision may be. However, the R&D report served, in part, to plant seeds of interest in readers and therefore needed to explain some vision of what lay at the heart of the NEXTschool initiative. Trying to balance this function with the openness required for the shared autonomy in design thinking, the R&D report asserted that it was just a starting point and did not intend to prescribe an artificially shared vision; its "findings and conclusions at this point are observational and will be subject to the rigors of the projects upcoming design phase" (LEARN, 2017, p. 3). In order to ensure an effective and authentic shared vision is established for NEXTschool, it will be important to allow the autonomy of these rigours and of the current explore phase to reshape the shared vision established in the R&D report. Design thinking aims to be the approach that will allow this authenticity, facilitated by the iterative and dispersed nature of the design process.

Although this shared vision must be open to participant input, the value of autonomy and student-centred learning will likely remain part of it by virtue of the design thinking process and its dispersed control. Through the autonomy of designers, NEXTschool can ensure teachers feel an ownership over the ideas that—the R&D report asserted—will change educational spaces in line with best practices globally, and in student-centred ways (LEARN, 2017). Allowing

designers to have autonomy seems to contrast prescribing predetermined structures; the design thinking model of giving over autonomy to designers may not seem to make space for the guiding communication of NEXTschool's central components. However, student-centeredness and teacher autonomy, both central components of NEXTschool (LEARN, 2017), are exceptions to this incompatibility when working with design thinking as the medium of reform; because the medium of a reform effort can become the message communicated in that reform, the dispersed autonomy of design thinking conveys that students and teachers need more autonomy and centrality in classrooms. NEXTschools are thereby likely to achieve this with any design group through reform born out of a design thinking process.

Stroh's 'secondary agendas.' Stroh (2015) developed a tool for considering the diverse agendas of people involved in a shared change process (p. 80). We have engaged this tool below as Table 3. Stroh's heuristic is designed to elicit ideas that help map the ways in which, within an organization, "even people with shared aspirations can have very different secondary agendas" (p. 86). Including diverse voices is a key aspect of design thinking (Liedtka et al., 2017). However, it is important to understand each stakeholder and how their motivations are similar and different so that individuals can "engage and bridge differences" (Stroh, 2015, p. 86). Articulating these purposes explicitly provides a space for reflection, conversation, and compromise. The process of creating and working through Stroh's tool can allow facilitators to design and facilitate labs that build the collaborative capacity necessary for engaging various diverse stakeholders around the complex design process of NEXTschool or for any complex organization to "achieve social change" (Stroh, 2015, p. 86). Although for NEXTschool, Stroh's tool has not been explicitly used to "address the challenges of different interests and perspectives to build a strong foundation for change" (Stroh, 2015, p. 79), creating one here has highlighted

the complexity of engaging so many voices within the NEXTschool design process. It also is a reminder of the necessary difficulty facilitators face in negotiating such a diverse group of designers; this relates to the active role facilitators in the design phase sometimes had to take, despite the way this worked against the authentic sharing of autonomy central to a collaborative, design thinking approach. The table we have generated is not exhaustive but has included many of the voices involved in the design groups outlined earlier.

Table 3. Explicit and Hidden Objectives of NEXTschool Stakeholders

Role	Espoused Purpose	Hidden Priorities
Union Reps	● Negotiate a collective agreement on behalf of teachers and manage the performance/compliance with the agreement by both parties.	● Increase the union membership. ● Improve benefits and working conditions for its members and reduce their risk.
Upper Level Admin	● Achieve Ministry of Education outcomes. ● Budget and spend within Ministry of Education allocations and funding formulas. ● Manage all administrative and capital assets used in education delivery.	● Balance the demands of school boards against the practical education delivery requirements and needs of school administrators, teachers, students and parents. ● Carefully manage spending in education to allow scarce resources to be available where needed politically while sustaining education delivery to achieve outcomes. ● Avoid undermining political positions of the board.
Policy Makers and Elected Officials	● Manage funding, policies and standards for education and report on student outcomes.	● Get elected again -- don’t upset parents or unions such that they will not vote for the government again. ● Hold school boards accountable for outcomes and spending within allocations and remediate where necessary.

Academics	● Contribute measurable improvements to education delivery competence through research and teaching. ● Educate and graduate teachers with the highest level of competency. ● Publish articles/books that are widely accepted in the academic community as the best practice or latest and greatest achievement.	● Pursue personally rewarding research interests on topics with a personal agenda but low relevance or value to the education sector. ● Publish books that are academically and financially viable. ● Develop programs and research that continue to attract the highest caliber of students to their research and graduate list.
High School Students	● Fulfill legal requirements of attending school ● Learn relevant and fulfilling content.	● Build knowledge that supports personal interests and future endeavours. ● Find and develop strong social connections. ● Explore and experiment with identity and passions.
High School Teachers	● Engage students. ● Explore important contemporary issues, globally and locally. ● Facilitate student discovery and growth.	● Sustain career. ● Manage stress and busy schedule. ● Build relationships and find fulfillment in work.
Parents of High School Students	● Support their children's academic and social-emotional growth and maturity. ● Prepare their children for independence and the future.	● Assure their children are poised for achieving future goals that may be set by parents or their children. ● Feel proud about their children's achievements.
Community/Business Organizations	● Educate students with specific skills that relate to the organization. ● Connect school projects and values with the organization's functions and vision.	● Establish connections with schools and communities that bolster the organization's reputation and marketability. ● Build momentum and interest in a specific topic, community, or industry.
LEARN Québec	● Facilitate sustainable and innovative educational changes in Québec High Schools.	● Build upon the already positive and meaningful reputation LEARN has

	● Increase student engagement in Québec High Schools. ● Support teachers involved in the NEXTschool project, and beyond.	amongst educator communities in Québec. ● Sustain funding and meaningful projects. ● Prove significance and impact of organization for supporting Québec educators.

Considering the mosaic of partners involved and seeing them as containing multitudes of purposes—some explicit and some hidden—ironically works towards resolving or synthesizing the variety of purposes and visions that make up a school. However, the active role facilitators sometimes had to take in negotiating a dialectical compromise amongst these purposes and priorities may have, at times, limited the designers' feelings of control and autonomy. These are feelings that design thinking requires in order to engage and transform the designers' mental models and the larger educational culture of their communities.

Considerations for Explore Phase

As discussed, imposing a vision for educational change that is not authentically shared works against the vision being prescribed. However, one has to start somewhere and working towards a shared vision for NEXTschool with authentically shared autonomy will face obstacles. Within the NEXTschool design phase, there was some hierarchical control retained for various reasons, many of which were difficult to anticipate or avoid:

1. The timing and specificity of the Research & Development (R&D) report pre-empted designers' opportunity to establish their own vision during the design phase.
2. The discomfort of some NEXTschool designers navigating ambiguity limited their ability to utilize the autonomy of design thinking.
3. The expert facilitators needed to take a fairly active role in working with inconsistent designers, especially with a few—like some of the administrators from the university class—who were obligated to participate as a requirement for a leadership program.

4. Considering the diverse partners included and their myriad agendas, the shared vision that resulted was a nuanced and complex mosaic filled with what may seem like contradictions.

This first concern reminds the explore phase facilitators about the importance of ensuring educational partners have a genuine share when deciding what a reform will look like; it cannot be too rigidly pre-set or pushed from the top-down. With the aforementioned exception of asserting that educational partners will share more autonomy in the reform and school, the messages or core ideas of what NEXTschool is about (including prototypes for what NEXTschool might look like) must be introduced with ample space for reiteration and shared input. Looking at the second concern, the NEXTschool expert facilitators must continue to address the challenges of navigating ambiguity and negotiate an approach that balances all reform partners' openness and autonomy with a shared structure of design. Thirdly, facilitators can disperse the greatest share of autonomy when working with consistent and committed teams. Finally, though the prospect of negotiating a shared vision amidst a diverse group of reform partners is daunting, we can also "find our differences an opportunity instead of an obstacle...Learning to compromise our demands for the sake of a common good is not to sacrifice them but to transform them. In the long run, after all, the common good is our good" (Allan & Evans, 2006). Developing an awareness of these barriers to authentically sharing autonomy will allow the NEXTschool initiative to continue its roll-out with greater attention and effort being put into navigating those moments where hierarchy comes before autonomy. This will contribute towards a more balanced approach that can benefit our communities holistically.

Design thinking has the potential to establish a motivating shared autonomy for educational systems that respects and works with the various conflicting visions and purposes of

education. It makes it possible to bring them together dialectically in a school, while maintaining an ownership and autonomy—albeit shared—for each and all of the various educational partners involved and impacted. This approach, if engaged authentically, carefully, and at every stage, can lead to a sustainable and equitable framework for change that will be reflected in a similarly equitable and dispersed experience for students, teachers, and educational partners in the resulting school system—in this case NEXTschools. Such experiences can achieve the NEXTschool aim of teacher-driven student-centeredness (LEARN, 2017), whereby schools benefit from many of the 21st century learning outcomes associated with autonomous teachers and learners. As the explore phase of NEXTschools continues, and in other school reform efforts, facilitators and educational partners have the shared power to realize or rush past this potential.

Conclusions

The success of NEXTschool's plan for sustainable and meaningful educational reform depends on affecting a culture shift. This culture shift may be achieved by engaging the mental models of core group members to design a shared vision for education that aligns with all the partners' various agendas (Fullan, 2011; Hargreaves, 2005; Stroh, 2015; Senge, 2006). An authentic design thinking approach in NEXTschool's explore phase trusts the understanding that "who participates is as important as the evidence itself" (Farley-Ripple et al., 2018, p. 239). It is not enough for expert facilitators to prescribe a shared vision from the evidence created amongst a diverse group of designers; these designers' voices need to be involved in the negotiations in order to assure their shared autonomy and the resulting commitment. This may be the key to realizing mental and cultural transformations to educational systems. Ensuring this shared autonomy during the design of the NEXTschool initiative will support a similarly valuable

culture of autonomy for teachers and other educational partners facilitating their own iteration of a NEXTschool and for students in these classrooms. The value of sharing autonomy at every level is mutually reinforcing as it disperses ownership and motivates the partners working towards reform.

> ...being allowed to adjust their implementation to local conditions and their own collective capacities, and being encouraged to unleash their energies and enthusiasms in curriculum development by being accorded a high degree of professional discretion….[leads to] a curriculum that is rigorous and relevant for culturally and intellectually diverse groups of students who bring different forms of prior knowledge, understanding, interests, and concerns to their classrooms. (Hargreaves, Earl, Moore, & Manning, 2001, pp. 111-2)

As Hargreaves et al. (2001) suggested, reiterating the process of transforming mental models and establishing a shared vision can similarly affect the culture shift needed in schools. Instead of working with the core group members of the design phase, this will be achieved in schools by engaging and influencing mental models of the local students, educators, and partners within each school where NEXTschool hopes to be implemented. However, this will only be possible if the facilitators, the explore year educators, and the NEXT students feel they have a genuine share in the autonomy of the change process and of the resulting structure.

Promoting an educational model that diverges from top-down structures is not a straightforward or simple task. Considering that Québec schools currently operate within a top-down structure or medium, it is difficult to expect a less hierarchical message and model to emerge. To realize a culture shift in schools, we have to work with current realities in the province. Design thinking, facilitated from the top-down in ways that educators and their

partners are familiar with, attempts to subvert the top-down hierarchy of schools from within, using a top-down facilitation of design thinking to create more balanced control and shared autonomy amongst the involved educational partners. The medium of education in Québec may not seem fertile for a message that bucks the top-down structure that schools here are used to, but engaging design thinking reframes the top-down medium. It provides a means of distributing authority and facilitating a reflection of this shared autonomy for students, teachers, and their educational partners in the schools that result from a design thinking reform.

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Transition

The third piece of my thesis follows the second paper chronologically, looking again at the NEXTschool reform initiative but in the summer period that followed the initial design phase. This paper looks at the place of digital technology in discourses and experiences of education and educational change. Grounded in literature on the value of digital supports and the importance of critical digital literacies, this paper considers how an educational system undergoing reform can embrace the supports of digital tools in careful, responsible, and effective ways.

This paper considers this literature in dialogue with discussions had by educators as part of the NEXTschool summer institute. As highlighted in the previous paper, the NEXTschool design thinking approach aims to respect and engage the expertise and perspective of educational partners, sharing autonomy. To that end, the summer institute featured breakout groups that brought educational partners together to share their views on educational reform. This paper will consider these educators' views and connect them to relevant literature in order to develop considerations that can help educators support students' critical digital literacies in future school reforms.

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The Supports of Digital Technology as Barriers to Student Autonomy: Towards a Critical Digital Literacy

Digital technology is a central element of 21st century learning and a fundamental tool for contemporary education; it is a means of instruction or exploration and a focus or competency which students are being taught (Beetham & Sharpe, 2013; Bellanca & Brandt, 2010; Partnership for 21st Century Learning, n.d.; Trilling & Fadel, 2012). Developing autonomy and acquiring social or life skills are also important components of 21st century learning aims (Di Fabio, 2014; Dumont & Istance, 2010; Finegold & Notabartolo, 2010; Galarneu & Zibit, 2007; Wagner, 2008). This paper will explore a certain level of incompatibility between education that relies on digital technologies and education that aims to support the attainment of the fundamental life skills necessary for autonomous learning. To resolve this discordancy, I will consider these areas of incompatibility as considerations that educators can focus on as they work with students towards a digital literacy that is compatible, or even beneficial, to these social or life skills and to autonomous learning. Although this inquiry points to ways in which an engagement with digital life can lead students further away from being able to acquire the social or life skills that contribute to their educational autonomy, if teachers' roles adapt with the 21st century shift in learning objectives, then students can develop critical digital literacy with digital technologies that complement social or life skills, building towards autonomous learning.

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Key Terms

Digital literacy. Digital literacy "is a topic whose terminology is very confused" (Bawden, 2008, p. 17) but the popular understanding of the term comes out of Paul Gilster's

book, *Digital Literacy* (1997). Gilster (1997) uses the term quite generically to refer to "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1). More recently, scholars such as Martin (2006) and Lane (2009) have expanded this definition to include the ability to use digital tools beyond just computers, employing the term digital literacy to refer to "a modern day skill set that relies on digital technologies or tools" (Lane, p. 6). Considering the confused, or generic and flexible way that scholars discuss digital literacy, it is important to differentiate between digital literacy by which students learn with digital tools and a more critical digital literacy that considers these digital tools and negotiates a responsible engagement with these tools—in contexts when it is advantageous to student learning and developing autonomy. There are already some educational approaches to digital literacy that model more responsible and careful approaches (Alvermann et al., 2018; Hinrichsen & Coombs, 2014; Ito et al., 2013; Rowsell, 2013). Educators can adapt these perspectives on digital literacy for their own practice to ensure that the way their students engage digital tools will support students and their autonomous learning. "Critical Computational Literacy" (CCL) is one such approach (Lee & Soep, 2016). It combines Critical Literacy—"interested in dismantling social injustices and inequities…it provided historically oppressed communities a means to observe, analyze, and deconstruct the inequitable systems of power in all facets of society" (Lee & Soep, 2016, p. 484)—with computational thinking—which, relates to "Computer Science, focus[ing] on the approach one takes to solv[ing] problems, design[ing] systems, and understand[ing] human behavior" (Lee & Soep, 2016, p. 484). This movement teaches "youth to analyze the powerful impact of various [online or computer-related] institutions and systems that reproduce inequality through the content of media messages and…the vehicles through which those messages circulate" (Lee & Soep, 2016, p. 481). CCL,

although specifically focused around navigating and challenging educational inequalities reproduced in digital spaces, is a potential framework to model the critical approach necessary to ensure that digital literacy is taught such that students can navigate digital tools in socially responsible ways. For this inquiry, the nature of a critical approach to digital literacy focuses around ensuring that students are using digital tools optimally and in ways that support students' ability to learn autonomously.

Social or life skills. The social or life skills discussed in this inquiry come from literature around 21st century learning skills, in which social and life skills are posited as a central learning objective (Ananiadou & Claro, 2009; Binkley et al., 2012; Dede, 2010a; Partnership for 21st Century Learning, n.d.; Trilling & Fadel, 2009; Van Laar, van Deursen, van Dijk, & de Haan, 2017; Wagner, 2008). In educational discourses, the contemporary emphasis on these skills—that include learning and thinking skills like critical thinking, problem-solving, creativity, communication and life skills like leadership, ethics, collaboration, and citizenship (Binkley et al., 2012; Dede, 2010a)—has emerged in OECD countries to support students as they encounter "new forms of socialisation and [so they can] contribute actively to economic development under a system where the main asset is knowledge" (Ananiadou & Claro, 2009, p. 5). Aspects of digital literacy are sometimes included as a social or life skill in discourse around 21st century learning (Binkley et al, 2012; Dede, 2010b). However, for the clarity of this inquiry, I will discuss digital literacy and social or life skills separately throughout this paper.

Autonomous learning. What I describe in this paper as autonomous learning is based on the liberal-humanist sense of autonomy combined with the ideas of emancipatory education as discussed by Paulo Freire (1970) and Jacques Rancière (1991). The liberal-humanist sense of autonomy suggests that students are not learning without teachers necessarily, but rather that

they are able to "form complex intentions… sustain commitments…chart [their] own course through life…develop [their] own understanding of what is valuable and worth doing…take control of [their] affairs, and…access…an environment that provides [them] with a wide range of valuable options" (Wall, 2003, p. 308). This definition is open to the idea that educators can be involved with developing students' autonomous ability to learn, but that they must not spoon-feed students. Instead, the teacher's role is to facilitate contexts that allows students to direct, fashion, and realize their own learning needs and aims. Emancipatory education reflects this understanding of autonomy and introduces the role of the teacher in supporting students' autonomous learning. Working against the idea that teachers are banks of information whose role it is to deposit this information into students, Freire developed "an emancipatory 'problem posing' education" (Galloway, 2012, p. 2) through which he believed students could transform society. Rancière similarly eschewed the idea of educators as expert knowledge holders. He described a teacher who was effective despite not being able to speak the same languages as his students (Rancière, 1991). For Rancière and the teacher he wrote about, the role of an educator is to move the student towards "intellectual freedom" (Galloway, 2012, p. 3). Intellectual freedom refers to learning more than just what the teacher knows, but to work with the teacher towards developing the fundamental competencies needed for an autonomous, personal, and independent approach to learning (Rancière, 1991).

Context

Benson and Voller (2014) asserted that "autonomy and independence have become linked to the growing role of technology in education" (p. 6). Many educational scholars who research digital technologies share this optimistic stance about the potential for the internet and digital tools to support learning that facilitates autonomy and independent learners (Ali, Hodson-

Carlton, & Ryan, 2004; Drexler, 2010; Hafner & Miller, 2011; Wegner, Holloway, & Garton, 1999); these researchers have demonstrated or taken for granted that digital technologies allow educational experiences to nurture student autonomy and independence. However, there are some educational scholars (Agbo-Egwu, Abah, & Anyagh, 2018; Baek & Ha, 2018; Fong, Lo, & Ng, 2015; Yamamoto, Ananou, & Sindlinger, 2013) and many scholars in other fields (Campbell, Sittig, Guappone, Dykstra, & Ash, 2007; Crary, 2013; Hall & Baym, 2012; Lee, 2016; Tanti & Buhalis, 2017) who have uncovered ways in which internet use and digital technologies can actually cause an overdependence in users that limits their autonomy. This paper builds on work that considers how digital technologies used in educational contexts may be limiting student autonomy. It takes this further by considering how educators' roles can adapt to a 21st century model and encourage an approach to education that balances digital tools and social or life skills to support student autonomy. This will be explored in the relevant literature and by analyzing the transcripts from breakout sessions and participant observations at a three-day summer institute that focused on innovative approaches to learning.

The summer institute featured presentations made by academic scholars, coupled with breakout conversations with teachers and administrators. These presentations and dialogues explored and unpacked visions of what an innovative high school—or a *NEXTschool* as it was called at the institute—might look like. The NEXTschool summer institute was a conference organized around considering what a high school of the future could ideally look like in the Québec context. The institute was funded through the Connections program of the Social Sciences and Humanities Research Council and was cohosted by a leading Québec university and a local non-profit organization responsible for English language education in the province. Over 80 teachers and administrators attending the summer institute were challenged to consider

what a NEXTschool may look like if it is designed with an explicit focus on student engagement for 21st century learners (LEARN, 2017). What was not explicit was the essential components of 21st century learning—whether it relates more to digital literacies, the aforementioned social and life skills, or some combination of these features. The momentum from this summer institute has built into what the community partner is calling the explore phase of NEXTschool in which educators at five high schools and one adult education centres in three school boards are continuing explorations and design workshops around actually developing and implementing a NEXTschool approach to their delivery model.

The NEXTschool initiative was launched with a research and development report that emphasized the importance of a student-centred approach as one of its essential components (LEARN, 2017). Also included in this document were suggestions that the NEXTschool project would fulfill key 21st century learning aims, including promoting social or life skills that facilitate students' development into autonomous learners (LEARN, 2017). Another way that the report discussed these 21st century learning aims was in relation to the use of digital tools to personalize the classroom and extend it beyond the four walls of the school (LEARN, 2017). Although many scholars looking into educational technologies would, as mentioned, see these goals as compatible, this paper aims to demonstrate another possibility: that using digital technologies might—in certain cases—diminish autonomous learning by lowering an individual's independence and ability to solve problems or think critically. Looking at educators' discussions around the implementation of a NEXTschool highlights how some sets of 21st century learning goals that highlight social or life skills culminating in autonomous learners (Di Fabio, 2014; Dumont & Istance, 2010; Finegold & Notabartolo, 2010; Galarneu & Zibit, 2007; Wagner, 2008) may be challenged by other sets of 21st century learning goals that focus on

cultivating digital literacy (Beetham & Sharpe, 2013; Bellanca & Brandt, 2010; Partnership for 21st Century Learning, n.d.; Trilling & Fadel, 2012). However, this inquiry builds towards a consideration of how to bring these sets of 21st century goals together in a responsible or critical approach to learning about and using digital technologies in the classroom.

Literature Review

When searching through databases and reading about the ways digital technologies are explored by educational researchers, it becomes clear that many scholars see the internet and digital devices as tools to support student learning and autonomy (Ali, Hodson-Carlton, & Ryan, 2004; Drexler, 2010; Hafner & Miller, 2011; Wegner, Holloway, Garton, 1999). Many scholars see digital tools as providing more potential flexibility and personalization of educational experiences (Beetham & Sharpe, 2013; Collins & Halverson, 2018; Gamrat, Zimmerman, Dudek, & Peck, 2014; Green et al., 2005; Laurillard, 2008), thereby aligning with the 21st century learning aim of adaptability for a rapidly changing world (Fadel, Bialik, & Trilling, 2015; Senge et al., 2012; Wagner, 2008). Distance education courses delivered online are praised for the potential flexibility that asynchronous instruction provides to ever more dispersed and busy students (Allen & Seaman, 2011; Anderson, 2008; Bates, 2005; Beldarrain, 2006). Digital technology is also seen to allow student autonomy in that students can learn at home through the popular idea of a flipped classroom. In a flipped classroom, students learn course content independently as homework through digital tools like online videos and then work on assignments or projects during class with teacher support (Bergmann & Sams, 2012; Bishop & Verleger, 2013; Tucker, 2012). Approaches like this—that rely on digital tools to allow students to figure things out without needing the support of a teacher or content expert—are also facilitated by websites or applications like ‘Duolingo’ or ‘Wolfram Alpha’ that have become

commonplace in many classrooms (Canbek & Mutlu, 2016; Bozkurt & Göksel, 2018; Marques, 2016; Railean, 2017). Although these examples of education supported by digital tools seem to be nurturing student autonomy, they help students by substituting the support of a teacher with that of a digital device. Whereas teachers can regulate the way and degree to which they support students, digital tools can be accessible at the whim of the student. Students who do not learn to regulate their use of digital tools can therefore become overdependent on digital devices (Baek & Ha, 2018) which can cause their memory processes to adapt in ways that may obstruct their abilities to figure things out without rushing to the internet (Agbo-Egwu, Abah, & Anyagh, 2018). Some scholars even suggest that students can become addicted to feeling connected online, causing an aversion to offline situations, psychological distress, and academic underachievement (Fong, Lo, & Ng, 2015; Yamamoto, Ananou, & Sindlinger, 2013). Along with uncovering the negative impacts that can result from an overreliance on the internet, Fong, Lo, & Ng (2015) highlights the role education can play in mitigating the potentially negative effects of internet usage. Unless education and teaching changes to facilitate a more responsible and critical digital literacy, digital supports have the potential to diminish students' confidence (Best et al., 2014; Turkle, 2014), their ability to discern credible information (Peters, 2017; Rainie, 2016), and their openness to engage with dissenting ideas (Flaxman et al., 2016; Karlsen et al., 2017). These digital dependencies may render learners less autonomous than they would have been without the digital tools in the first place (Campbell, Sittig, Guappone, Dykstra, & Ash, 2007; Hall & Baym, 2012; Lee, 2016; Tanti & Buhalis, 2017). As digital tools become bigger parts of students' lives and educational spaces, a teacher's role needs to shift to support digital literacies such that students can mitigate these potentially negative impacts and nurture a careful and balanced relationship with the internet and digital devices.

As Neil Postman (1997) unpacked in his discussion of computer technologies in education, "[a]ll technological change is a Faustian bargain. For every advantage a new technology offers, there is always a corresponding disadvantage" (p. 192). In arenas beyond education, this has been well researched; "[t]he more technology replaces skills we have learned, the more likely it is we will forget those skills, or worse, never learn them at all" (Lee, 2016, p. 1575). The value offered by digital tools comes at an expense: Google Maps, Waze, and other online mapping and GPS services provide easy navigability for tourists in unfamiliar areas but one recent study suggests that this leads to a dependence on these crutches (Tanti & Buhalis, 2017). Other studies have demonstrated that such supports obstruct individuals' ability to construct mental maps and develop a personal sense of direction (Huang, Schmidt, & Gartner, 2012; McKinlay, 2016). Medical technologies are similarly demonstrating that digital technologies can increase the safety and efficiency of medical procedures but that they have unintended consequences for medical information systems (Campbell, Sittig, Guappone, Dykstra, & Ash, 2007) and the quality of doctors who have become complacent and overdependent on technology (Lee, 2016). Even for socializing, although social media provides increased access and convenience to friends and loved ones, it increases the guilt and pressure associated with the perpetual contact made possible by digital devices (Crary, 2013; Hall & Baym, 2012). All of these dependencies are based on effective and helpful tools that—used without a critical and educated approach—may end up usurping the user's autonomy.

This paper aims to explore how the Faustian bargain of digital technology plays out in educational contexts. As Postman's critical qualification reminds us, digital tools—if used irresponsibly or without critical reflection—have the potential to counteract the benefits they offer. Connecting the literature reviewed here to the experiences of teachers and administrators

in their classrooms and schools—as shared during the NEXTschool summer institute—highlights how the aim of student autonomy may, at times, be obstructed by the very digital tools that are expected to enhance or facilitate it. The literature and experiences analyzed also point to the significant role education can play in facilitating a critical digital literacy that allows students to learn about and use digital tools in ways that support their development as autonomous learners.

Methodology

To inquire into how digital tools may impact student autonomy, I will work with the empirical methodology of case study, an ideal approach for a qualitative inquiry into a contemporary concern in a real-world context (Yin, 2017). The context of this case study is the NEXTschool initiative, facilitating educational reform in Québec high schools. Specifically, I will be looking into the NEXTschool institute that took place this past summer over three days, from July 31st until August 2nd, 2018. The community partner and local university co-facilitated the NEXTschool summer institute to build momentum for the NEXTschool initiative. One of the objectives of the NEXTschool summer institute—and the one that will drive the focus of this case study—was to figure out how to engage students in 21st century learning, whatever that may have meant to the various educators participating in the institute.

My approach to this inquiry has drawn on post-structuralism (Peters & Wain, 2002). Considering this study with a post-structuralist lens honours the "emphasis upon perspectivism in interpretation" (Peters & Wain, 2002, p. 62)—thus aiming to respect the claims made by teachers and administrators who were taking part in the summer institute. In the following section, the ideas of one keynote presenter, one administrator, two researchers, one educational consultant, and eight teachers are discussed. These educators and scholars hold valuable expert perspectives as individuals situated within the school or educational context. Although their comments here

are anecdotal, my discussion intends to ground them in relevant literature and consider how they may relate to either problematizing digital tools that impact students in negative ways, or how their comments can build towards a more critical and responsible digital literacy. The aim of unpacking these comments is to highlight the value and details of educators' and schools' abilities to help students engage digital tools in ways that support these students along the path to becoming autonomous learners.

Findings

From the conversations and presentations transcribed at the summer institute, digital technologies emerged as a commonly discussed feature of 21st century schools. In the large plenaries, digital tools were presented as a key to achieving the aforementioned institute goal: developing a model by which students are most likely to effectively engage in 21st century learning. Presenters delivering keynotes at the summer institute told success stories associated with digital tools that aid students or schools, and teachers and administrators shared information about digital resources that they already use in their practices. During focus group discussions, teachers and administrators also explored some of the anxieties they have about the growing use of digital technologies in classrooms and about issues students face that—as the conversations analyzed below uncover—some believe are connected to growing dependencies on the internet and other digital tools. These discussions also considered how to reframe education or how teachers might adapt to ensure that digital tools are used in ways that benefit students.

Keynote presentation – digital resources for education. One of the keynote presenters was particularly supportive of incorporating digital tools in classrooms. He shared specific digital resources across disciplines that he recommended for classroom use. He told a story about a young girl who after being bullied in her classroom, developed a Youtube channel to share her

ideas about books with a larger, more encouraging audience. He extrapolated to suggest that Youtube can facilitate student projects and provide them with translocal platforms to seek out validation when they may be feeling invalidated by negative social dynamics in their local classroom. The presenter also shared tools that support sciences and humanities classes: for sciences, he discussed Wolfram Alpha, a program that solves complex equations for users in a variety of fields; for humanities, he discussed the Prism Scholars Lab which can be used to notate poems or other texts, whether political or literary.

Although the presentation and reception to these tools was largely positive, some educators in the audience asked whether the skills that these technologies risk replacing—solving equations supported by Wolfram Alpha, critically unpacking complex texts supported by the Prism Scholars Lab, or even social validation, as in the case of the young woman supported by Youtube—are still important to foster independently, within local settings, when we have tools that can support students in achieving them digitally. The presenter responded that the use of digital tools, for him, were the foundation of figuring out how to solve any problem that the learner may encounter, regardless of subject area. This presenter, aligning with the 21st century learning goal of adaptability (Fadel, Bialik, & Trilling, 2015; Senge, 2012), suggested that students can use digital tools in order to flexibly and generically know how to identify any problem and figure out how to solve it. He offered no critique of the potential for digital tools to support learners in their autonomous quest for knowledge. However, his presentation was designed to bolster teachers' abilities to supports students' uses of digital tools, perhaps towards more autonomous learning. Being an autonomous and adaptable problem solver, in this presenter's conception, involved determining what digital tools can be used to support achieving a solution. His appeal to teach adaptable problem solving through focusing on the basics was not

about local and analogue critical thinking; his problem solving relied on using digital technologies. To some extent, this presenter advocated for digital tools without a digital literacy that would encourage students to use these tools in ways that support their autonomous learning. Implicitly however, his presentation encouraged the educators listening to learn more about digital tools in order to support their students uses of them, hopefully in critical and responsible ways.

Focus groups – risk-taking risks. Breakout sessions and in-session conversations with teachers touched on the possibilities and problems that arise when students rely on internet-based technologies and digital tools. One teacher, Participant 1, discussed the way that social media can be a digital tool that obstructs students' abilities to take risks—which scholars agree is an important way for students to develop the 21st century competencies of critical thinking, autonomy, and problem solving (Boyles, 2012; Dede, 2010a; Halász & Michel, 2011; Parsons & Taylor, 2011):

> I think there's a lot of stuff too about their culture that's very like risk-averse with the Facebook and the 'likes' and the needing to be like everybody and so even standing out, putting up your hand and answering a question, offering an opinion, you know, that you don't know is right, like they very – have a really hard time doing that; so I don't know about you but we end up with more beige.

In Participant 1's characterization of her students, she asserted that the tools provided by social media may make it more difficult for students to take risks. Literature has supported this and suggested that the internet and social media can lead to anxiety and a lack of self-confidence (Best et al., 2014; Turkle, 2014). If teachers gain deeper understandings of these potential issues and learn more about the way digital technologies work or obstruct learning, they can support

students' development of a digital literacy that is compatible with risk-taking, critical thinking, and adaptability.

Focus groups – digital overdependence. Another challenge discussed by one of the breakout groups at the summer institute focused on the level to which students rely upon digital technologies. This group echoed educational scholars who have explored how the reliance on digital tools can go too far and lead to overdependencies on these technologies (Agbo-Egwu, Abah, & Anyagh, 2018; Baek & Ha, 2018; Fong, Lo, & Ng, 2015; Yamamoto, Ananou, & Sindlinger, 2013). At least four of the educators in this group—three English teachers, and one math teacher—agreed that too much or the wrong kinds of help—from parents, teachers, or technology—jeopardizes students' abilities to work autonomously in a student-centred classroom. An example that illustrates this dichotomy between developing autonomy and being digitally reliant came up during one of the discussions around implementing a NEXTschool. Participant 2, an English teacher and department head, was discussing an annual field trip scavenger hunt challenge her school holds for a group of their high school students around Montreal's old port. With every passing year, she and two of her colleagues (who were also in the focus group) have been noticing that the same challenge—figuring out rhyming clues that the teachers prepared to facilitate an exploration of the area—has been, according to Participant 2, getting "progressively more difficult for [students] to do…" This teacher even suggested that the difficulties arise because, as she put it, students "are not thinking anymore." When questioned on what she felt was the cause of this difficulty, Participant 2 said that she and her colleagues "discussed it a lot as a staff" and they believe that "technology" is the culprit.

When pressed on what the other educators in the room felt was the basis for students' diminishing abilities in this challenge that engaged the 21st century learning goals of problem

solving and initiative, Participant 3 built on what Participant 2 had brought up. She discussed the speed of internet search engines and how this translates into skimming through details in everyday life:

> …the kids, they get the clue and they'll like [read] the first words [and] go, and they haven't read the 10 other words that go with it, and so they're just too quick…I think technology – I think everything is very quick, everything – Google, you don't need to know anything, you don't need to know how to learn anymore you just need to go 'Google.'

Instead of figuring things out for themselves, some approaches to 21st century learning goals are designed with the assumption that students can look up information and solutions. Internet searching can be an effective tool to support all sorts of decision-making processes and problem-solving skills, but there are certain contexts—like the one above—for which Google may not be helpful. It cannot handle nuance; it regurgitates without contextualizing (Illingworth, 2001). However, if internet searching is the only problem-solving tool a person has, or if a student has not learned the digital literacy necessary to utilize search engines appropriately, then they may default to using them in ineffective or problematic contexts. An overdependence on the internet may lead students to fail at critically thinking through their challenges autonomously.

Focus groups – problem-solving problems. During one of the summer institute's focus group discussions, a teacher, Participant 4, was discussing Sesame Street: "even Elmo in his little section at the end, he's got his smarty who's a smart phone. And what do we do when we don't know something? We look it up on smarty." There is a risk to designing schools with the assumption that because students can look things up, they should always and generically be encouraged to do so, and that education just has to adapt and reframe its goals towards 21st

century learning aims. The risk here is not that looking things up replaces the teacher but that it replaces the process by which students are challenged to try to figure things out on their own—with a teacher to model, explain, and support the process by which students become able to figure things out autonomously. In today's world, this process of figuring things out relies increasingly on digital technologies, so teachers' roles should similarly be increasingly concerned with supporting students' abilities to harness these technologies in effective, critical ways, which may sometimes include avoiding these technologies, at least temporarily. Scholars have demonstrated great educational value in sitting with uncertainty and fumbling to figure out answers or solutions without looking them up (Hasso Plattner Institute of Design at Stanford University, 2017; Davis, 2017; Gopal, 2011; Nel et al., 2008)—especially in the acquisition of the leadership and initiative that cyclically is necessary to developing further self-efficacy and autonomy. Inversely, relying too much on looking things up on technological devices may—as discussed—diminish students' ability to resolve problems on their own. This can reaffirm students' dependence and their continued need to look answers up instead of taking the initiative to figure a solution out on their own. Teachers need to evolve in order to obstruct this negative feedback loop. Digital tools are a part of everyday life and the discussions presented here suggest that education has not yet transformed to the extent it needs to in order for teachers to have the space, knowledge, and structure to support and facilitate students' responsible, critical digital literacies.

Participant 2, the teacher who ran the aforementioned scavenger hunt program explained that Google—as the default problem-solving tool used by her students—was an ineffective aid for their competition:

> …our race you can't Google because it's – you're looking for a sign, Google doesn't know the sign, like they're looking for really small clues sometimes and so they just got lost. They just – and we- I observed them and I just was like 'what are they even doing?' and I went over one day and I said, 'What does your clue say, where are you going?' … 'It says stay in the square'… They skipped the whole first stay in the square and so when I said, 'What does your clue say?' she read, skipped those three words and went to – and I'm like, 'Say that again, read that again, read the whole clue to me,' she did the same thing and I said, 'No what are the first three words' [laughs]. She was like, 'Stay in the square, oh', and then they went and stayed in the square and they found it – but it was just that kind of stuff where you're like, 'You guys aren't reading, you're not stopping, you're not consulting each other, you're not working together, you're just-'.

After she finished her explanation, Participant 4—also a teacher at the school that ran the scavenger hunt challenge—agreed that digital tools may have been related to the students' difficulty completing the scavenger hunt competition. She elaborated on the challenges of digital technologies' ubiquity: "I'm finding that the students have gotten like progressively less able, like a lot more learned helplessness." Participant 5 echoed her agreement: "there's no autonomy." These comments contribute to a wider understanding of how teachers perceive students use of digital tools. It may suggest that some teachers see digital technology as inhibiting the 21st century goals of initiative and autonomy and contributing to students' inability to collaborate and support their own learning. It touches on the ways that digital technology—such as user-friendly search engines—can sometimes limit other 21st century learning goals like those that Wagner (2008) explores: critical thinking and problem-solving abilities, student collaboration, and agility when analyzing information.

Focus groups – developing digital literacy. Although the digital reliance demonstrated by the students in the scavenger hunt story did not result in the effective use of technological tools, many scholars and educators have begun to demonstrate how developing student-centred classrooms with students who are strong, autonomous leaders can be compatible with a critical understanding and use of digital technologies (Alvermann et al., 2018; Hinrichsen & Coombs, 2014; Ito et al., 2013; Lee & Soep, 2016; Rowsell, 2013). These thinkers have suggested that the aforementioned issues associated with ineffective digital literacies arise when schools fail to critically and carefully adopt or explore digital technologies. As Participant 6, one teacher at the summer institute put it, "something that we're struggling with is having the technology there, having access to the technology, and having the knowledge and how to use it." In another focus group the following day, Participant 7 echoed this concern, bringing up the importance of building foundational knowledge before helping students utilize digital supports:

> …the answer is also not to like nuke all the content just because you can look it up on your phone. You know, you actually can't look things up on your phone very well if you don't know a bunch about the domain that you are trying to look something up.

Learners can be empowered in autonomous ways when their education balances learning fundamental knowledge or skills beyond the digital domain and being digitally literate in ways that empower critical and responsible engagement with digital tools. Overly rushed or uncritical adoption of digital tools is less likely to empower autonomous learners in the same ways.

This understanding of carefully reimagining how to engage and teach critical digital literacy was shared by several educators at the summer institute. Many were optimistic that digital technology can be a positive force, as Participant 2 pointed out, if educators "figure out…how to turn it around and use it more to the advantage, and focus on the learning tool

capability of it." Some teachers even shared strategies that can develop digitally literate students while promoting their autonomy. In the following story, Participant 8, a teacher, shares how her own autonomy was challenged when she had issues with technology. However, through embracing the critical thinking and problem-solving abilities of her students, Participant 8 managed to turn the situation into a learning moment for the students and for herself that aimed at developing their autonomy:

> …sometimes when I'm doing something in class it's just, you know, technology is not working for me. And you get the kids…and they go over and they kind of like take over and they just do it. And I'm like, 'no, no, no, I need to do it myself.' And suddenly I'm like, 'okay,' you know, like now also this kid is looking and saying, 'okay,' you can't just go and say go do things for people, you need to teach them how to do it themselves too. And it is really interesting when you say like with the shared values when you're reversing the roles and suddenly you're as the student, so you see things that the kid is also as a teacher and the kid is seeing things, you know?

At least three educators at the summer institute—two teachers and one administrator—brought up the idea of encouraging students to take on leadership roles with digital tools in the classroom, promoting digital literacy and student autonomy concurrently. Participant 9, an administrator, even had the idea of getting students to operate a digital technology repair and workshop or bar for other students and for staff at the school. This technology repair bar idea could allow students to share their 21st century abilities associated with digital literacy while developing their other 21st century abilities associated with problem solving, autonomy, and critical thinking. Especially for students who may already be digitally literate, teaching and supporting others' digital literacies presents opportunities to foster other important 21st century

learning goals associated with autonomy and life or social skills. Those receiving the support from these more digitally literate students also learn important life skills in relation to collaboration, problem solving, and critical thinking as they become more competent and autonomous in their own uses of digital technologies.

Conclusion

Schools designed to support 21st century learning need to both facilitate digital literacy and teach the life skills and competencies associated with autonomy and other 21st century learning goals. Conversations and presentations from the NEXTschool summer institute demonstrated a critical concern that must be resolved in order to make this possible: for a school to achieve a student-centred model, students must be autonomous learners and critical problem solvers—which in the world of 21st century learning can be connected to students' digital literacy. In order for students to become digitally literate, critical, and independent, they must learn how to take charge of their own learning and engage in 21st century competencies. As explored, using digital technologies can sometimes obstruct this autonomous development. However, facilitating students' digital literacies in a balanced and responsible way can break the cycle by which students become increasingly reliant on digital tools and increasingly abstracted from their abilities to learn autonomously. As expressed by Participant 10, a researcher moderating one of the NEXTschool summer institute focus groups,

> On the one hand the NEXTschool is meant to develop these [life] skills but it also relies on students having them, so I think that's a 'where-do-we-go-next' question; it's like how do we initiate students into this type of program so that they actually are able to do these challenges that I think will then take them further.

Participant 2, agreed and pointed out the cyclical but currently hidden reality that we "can't expect [students] to do something if they can't do it." She was critical of rushing into a student-centred, teacher-facilitated, digitally-enabled model:

> …it's all very good to be a facilitator but I don't know about you guys, but I do a crap load of direct explicit instruction because they're not going to figure it out by themselves; and even if you do give them a detailed instruction sheet and an example of what they're to produce there's still going to be, you know, so…how do you then figure out well what's my role in here, yes I need to facilitate but I also have to figure out what do they already know how to do and how do I address the gaps.

The role of the teacher in an ideal 21st century school will be to work with the students to find this balance and determine—on a case-by-case basis—how different digital tools support or obstruct student autonomy and how different students can develop autonomy when working with digital technologies.

Beyond just teachers, administrators and school boards also play a role in striking the balance between embracing new technologies and promoting a critical digital literacy that facilitates autonomy and other 21st century learning objectives. During the focus groups, this strategy of careful, critical, and responsible engagement with digital tools was described by Participant 11, an educational consultant focusing on digital technologies in the classroom, as "watering the roses, not the rocks or weeds." This phrasing resonated with another member of the focus group, Participant 9, an administrator, who explained:

> …if you have a technology initiative in your school and, you know, the person that takes the time—like in the past they put out a project proposal so whichever cycle or whichever group of teachers want to work on this make a proposal on what you're going to do with

> the technology, because I have, whatever, $20,000 to buy laptops or iPads or whatever, you know. So the teachers who were interested created a proposal and then since they put all that work into creating this proposal, they got the resources in order to move forward. So that's how you water the roses…[a]s opposed to just dumping the technology…[a]nd then it sits in the corner and nothing is used.

Beyond just ensuring that teachers support students' critical digital literacies, Participant 9's comment points to the way that digital technologies must be carefully and critically adopted at the administrative and board levels in terms of budgets and policy decisions.

Looking specifically at NEXTschool and the associated literature, the leaders and founders of the initiative have made it clear that digital tools will be a big part of NEXTschool designs. This is delineated in the research and development report that pre-empted the workshops currently underway with educators who are working to design 21st century learning models for Québec high schools (LEARN, 2017). This was also made clear in focus group conversations held at the summer institute. During a debrief after the institute, Participant 12, one of the researchers who had helped gather data and moderate focus groups pointed out that "those five people [the two founders of NEXTschool and the three keynote speakers at the NEXTschool summer institute] have a very similar vision of what the NEXTschools are going to look like and it has a lot to do with technology." With the NEXTschool example, and for other educational reform that features 21st century learning goals, developing autonomous learners can be compatible with using new digital technologies as long as this engagement is embarked upon with care and critical reflection.

The way students use digital tools has the potential to lead them away from developing the social or life skills that facilitate their autonomous learning. As discussed though, these tools

can also lead students towards a more responsible, critical digital literacy that supports their autonomy. This paper's problematization of digital tools is not suggesting that educational systems should stop facilitating conversations or engagement with digital technologies in schools. On the contrary, it is increasingly important to engage at all levels—with academics, administrators, teachers, students, and the extended community—and determine how educators can evolve to best balance the inclusion of digital tools with the facilitation of student autonomy and other 21st century learning goals. Further academic studies and critical conversations within schools are necessary to promote 21st century reforms that will help schools support students' uses of digital tools in ways that are compatible with—and even beneficial to—the development of social or life skills and autonomous learning. If realized, such 21st century educational changes can ensure that students' critical digital literacies support their development as autonomous learners in our increasingly digital world.

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Transition

The final paper of my thesis does not deal with the NEXTschool reform initiative but it explores a similar reform project that a high school staff I visited with and observed attempted to implement. This reform was not successfully adopted and the school decided not to continue engaging with the project after one design session with external facilitators. Through a discussion of literature on the power dynamics of educational change, I try to make sense of the issues that arose during the process of attempting this reform the reform. By relating the literature on these issues to their manifestations for the staff involved with my research—the external facilitators of the reform process, the administrators at this school, and the school's tight-knit teaching staff—this paper attempts to meaningfully represent many of the challenges that may result from attempts at school reform that are hierarchical, and not effectively collaborative. Connecting back to the strategies outlined in the initial concept analysis, and to the way the second paper discussed the efficacy of authentic design thinking, this paper underlines the importance of educational partners sharing autonomy and working together towards systems change in a school.

Authentically Sharing Control: Strategies for and Barriers to Facilitating Educational Reform

This paper presents a case study to animate trends in scholarly literature on the power dynamics of educational or organizational change. It aims to uncover some of the sentiments and details that accompany the impacts of different power dynamics or leadership approaches for these types of change processes, providing a richer and more affecting picture of this research—one that could compel future changemakers to meaningfully process and absorb the ideas explored here. I attempt to achieve this by bringing scholarly ideas found in accepted discourses on the power dynamics of educational change into conversation with a real-world manifestation of an educational reform effort. The reform that I observed for this study related to many of the strategies and barriers to change found in the literature reviewed. The literature and experiences represented here provide contexts for understanding structures that can support or facilitate educational or organizational change, as well as approaches or leadership styles that may obstruct change or reform. These sources can help future educators or schools gain a deeper understanding of some of the benefits of leading change through collaborative approaches and some of the drawbacks of top-down change processes or leadership. Specifically, this paper reveals the value of approaching change non-hierarchically and genuinely sharing control amongst partners in a local setting.

The school being considered in this study for its real-world experience with educational reform is a mid-sized secondary school in a rural area of Eastern Canada that serves many low-income families. This school was expected to be one of the first schools in its province to pilot an educational reform design process that I will refer to as *New Design* to protect the anonymity of those involved in the initiative. New Design aims to modernize secondary schools in order to

increase student engagement. At the moment, New Design is being planned and piloted at a handful of other schools in the area. The school in question for this study had a small number of staff members who had been part of various informational and professional development meetings for New Design before their school signed on to explore the initiative. In the summer of 2018, the principal expressed interest in being one of the schools that would explore the initiative by working with external facilitators over the course of several design workshops slated to occur during the 2018-2019 school year. After just one of these workshops though, the school withdrew from exploring the New Design initiative. Discussing the initiative and the one workshop that was facilitated at this school aims to build with relevant literature to clarify some obstacles, supports, and strategies that may be valuable in future educational reform efforts.

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Background on New Design

New Design is an innovative reform initiative established with the objective of developing a new model for 21st century high schools that works with current regulatory frameworks while engaging more students. New Design was founded by two individuals, both with long and varied resumes within educational systems in their area. They have both traveled extensively to view models of innovative schools across Canada and beyond. In preparation for launching the New Design initiative, they did extensive research and reviewed relevant literature that helped them compose a report synthesizing popular ideas about best practices in education and in reforming organizations. Then, starting in the fall of 2017, they orchestrated various focus groups, university classes, design workshops, and a small conference featuring speakers and

breakout sessions to help refine their model and to build broad-based momentum for and engagement with the initiative.

New Design utilizes design thinking in an attempt to ensure that educational partners in their local school contexts feel ownership over their reform and are driving and designing context-specific changes (Liedtka, Azer, & Salzman, 2017). Design thinking comes out of a business model of design that was popularized by the design company IDEO and the Stanford d.school (IDEO, 2014; Stanford d.school, n.d.). Design thinking often begins by defining the issue or objective being explored and empathizing with users' experiences; then design thinkers ideate solutions as prototypes and test them with users in order to empathize further and refine the prototypes appropriately (IDEO, 2014; Stanford d.school, n.d.). Design thinking is built on the idea of dispersed authority, with expert facilitators but no expert knowledge-holders, and multiple iterations that are developed and revised through a non-linear process like the one described above (Liedtka, Azer, & Salzman, 2017). For New Design, the expert facilitators are from a non-profit educational organization whose mandate is to support local educational initiatives. New Design aims to improve schools through a context-based reform grounded in research on 21st century learning (Bender, 2012; Fadel, Bialik, & Trilling, 2015; Hood, 2015; Pelligrino, 2012), combined with examples of various innovative high school models from other provinces and countries. This scholarly and empirical research is expected to be refined into broad-based prototypes designed by local educators, administrators, and scholars as part of facilitated design thinking workshops. Using this groundwork in the context of design thinking, New Design invites educators at their local school level to translate or adapt research, models, and prototypes into structures and ideas that make sense to them in their differentiated school contexts.

Methodology

In this paper, I will work through a case study methodology (Yin, 2017) that is informed partly by an institutional ethnographic approach (Smith, 2005). For my case study, I began by considering research that looks at educational change and how it is impacted by top-down leadership or facilitation. Through relating this research to my observations of and conversations with staff engaging with the New Design reform initiative, I attempt to ground and understand the experiences of those staff members and of the facilitators and administrators with whom they interacted. This paper looks deeply into the school staff's challenging relationship with the New Design reform in order to highlight some barriers or concerns that may have led to the school's decision to step away from the initiative. By analyzing these obstacles along with potential strengths that the school demonstrated, this case study attempts to build strategies that can support a school's successful engagement with a reform like New Design.

The way this paper considers its research participants aligns with an institutional ethnographic approach (Smith, 2005). Institutional ethnographies start by considering the experiences and perspectives of people who are involved in the research (Smith, 2005). I observed the staff involved with my research at professional development meetings and workshops, as well as at a small conference. In these contexts, I had the opportunity to facilitate a breakout session and a focus group with educators from the school. Then, after the school withdrew from exploring the New Design process, I spoke with a lead teacher from the school in question. Through this paper, I try to bring this teacher's perspective into dialogue with literature and with the comments of the facilitators, administrators, and other teachers involved in the design workshop and in the debrief that followed the workshop. Like an institutional ethnographer then, this study "depends on the experiential resources of informants, on [my] own

experience, [and] on experiences doing observational work in a field setting" (Smith, 2005, p. 125). Working with the ideas expressed by the teacher I spoke with and by others at the school involved provides—from the perspective of institutional ethnographers—"a rich source of understanding…inserting knowledges that ruptures those subject to the monologies of institutional discourse and ideology" (p. 124). In the spirit of institutional ethnography, this paper explores how educational reform that attempts to disperse authority seemingly works or fails to succeed when centring the perspective of the people directly involved with and affected by the reform.

The teacher I spoke with most for this study is a humanities teacher. I will refer to them with singular they/their/them pronouns. This teacher emerged—throughout the various meetings on New Design and in the first design workshop—as a leader and spokesperson for some of the teaching staff at their school. They have been working at the school for over two decades and they have often been involved with initiatives and committees at the district level and with the provincial Ministry of Education, notably supporting a previous attempt at educational reform in the area. We spoke on the telephone for ninety minutes after their school withdrew from the design process, and they shared their perspective on why their school had decided not to continue with the New Design explore year workshops.

Conceptual Framework

In centring an individual teacher's account and bringing them into dialogue with the words of the other local actors involved in rolling out the reform at the school in question, I do not mean to present these individual perspectives as universal or omniscient; as institutional ethnography takes for granted, "actuality is always more and other than" in its account (Smith, 2005, p. 125). Exploring this school's experience with reform is not intended to answer

definitively why they backed out of the New Design project, nor is it to represent a diverse and large sample of educators' experiences. Similarly, the literature included is not intended to represent a comprehensive survey of literature. Rather, borrowing from Garman (1996)'s principles of validity in qualitative inquiry, these sources aim to offer what Garman called *verité* and *verisimilitude*. Like Creswell and Miller (2000) and Schwandt (1997), I define validity as "how accurately the account represents participants' realities of the social phenomena and is credible to them" (Creswell & Miller, 2000, p. 124-5). In order to improve the accuracy with which I can achieve this, I have attempted to frame my evidence in relation to these two principles from Garman. The literature I discuss in this paper aims to achieve *verité*, aligning my discussions with accepted discourses and understandings in research on educational reform and leadership. The empirical research I bring in through observations and comments from research participants attempts to achieve verisimilitude, aiming for an affirmative response to Garman (1996)'s questions, "Does the work represent human experiences with sufficient detail so that the portrayals can be recognisable as 'truly conceivable experience'? Does this research render accounts that readers not only read but feel and believe" (p. 19)? My observations and recordings of design workshops, breakout sessions, and focus groups aim to achieve a verisimilitude that will give my reader a detailed, conceivable, and felt experience of the benefits and drawbacks uncovered within the literature on school reform and leadership. By aiming for verité—through the literature discussed—and verisimilitude—through the experiences and comments captured—this study strives for a validity that reflects values and approaches consistent with best practice in qualitative inquiry (Garman, 1996).

To realize a verisimilitude (Garman, 1996) that nuances and complicates the monologies of the discourses and ideologies surrounding educational reform, this paper spends significant

time with the account of a lead teacher at the school being explored. This can function as a way of "[r]ecognizing and incorporating into the project's ethnographic analysis the actual diversity of perspectives, biographies, positioning, and so on" (Smith, 2005, p. 125). Including nuanced perspectives further complicates the institutionally monological or the objectified and structural account of how reforms succeed or are obstructed. In this paper, my objective is to build from the verité (Garman, 1996) of the literature reviewed by reflecting on this staff member's account of a reform effort that echoes this literature. From there, I will focus on the words of other teachers involved, of the school's administration, and of the New Design facilitation team. Personifying the ideas found in relevant literature, these different voices will be synthesized to contribute towards an ongoing uncovering of the dialogic and dynamic human perspectives of those experiencing or struggling to realize an educational reform.

Findings and Discussion

Much literature on educational or organizational reform supports the supposition that top-down reforms are often unsuccessful; many scholars have agreed that the top-down approach to educational or organizational change is problematic because systems are driven and supported by a mosaic of individuals who are most invested and motivated when they all share autonomy and feel genuinely involved with changes (e.g. Allan & Evans, 2006; Evans & Boucher, 2015; Fullan, 1993; Hargreaves, Earl, Moore, & Manning, 2001; Hargreaves & Shirley, 2009; Hoban, 2002; Jang, Reeve, & Halusic, 2016; Leithwood, 1994; Llopis & Foss, 2016; Maxcy, 1991; Pink, 2011; Stroh, 2015). From the perspective of the teacher I spoke with, there were three significant and interrelated explanations as to why their school backed out of the reform initiative being explored at their school. These will be discussed as possible barriers to other reforms that share similar characteristics. Through an analysis of what happened at the school being discussed in

relation to relevant literature, I aim to highlight strategies that can support future educational reforms.

The first explanation that the teacher brought up related to the role of the school's principal and administration. They suggested that the principal and administration team operated unilaterally and from the top-down at various points throughout their involvement with New Design. This lead teacher's account and the perspectives expressed by other local actors suggest that this became a major barrier to the school team's motivation towards and understanding of the reform's design process.

Secondly, the teacher I spoke with shared their frustration about the way the external facilitators approached their facilitation role in the New Design workshop. The teacher felt that the facilitators who were brought in to orchestrate the reform at their school did not first establish connections with and learn about the school community they were expecting to facilitate. This was especially problematic because the tightknit staff at the school in question already had a culture of innovative practices, teacher leadership, and collaborative change-making going on that was not tapped into for the New Design facilitation. There is a plethora of scholarship on educational and other organizational reforms that supports the importance of developing connections with a community, learning about them, and collaborating with them from where they already are in order to unlock the potential for successful facilitation towards change (e.g. Choudry, 2015; Farley-Ripple et al., 2018; Goldstein & Butler, 2010; Gow, 1997; Hargreaves, 2005; Lotz et al., 2015; Mukhopadhyay & Sriprakash, 2011; Olsen, 2009; Smith & O'Day, 1990; Tuck & Yang, 2013; Yu, Leithwood, & Jantzi, 2002).

Finally, the teaching staff at the school were challenged by and resistant to the New Design process because of the misrepresentation or misunderstanding of both the collaborative

model allegedly used, design thinking, and of the exploratory and tentative nature of their school's involvement in the initiative; the teacher with whom I spoke and other staff expressed that they felt they were already committed to following through with the New Design model by partaking in design workshops during an exploration year. Looking closely at the transcript of the first design workshop, it becomes clear that the way design thinking was framed and experienced in the initial design workshop did not allow teachers to feel like they had a genuine share in the control over the New Design reform. This final barrier points to the importance of how reform efforts or initiatives are framed and the value of open, clear, and ongoing communication amongst collaborators (e.g. Baldwin, 2006; Bryk & Schneider, 2003; Dhillon, 2017; Evans, 1996; Fullan, 2011; Gallagher & Thordarson, 2018; Mintrop, 2012; Rubinstein & McCarthy, 2014; Senge, 2006; Waugh & Punch, 1987; Young, 2009). Through this paper, I will discuss the academic literature on reform by thinking carefully about these three barriers and bringing them into dialogue with the literature and with the perspectives and experiences of other stakeholders from the school in question. Through this exploration, I aim to uncover some strategies, barriers, and patterns that can support the effective implementation of future educational reforms, especially those that aim to disperse authority amongst local actors, like New Design.

Top-down change. From the perspective of the teacher I spoke with, the principal (for whom I will also use gender neutral pronouns) and their administration team were the ones who made all the decisions about whether or not to be involved with New Design. These decisions were understood to have been made from the top-down, without having a meeting with the teaching staff involved. Some individual teachers may have had one-on-one conversations with the principal, but teachers—according to the one I spoke with—saw the principal and their

administration team as driving the process from the top-down throughout the entirety of their brief involvement. Before the design workshop, approximately ten staff from this school attended the small New Design conference to learn more about the initiative and, at that point, their involvement was framed as exploratory. Then, the principal signed on as an official explore school without consulting teachers or even letting them know about their involvement until shortly before the first design workshop. When the design workshop was announced, the teacher I spoke with felt like they and some of their colleagues were "voluntold" to be involved (i.e. volunteered unwillingly). Similarly, the decision to withdraw involvement felt abrupt to the teacher with whom I spoke. They claimed that although there was resistance amongst teachers against the way the New Design process was being facilitated at their school, they believed their administration again had acted unilaterally when they made the decision to withdraw, doing so without having a team meeting with teachers. This decision, they reflected, may have related to teacher resistance. However, they believed it was also likely a result of the principal's personal commitment to lowering class sizes, which the principal—they claimed—had hoped would have been achieved through the New Design initiative. Instead though, this teacher explained that the principal found another way to lower class sizes around the time of their withdrawal from the New Design process. The teacher I spoke with felt that the principal's perspective and agenda took priority over the teachers' and drove the initiative in a top-down structure.

Many educational scholars claim that useful and sustainable educational reform can be achieved when the people leading the reform avoid top-down prescriptive change frameworks and, as intermediaries, engage multiple stakeholders around shared visions (Farley-Ripple et al., 2018; Fullan, 2011; Hargreaves, 2005; Stroh, 2015; Senge, 2006). This did not seem to be the case at the school in question and may have been a major factor in the resistance expressed by

teachers. Beyond promoting buy-in from teachers, avoiding top-down change processes is also an effective way to include more perspectives and locally-relevant ideas in a reform. As Hargreaves, Earl, Moore, & Manning (2001) describes in the following excerpt, the value of sharing authority across levels of reform—from the source research, models, and prototypes to the target schools, educators, and practices—not only achieves reforms that are appropriately designed for local contexts, but this approach also empowers practitioners:

> teachers' being allowed to adjust their implementation to local conditions and their own collective capacities, and being encouraged to unleash their energies and enthusiasms in curriculum development by being accorded a high degree of professional discretion… enables teachers to create a curriculum that is rigorous and relevant for culturally and intellectually diverse groups of students who bring different forms of prior knowledge, understanding, interests, and concerns to their classrooms (Hargreaves, Earl, Moore, & Manning, 2001, pp. 111-2).

New Design's utilization of design thinking aimed to achieve this, creating relevant and differentiated curricula or reform structures over which teachers feel ownership. However, as I will unpack in the following sections, the teacher I spoke with from the school being discussed did not feel like authentic or genuine design thinking had been facilitated, and the way the principal directed the process from the top-down did not set the stage for a collaborative process with dispersed authority.

After the design workshop, I sat in on a debriefing conversation between the school's administration team and the New Design facilitators. From the debrief, it became clear that the principal and their administration team were aware of the potential value of avoiding a top-down approach and dispersing authority for the New Design explore process amongst their teachers.

However, it was also clear that they were not willing to give over control without ensuring they had some power to manage how their staff organized themselves and their authority to design. The principal emphasized to the facilitators who were brought in to run the design workshops that their staff do not respond well "if they feel we're talking down to them, if we're belittling them." The way that teachers were belittled and left out of the decision-making process came up in the workshop itself when the facilitators tried to reconfirm the dates of the next design workshops with the teaching staff, only to find out that not all the teachers were aware of and on board with the proposed dates. The teacher leader who I spoke with asked the facilitators to send them the dates of the upcoming workshops "and we'll make sure they work for everyone." The facilitator was confused by this, thinking the dates had already been set, saying, "but these came from your principal." It became clear though that the principal had chosen these dates from the top-down without consulting teachers. One teacher even filed a union complaint over the scheduling of the workshops. The principal explained that this teacher "walked out of the meeting, sent an e-mail at large saying, quoting some part of collective saying we couldn't have a meeting longer than two hours today because it was the prep for their interim reports." When explaining the resistance that the facilitators faced during the workshop, the principal suggested that they and their administration team "didn't check our source, you know, like *I* booked [several] meetings. And I tried to avoid pissing them off well I'm booking…but I didn't check my source, I didn't have time to meet with them to say what would be the best thing…I thought I knew best." The principal's comments here clarify the importance of involving the teachers and ensuring authority is dispersed amongst everyone involved with the New Design initiative. Problematically, this comment from the principal also highlights the disconnect between their

own awareness over the value of sharing control with their teachers and the way they actually acted in engaging and collaborating with their teachers.

Again betraying their desire to disperse authority, the principal proposed a strategy for dealing with teacher resistance that attempted to give the appearance of shared control while maintaining a top-down change structure. Discussing how to split up the teacher participants who were the most vocal resistors at the next design workshop, the principal suggested that the facilitators orchestrate "a way to come in with different coloured little post-its and pass them around just to make sure that our strong heads don't have all the same colours." The principal followed this suggestion by explicitly stating that this process of manipulating the design groups "cannot look like manipulation." This covertly manipulative spirit reflects the way the teacher I spoke with felt about their principal's involvement in the New Design initiative more generally. Although the principal understood the value of getting their teachers involved in ways that they felt authority over, the principal ultimately was unwilling to give over the degree of autonomy that may have been necessary to quell resistance and support a meaningful, effective, and sustainable reform. Being aware of and framing a reform as dispersing autonomy is not sufficient to achieving collaborative control if the leaders maintain a top-down authority over how involvement is orchestrated.

External facilitation. The way the New Design process was rolled-out in the school I was observing featured an external facilitation team of two individuals. The manner in which facilitators approach a school staff and community is significant; research stresses the importance of getting to know the context of the school's staff and community, and rolling-out the design contextually and idiosyncratically (e.g. Fullan, 1993; Hargreaves, Earl, Moore, & Manning, 2001; Mukhopadhyay and Sriprakash, 2011; Munroe et al., 2013; Smith & O'Day,

1990). Considering how important it is that external facilitators get to know a school's context, there were several voices in the design workshop at the school being discussed who were explicitly shaken by the external facilitators' lack of understanding or knowledge about the school. At one point, after one of the facilitators asked "if everyone [was] sitting with people they don't know," there was laughter from the group because "we all know each other," as one of the teachers explained. Reiterating this to the facilitators during the debrief after the workshop, the vice principal shared that the teachers "were shocked that you didn't know that we're all a small community and they all know each other." I even observed some of the initial discomfort caused by this during the first activity at the design workshop for which staff each had to choose a photo from a pile and describe how it related to them. Some of the teachers appeared to resent being told to introduce themselves because they seemed very proud of the fact that they all already knew each other.

The teacher I spoke with clarified that the team of teachers the external facilitators were working with was a particularly driven and committed group. The teacher suggested that they often go beyond the call of duty and commit personally to initiatives. This was demonstrated clearly in their active and emotional involvement in the New Design conference and the design workshop that I observed. It was also demonstrated when—as the teacher I spoke with explained—eight teachers who had taken part in the design workshop sat around during their own time afterwards, on their own initiative, and discussed the New Design project and how it might fit at their school. The principal echoed this sentiment during the debrief: "they're a strong bunch…they're working dogs. I mean, they're crazy. Some of them are here 'til like six, seven at night. So it's not like because they can't do it because they can…they're gung-ho, they're made things happen over the years, they're movers." That such committed and involved staff were not

buying into the facilitated New Design rollout provokes the question of whether an educational change might have worked better with such tightknit and devoted teachers had the teachers themselves been the ones facilitating the changes in their school. The teacher I spoke with after the workshop described their colleagues: "It's a self-driven bunch. They're people that go after their PD [professional development] development [sic] on their own." Taking into account that this is a group that usually goes after professional development independently, it is particularly valuable to consider how they might have been able to have more control over the New Design workshops. After all, these workshops were scheduled on days during which these teachers would normally be autonomously pursuing professional development opportunities otherwise. If external facilitation is necessary, then external facilitators that come in would likely be best served if they figure out how to capitalize on the staff's cohesion and other strengths, and allow them to be the drivers and leaders of the reform. This approach to facilitation though requires learning about the staff and engaging in genuine design thinking to assure shared control.

One particular incident highlights the problematic dynamic between facilitators and staff that can arise from a lack of understanding of a school's local context. Right at the end of showing an American video about the problems with schools, but before it had even ended, one teacher interrupted:

> Teacher: Can I make a comment?
>
> Facilitator 1: That's exactly what I was going—
>
> Teacher: Ok, So I think it's sorta interesting that you chose this video to show because it reflects the US curriculum and here in [our province] we have a *really* different situation…I also feel like uh the audience of people *here* are *not* those people so I think choosing that video is sort of controversial to show us because uh that's not who we are

um anyone sitting here, not one of these people is one of those teachers so I have a little bit of a [long pause] reservation with showing that… our program here in [our province] is so rich umm and I think teachers, especially the teachers in this room *truly* do their best to understand and bring out the best in their students thru that curriculum so I really feel like um we need to watch that with like a whole lot of salt.

Facilitator 1: Absolutely…now are you saying that none of your kids would be feeling this way? Do you know what your students feel-?

Teacher: Yes, actually we do, this summer we had a beautiful experience… we ran into two students who are two years ago graduates and six or seven years ago graduates…and he brought up this question…and you can say that he's just one person but this student, this person was so self-assured…and he said that if it weren't for high school…he would not know how to engage those things in his life. So I really feel like we do a lot that's *right*...We are affecting them deeply.

Facilitator 2: And I love that you bring that up because a lot of people watching this have that resistance right, like well, that's that's not us…the questions this brings up is like are is there a student are there some students who feel like this and I think even in the *best* schools there's always a possibility…all of these reactions are valid.

Facilitator 1: And it wasn't to denigrate the work you do…but there are kids who feel that all you're doing, all they're doing is teaching to the test…

In this exchange, the facilitators failed to concede to the local teachers' control or authority over their narrative and vision for their school. Afterwards, a few other teachers shared further comments about the video, but the facilitators cut the conversation short with, "so I encourage you to have more conversations about this…and we're gonna move forward um just to make

sure that we try to respect the timing." This conversation demonstrates the importance of respecting and honouring teachers' autonomy at all stages of educational change efforts, especially if modeling and building towards a design thinking framework that wants to genuinely disperse authority and control amongst all the teachers involved.

Partway through the design workshop, it had become clear that the facilitation team had not gotten to know the school or the staff, and the relationship between the facilitation team and the teachers seemed fraught. The teacher I spoke with described the missing piece as "knowing your audience." Part of this teacher's disappointment was that they felt the facilitators had not adapted or translated their facilitation for their school's context. This teacher felt like the Powerpoint that the facilitators used was a generic one and that the same presentation would be used for every group exploring the New Design reform at other schools. At the debrief after the workshop though, I found out that this was not the case. Discussing the master document that the facilitators were given to support their planning of the workshop and Powerpoint, one facilitator explained, "we're not following it to the T, right, we're gonna have to adapt to the group that we're working with. Everybody's starting, all the facilitation groups are starting with the same tools and then adapting it." So, despite the fact that the teacher I spoke with felt that the design process facilitation that they and their colleagues were led through seemed generic, the facilitators *were* adapting the design process for the specific context. However, it is difficult to appropriately translate a process to suit a new school and staff without knowing about that school and staff.

From the perspective of the facilitators and the teacher I spoke with, this divide *was* a barrier, but was *not* entirely the facilitator's fault, pointing to their principal's role as an intermediary between the teachers and facilitators. This uncovered another example of the issues

with the top-down style of administration at this school. The teacher I spoke with told me that their principal claimed to have tried to initiate phone conversations with the facilitators, but that the principal claimed they were unable to reach the facilitators. However, this teacher told me that they suspected it was the other way around and the facilitators may actually have been unable to reach the principal. The facilitators themselves echoed this, claiming they were unable to get a hold of the administration to have the conversations that they wanted to have while preparing the workshop. One of the facilitators told me that they were not prepared for the pushback faced during the workshop precisely because when they reached out to the principal before the workshop, they only heard back at the very last minute.

Regardless of the reasons, the importance of understanding context and working with a school to understand their local community—staff and otherwise—is significant, as reflected in educational research (e.g. Fullan, 1993; Hargreaves, Earl, Moore, & Manning, 2001; Smith & O'Day, 1990). Although not explicitly mentioning design thinking, Mukhopadhyay and Sriprakash (2011) demonstrate the importance of movements that, like design thinking, engage local actors to ensure the reform that is realized aligns with local communities' concerns and commitments. Mukhopadhyay and Sriprakash (2011) underline the changes and adaptations educational ideas go through in the process of rolling out reforms from source contexts or ideas into a target school or community. Instead of *borrowing* reforms, Mukhopadhyay and Sriprakash (2011) insist on using the term *translating* to reflect the inevitable changes that ideas or prototypes undergo to honour context-specific factors that will serve local actors. Design thinking, when undertaken with genuine control in the hands of designers, can ensure that what facilitators bring to the school is authentically and critically explored by designers. Farley-Ripple et al. (2018) point to the way that what an external facilitator of New Design shares as

research—like the New Design models and ideas established in research reports or other literature released by the New Design team—are not value free "but rather [are] interpreted differently by different stakeholders in different contexts (e.g., Coburn, Toure, & Yamashita, 2009; Finnigan & Daly, 2014; March, 1994)" (p. 236). Facilitators therefore have to commit to the ideas of design thinking so that different stakeholders in different contexts get a chance to carefully translate or interpret the research into practice in ways that suit their local contexts and their staff community. Clearly, the teacher I spoke with from the school being discussed did not feel that the design workshop that they and their colleagues were facilitated through was translated or interpreted for their context.

When teachers do not feel like they are being listened to or included in the reform process in authentic ways, then what the reform initiative introduces seems disconnected from all the positive work that teachers are already doing. As one of the school administrators shared in the debrief following the workshop, "that vision of radical difference, that's what they still see…that's why they got their guard up like, 'no we can't do that.'" The reality that would likely have emerged had the school continued their exploration of the New Design process was that the design aimed to build on what was already working at the school being discussed. However, the sense that external facilitators projected, sometimes through no fault of their own—that facilitators had not learned about the school community and that teachers were not being listened to, understood, or given authority over the situation—led to teachers putting up their guards. Although a deeper commitment to learning about the school community and to the shared control promised by design thinking was lacking, a more careful and clear framing of the initiative could have also helped mitigate some of the teachers' concerns and resistance.

Framing and communication. The question of framing and communication is connected to both of the sections already explored. Looking at the issues of miscommunication or unclear framing as related to the teachers' relationships with their administration and top-down change, the teacher I spoke with felt like their principal had already committed their school to adopting the New Design initiative; they believed that when the principal signed them and their colleagues up for the design workshops, it was understood by staff as being more permanent or committed than exploratory or conditional. They also did not like the idea that they and some of the other teachers involved had been "voluntold" to be involved, subverting the design thinking process' objective of sharing control and authority with all designers in motivating ways. Connecting this concern to the external facilitators, the way the facilitators framed the design thinking process during the design workshop did not effectively clarify the way staff would have authority over the reform. This focus on the way external facilitation intersected with problematic framing will be the emphasis of this section as reflected in what I observed and heard at the school being discussed, and as reiterated by the teacher I spoke with from the school. For staff to feel the ownership and motivation over a reform that can help ensure its efficacy and sustainable implementation, it is imperative that they feel they have autonomy and control over the change (e.g. Pink, 2011; Senge, 2006; Stroh, 2015). Communication and framing can help develop this understanding.

A misunderstanding of the workshop's intentions arose partially from the way the external facilitators orchestrated the design workshop. The teacher I spoke with and the debrief that followed the design workshop both underlined the educators at the school's lack of understanding. These teachers were not led to appreciate the nature of design thinking and its potential to disperse authority amongst staff in ways that can be empowering and that ensure the

rollout honours the school's local character. This lack of understanding about design thinking may have just been a result of the short timeframe with which facilitators had to work with the school staff exploring the New Design process. However, even in the short time they did have together, the teacher I spoke with said they felt that the external facilitators were "presenting" about design thinking instead of "facilitating" it. They explained that their understanding of design thinking and New Design was that it would be "all about get up and do, not sit and listen." From this teacher's perspective, the design workshop did not align with this expectation. During the debrief after the design workshop, the principal shared a similar note to facilitators, suggesting they should have started the workshop by facilitating conversations or activities instead of presenting content: "today's meeting should have been, the first hour should have been 'what are you looking to change.' And [teachers] didn't see it like that. They interpreted it like, what am I doing wrong, what do I need to change. And that wasn't that." If the facilitators had started, as the principal suggested, with empathizing with teachers and building from their local expertise, it would have reflected the principles of design thinking (Liedtka, Azer, & Salzman, 2017) and it may have motivated their involvement more productively. The action of facilitating conversation would have made it clear that the staff's autonomy and authority would be incorporated and respected. Alternatively, just presenting to staff as external facilitators is less convincing. As the principal and vice principal commented, respectively, "it needs to come from within" "or else they won't buy in."

The way the facilitators defined design thinking for the teachers at the workshop was a prime example of how the facilitators' use of design thinking seemed more about *presenting* about design thinking than using it to *facilitate* the workshop. The facilitators showed a video about design thinking that did not engage teachers or fit into the ongoing conversation; the

teachers were mostly silent when asked to respond to the video. Partially the silence of teachers resulted from the way one of the facilitators followed the video with rapid-fire questions, asked in succession, only leaving two short pauses for responses:

> Do you feel that these— this design process can be useful to you? As teachers? As pedagogues? How can this be used? What are your initial reactions to that? Has anyone ever seen this before? Or does anybody know about design thinking? There's a lot of those videos going around Youtube, Facebook? It's okay if the answer is no? [pause 1] Does this interest anybody? Does anybody does anybody use any of these processes? [pause 2] Yea?…Does this, do you feel like this has merit or as a practice or as a process for you as teachers? Can any of you envision using this?

Eventually, some teachers did have responses to share to these questions, but even this facilitated conversation was not facilitating design thinking; it was just presenting what design thinking was. Perhaps coupled with an activity simulating design thinking, this video may have been effective at engaging teachers and demonstrating design thinking. However, on its own, it reflected the concern that the teacher I spoke with expressed, that the workshop was more talk than action.

Despite the talk about design thinking and the explicit framing by which facilitators tried to suggest that the teachers would have control, many still left feeling like they were not in control. On several occasions throughout the workshop, facilitators affirmed that the teachers were driving the process and in control. One facilitator said, "you guys are going to be doing most of the work," and "you're the experts, you're in the classrooms, that's why you are here today, right?" When the other facilitator tried to share that the teachers would have flexibility and control, this facilitator was reading—fumblingly and without much intonation in their

voice—from notes. The fact that this explicit framing did not convince teachers that they, as the local school staff, would have control over the New Design reform is a reminder of how much louder and more powerful the actions of a facilitator or leader are than their words. For design thinking to be rolled out effectively, it is not enough just to frame it as such; it has to be experienced as authentically collaborative, and interactive.

Another example that demonstrates a way in which the facilitators' approach to design thinking may have been somewhat superficial came up during the debrief, after discussing pushback from teachers about the time commitment and schedule for the workshops. One of the facilitators described telling a teacher who was pushing back, "that's just the way the process is and you either, you've bought into the process or not type thing." The message from this comment is that teachers have committed in an all-or-nothing kind of way and do not have the authority to control the nature or degree of their involvement with New Design. Authentic design thinking necessitates more respect and control being given to the teachers being facilitated through the design workshops.

Looking beyond the facilitators, another reason why design thinking—though framed as the process by which the design workshops would be run—was not always genuinely engaged relates to the research and planning that pre-empted the design workshop. Although design thinking is meant to rely on open expectations that allow local designers a high degree of autonomy, there were some key features of the New Design reform initiative that were already anticipated and had been shared as explicitly 'essential' or 'vital,' ostensibly due to the research that informs the New Design model. These features had been shared by facilitators with staff at most participating schools and were included in much of the literature released by the organization behind New Design. These fixed components of New Design make it necessary for

facilitators to tailor their design thinking process in particular ways, regardless of the staff with whom they are working, thereby pre-empting and subverting some of the promised open and locally-determined structure of design thinking.

Beyond the rigidity of the principles predetermined in the research and literature released by the New Design team, the understanding of the New Design model as fixed may also have arisen from the branding of New Design. For some, framing the reform initiative with a name and branding may have implied a rigidity or conceptual cohesion to the resulting models. In the founders' minds, perhaps the branding was just to refer to the cohesive process by which the New Design initiative was to be rolled out by facilitators. However, from the perspective of the teacher I spoke with, the branding was overwhelming: "it's all New Design, New Design, New Design." They explained that before the workshop, they and their colleagues thought they were going to design their school of the future "in our own way, in our own school, to fit our own culture." However, the rigorous branding made them feel like this was not going to be the case. Branding New Design may have framed it more as a product than a collaborative process. As the vice principal shared during the debrief, the teachers at their school, "they still think that it's a product…That's why the criticism is there because they don't- they still think that you're gonna tell them how to do this, and that's not, they don't get that part." During the debrief, the facilitator conceded that it did still seem that "it's gonna be a top-down, imposed-" kind of thing. Even the people framing the New Design process—the initiative's facilitators and the school's administration—acknowledged a disconnect between the intended open process by which design thinking is meant to rollout and the way it seemed to be top-down and prescriptive at the school in question. This made it clear that more work and a different approach to carefully communicating the reform process was needed.

Conclusion

This case study uncovered many ways that the hierarchical nature of an organization's structure can be a major barrier to effective and meaningful change. Educational reform that aims to engage teachers as partners is most effective when it avoids top-down power imbalances, working with teachers in genuine and transparent collaborations. This became clear through unpacking my experiences observing the New Design reform and the conversation I had with the teacher at the school being discussed—in dialogue with relevant literature and with the ideas and perspectives of other teachers, of administrators, and of facilitators involved in the reform. If external facilitation is part of the reform, facilitators will be best served by learning about the school community that they will be working with and tailoring the reform design in ways that align with the school's and staff's strengths, and that works with them to centre their understanding of the school and to build on what is already working well. The way that the reform is framed and communicated by the people leading the reform—founders, facilitators, and administrators—can help ensure that the staff feel the motivation and empowerment that comes with their autonomous and active involvement helping drive the process. Like at the school discussed in this paper, a principal or administration team often act as gatekeepers, retaining hierarchical structures that form a barrier to the shared control that can motivate reform. If distributed authority is achieved though, staff are not only motivated but the reform is also orchestrated in ways that reflect the local conditions of a school, as best understood by these stakeholders in their local settings. Design thinking, if facilitated in genuine ways and communicated clearly, is a strong approach for ensuring that control is dispersed among all impacted parties, leaving reform models open for idiosyncrasy, nuance, and change. Actions are more influential than words, so modelling design thinking authentically and leading with the

ideals facilitators or administrators aim to embed in their transformed schools seems to be more formative than explicitly describing or framing the process as 'design thinking.'

That the group of educators at the school considered in this study resisted the New Design initiative—in the way they experienced it—could be seen as an ironic testament to their ability and drive to make educational change in their school community. These teachers clashed with the external facilitation team's attempt at design thinking, and with their administration's top-down leadership in ways that seemed to reflect a tenacious commitment to their school and students. Given support—through resources and time to meet and plan with shared control—this staff, and many like it, have ample potential to reform their schools in innovative and locally-suitable ways. If genuinely understood and practiced, design thinking—or any model that authentically distributes authority amongst local knowledge-holders—can provide a structure for this support and help facilitate change.

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Conclusion

Through the research I have undertaken for my Master's, I was struck by the fundamental and radical changes that the world is experiencing as educators and scholars on education explore how 21st century schools might best be reformed. This research highlighted educational innovations meant to reflect and respond to the changes our world is experiencing, and incongruencies that need to be addressed through further innovation, research, and reflection. Working to address the challenges of 21st century changes to education will ensure that educational organizations can prepare students for their contexts and the future.

In contending with this difficult task of realigning learning with new and rapidly changing concerns and contexts, educators and other educational stakeholders must aim to reform their organizations in careful and appropriate ways that local stakeholders can support, value, and sustain. As reforms unfold, the power dynamics within educational organizations and the facilitation of reforms can be negotiated to ensure that changes involve and benefit these stakeholders, despite their diverse and complex needs and concerns. In complex contexts, the value of embracing interdisciplinary frameworks for learning is significant, as has already been advocated for by indigenous educators for generations. Another significant concern is how to design reforms that value and critique the growing role that digital technologies play in our world. As this research on educational change for 21st century schools highlights, there are many important directions for new research to consider as educators and their partners reimagine the schools of the future.

Looking Ahead: Researching Digital Technologies

Digital technologies are particular transformative in our contemporary context, especially for young people (Statistics Canada, 2017). Canadian organizations are making massive changes

and investments in attempts to navigate these technological shifts (Lamb & Seddon, 2016). However, with such a rapidly changing, relatively new, and technically intricate domain such as the internet, educators and educational institutions are not always making the changes and investments in directions that responsibly and critically reflect the ways the internet is caught up in systems of learning, socializing, labour, environment, industry, capital, etc. (Ávila & Pandya, 2012; Jenson et al., 2010; Jones et al., 2013; Richardson, 2013; Selwyn et al., 2016; Voogt et al., 2011). As my research developed throughout my MA, the role of digital technology emerged as one of the most engaging, challenging, and timely concerns that features prominently in discussions of 21st century learning. My Master's research into innovative 21st century schools and educational reforms did not encounter enough meaningful engagement with the implications or consequences of the growing use of these digital technologies. Scholars, such as those referenced above, suggest that the trend of embracing digital technology in schools without critically engaging with how to use these technologies responsibly is widespread. There is an urgent need therefore for research aimed at supporting teachers' and students' responsible engagement with digital technologies, especially in an age of dramatic educational reform and change. Coming out of the four papers included here, my upcoming PhD research will look at how 21st century educators and schools are (or are not) working with students to consider how digital technologies influences their learning, life, and the world.

Research investigating the implications of young people's uses of digital technologies is particularly crucial and relevant in the Québec context. Through investigating NEXTschool, I found that preparing students as digital citizens is a reoccurring feature of educational reform in this province. This reflects the province's growing number of careers that relate to digital technologies. With digital technologies now ubiquitous in schools and life, educators cannot

afford to ignore their consequences and possibilities. Unlike existing research, my future PhD research will focus on whether and how teachers are working with students to develop their critical understanding and use of digital technologies. As the way that students and educators relate to each other and to technology use is clarified, we can work to disrupt—if necessary—or promote—if valuable—the various relevant elements of teacher practice and institutional texts. Supporting the responsible use of technology in schools by focusing on its impacts will deepen the experiences and educational outcomes for students, as well as improving conditions for other implicated parties—both human and ecological.

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