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Editorial

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The fallout from COVID-19 has been far reaching; there is no one or no thing that has escaped the impact of the pandemic. Everything from the quotidian to the extraordinary has had to adapt, modify, or simply stop in the face of this new landscape. Our taken-for-granted notions of how we navigate our realities has been interrupted and disrupted, bringing into focus the multitude of ideas and practices that have become so routine in our lives that they have receded into the background of our consciousness. Our journal, *in education* was unable to publish the spring 2020 issue because of the unforeseen impact on our day-to-day processes for producing an issue. Since March 2020 we have worked to adjust and revise our review process time lines, develop greater lead time for recruiting reviewers for submissions, and strengthen correspondence with authors and reviewers. Just like everyone else we have been trying to find ways to work through these new circumstances in thoughtful, supportive, and meaningful ways. As many have experienced, the pandemic days have not been easy nor without challenges that we could not have readily imagined prior to March 2020. The concomitant rise in the Black Lives Matter activism during the pandemic brought the world's attention to the injustices and racism experienced by Indigenous, Black, and People of Colour (IBPOC). Just as the pandemic has shown us that the people and governments of the world need to act in coordination and cooperation to fight the spread of COVID-19, the people and their governments need to act with cooperation and conviction to address injustice, racism, and the ongoing effects of colonization.

This issue has come together during these unusual yet important times, giving us a collection of interesting and thoughtful research that should provoke the reader's thinking. Darren E. Lund and Rae Ann Van Beers bring into focus the important role educators can/do play in supporting and guiding youth activist in order to foster cross generational growth. Jennifer Mitton, Lia Lewis and Savannah MacDonald share research from a qualitative study that repositions Grade 12 students in a rural maritime English Communications class as "Thinkers with Ideas to Share." They achieve this work through utilizing the circle: having students sit in circle daily with the focus of communicating elevated expectations to students who historically have struggled academically. Alexander Davis takes up an examination of "Digital Citizenship in the Ontario" context pointing out that the Ministry of Education in the largest province in Canada does not provide a definitive idea around the notion of digital citizenship; instead, the Ministry offloads responsibility to school boards. Davis points out the lack of a cohesive conceptualization as a result, but still finds that across the 10 school boards he examined, all point to digital citizenship embracing some notion of "responsible and ethical technology use," which he suggests influences their broader civic engagement. "Unleashing the Learners," shares the findings of a qualitative study that delved into the wherewithal of makerspace facilitators in the Saskatchewan context. Marguerite Koole, Kerry Anderson, and Jay Wilson highlight the findings similarity to other studies, which point to the importance of "the value of productive failure, relinquishing control, and modes of support" in makerspace facilitation. Koole et al. also emphasize the need to support preservice and in-service teachers to become more confident and prepared makerspace facilitators. The piece "A Vision Towards Indigenous Education Sovereignty in Northwestern Ontario" takes on the long struggle for Indigenous education control, not just through the structures of schooling but more importantly through the curriculum. The authors, Melissa Oskineegissh and Leisa Desmoulins, worked with Indigenous educators

and knowledge keepers in the northwestern Ontario region to delineate a vision for Indigenous education sovereignty through, "pedagogies grounded in the need for equitable education; Indigenous-led instruction for land-based teachings, traditional practices and languages; and, community-based accountabilities," all of which are actions laid down in the Calls to Action from the Truth and Reconciliation Commission. Finally, in "Understanding Meaningful Exchanges: Mathematics Discourse Analysis and Complexity Thinking," Evan Robinson brings to light the importance for teachers to attend to the emergent student centred discourses in elementary mathematics classrooms and focus on what impact the complex learning system has on the emerging classroom discourse.

Although the pandemic has been pervasive in its reach and impact, the human spirit has risen in many ways to meet the challenges presented. People have modified and adapted behaviours and actions to try and contain the spread of the virus, while the world has come together to develop a vaccine. Is there more we can do? Most certainly there is, such as ensuring that all people of the world have access to the new vaccines and that people continue to practice behaviours that diminish the spread of the virus. But the events of this past nine months have demonstrated the possibilities of humans to come together to change attitudes, behaviours, and act in just and humane ways. Like many people around the world we at *in education* are hopeful for what we may do in 2021. Take care and keep well.

Unintentional Consequences: Facing the Risks of Being a Youth Activist

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Abstract

Students involved in social justice activist groups and activities encounter several potentially negative consequences in advocating for issues that are important to them. Through duoethnographic interviews with scholar-activists, former youth activists describe the barriers they experienced as socially engaged young people, including dealing with pushback from their cultural, school, and even activist communities. Without adult allies to help mentor them through these processes, the negative emotions associated with these encounters can lead youth to burn out and leave activism altogether. The findings of this study remind educators that they have an important role to play in providing meaningful activist training, apprenticeship opportunities, and supports for youth who are passionately engaged in progressive social and political action.

Keywords: social justice activism; youth; duoethnography; student movements

Unintentional Consequences: The Risks of Being a Youth Activist

In adding to the growing body of literature on youth activism for social justice, this study sought to gain the insights of former youth activists directly, seeking their views on the joys and challenges of this work. Through in-depth interviews with a range of young people who had taken leadership roles in their earlier years as secondary students, we tapped into a rich vein of wisdom on the lived reality of pursuing social justice ideals. A recurring theme that emerged in all of the interviews surrounded the significant risks and challenges that young people faced when they undertook activist work in their schools and communities. This article documents some of the key findings along that topic, with implications and suggestions for students, educators, and others who do this important work in our communities.

Many young people have chosen to organize initiatives to foster acceptance in schools and communities across North America, but relatively few studies have addressed the nuances of this work from the perspectives of the youth activists themselves. Through an earlier pilot project, the lead researcher sought to answer this need by developing an interactive, web-based resource for school activists, based on interviews with student and teacher activists (Lund, 2011; Lund & Grain, 2012). Social justice activism in this study includes educational activities, lessons, school or community displays, political engagement, arranging guest speakers, group activities, awareness events, media campaigns, and other events on issues of race, ethnicity, sexual orientation, and ability, among other diversity issues.

Engaging current and former student activists as active participants in educational research resists a growing backlash toward youth culture in general. Giroux (2003) noted that "youth" as a social category may be positioned to instill fear, a problem to solve, or a danger to adult society. Rather than accepting the societal beliefs that they are not yet fully formed citizens who lack capacity, who are more likely to cause social problems rather than assuage them (Coe et al., 2015), many youth engage in activism which, by definition, involves some form of action. From organizing protests that support basic human rights to advocating for increased social programming to raising awareness about destructive consumer habits, young people have been instrumental in pushing for social change for several years (Conway & Morrison, 2007; Forenza & Germak, 2015; Gordon & Taft, 2011; Taft, 2011). Young people are just beginning to be engaged in meaningful ways in educational research on social justice activism, and their understandings of the complexities of this work remain largely unexamined. This research directly engaged former youth leaders as informants and collaborators in the struggle to make schools and communities more equitable.

Understanding Youth Activism

Schools typically promote civic engagement programs and activities that are deemed to be representative of what adults have determined future "good citizens" should be and do (Flacks, 2007). As Kennelly (2009a) pointed out, those attributes do not include pushing against current systems but instead encompass activities such as voting, volunteering, and raising funds for what are deemed worthy charitable causes either in the community or globally. When students do try to push agendas that are not supported by their schools or the administration, they are likely to be considered "bad activists" (p. 127). When added to their traditional and limiting gendered expectations as young women, female activists can face additional barriers due to their gender (Gordon, 2008; Harris, 2004; Taft, 2011).

Youth who engage in activism often do so because they see it as being linked to their personal identity, engaging in activist work simply because it is their "thing." As Taft (2011) noted, "Activist identity requires doing; it has to be performed through the ongoing practice of activism" (p. 182). In spite of their dedication to activism for the sake of significant social causes, the political engagement of young people is often trivialized by adults who may question their motivations and effectiveness at influencing change. For instance, students who walk out of school as a means of protest are often interpreted simply to be "cutting class" (Cabrera et al., 2013, p. 8). Such adultist views plague the activities of youth activists who must continually counter tokenistic perceptions (Best, 2007; Gordon, 2007). While participating in such work creates alignment for young people in terms of their activist identities, activists of all ages can experience negative effects from such engagement, with burnout being the most noticeable issue faced (Gorski, 2015; 2019; Gorski & Chen, 2015; Kennelly, 2014).

Research Approach

We formulated flexible guiding research questions generated from experiences and ongoing research in this field. Seeking a respectful engagement with the everyday social justice work of the participants, we employed a dialogic approach with our participants following duoethnography (Norris et al., 2012). By using an innovative model of participatory research that pays deliberate attention to matters of social justice, we acknowledged power relations along with the our own identities and assumptions. Building on insights from other duoethnographic studies Darren E. Lund has undertaken using this method (see Evans & Lund, 2013; Nabavi & Lund, 2012), we sought to understand participants' perspectives through a collaborative interview process.

The guiding research questions for this study were "How do former student leaders conceptualize and articulate their social justice education and activism?" and "How might the frustrations and limitations of activist work as identified by former student leaders in social justice, best inform those wishing to encourage greater youth participation in social justice projects?"

We are both educators with experience in coordinating social justice projects. Rae Ann Van Beers was a research assistant enrolled in doctoral studies full-time during the project. The study itself was planned as a means of community-building among social justice advocates. Rather than downplay our past experiences in the field, we have successfully benefited from our roles as activist "insiders" to obtain more relevant and sound data.

The 12 participants cited in this article were recruited using a range of convenience sampling methods (Creswell, 2007) that drew on the our national networks of community activists, social justice educators, youth groups, and other people involved in this work (Lund & Van Beers, 2019). For our study, we employed word-of-mouth, telephone, Internet searches, social media sites, media archives, and informal community surveys to identify past social justice projects and their student leaders. During data gathering, we arranged and conducted telephone, face-to-face, and online interviews with a range of participants for this research. Efforts were made to sample a diverse mix of past student leaders from a range of cultural and identity backgrounds. The 12 participants included 10 people who identified as female, and two as male; three females self-identified as people of colour, one of which also identified as queer; and one participant identified as Métis, and one as Indigenous. Each met the criteria of having

held leadership roles, having taken an active part in planning and implementing social justice activities or projects, and having been involved in the activism directly for at least one full year.

All of the appropriate permissions to conduct this research were sought and obtained from all of the necessary sources in accordance with the ethical standards of the funding agency (see Authors' Note) and our University's research ethics board. Individuals were interviewed during face-to-face or Skype visits in a number of locations following the protocols of duoethnography (Sawyer & Norris, 2013). Duoethnography is a dialectic form of inquiry through which researchers build upon and extend narrative and autoethnography genres, in which all participants are regarded as co-researchers. Through a collaborative process of meaning-making, life histories are considered as a curriculum, and participants are asked to examine their understandings. Data were gathered from transcribed interviews and field notes, and we undertook initial data coding and analysis, again following steps outlined for duoethnography (Sawyer & Norris, 2013). As we reviewed the transcribed conversations and notes, we were intentionally honouring "multiple dialogues, surfacing subjugated knowledge, engaging in critical collaboration, [and] finding synergy between data collection and analysis" (Sawyer & Norris, 2013, p. 40). Attending to the meanings of the participants, we independently identified key themes and interchanges, and then collaborated on our writing, presenting here the insights most relevant to this research focus.

Research Participants

The individuals who lent their stories to this study came from diverse backgrounds and entered into activism for a variety of reasons. Both Linda and Katie[1] were involved in their high school social justice group where they were exposed to issues and causes they had never encountered before, but that influenced them to embrace activism during their post-secondary studies as well. Dallas, on the other hand, grew up in a politically active family in which her educator parents encouraged her involvement in social justice work in high school. Leah fought her Catholic high school administration in order to form a GSA for herself and her LGBTQ+ peers. Chantal was also heavily involved in creating and maintaining safe spaces for LGBTQ+ youth, as a queer woman of colour herself, working with community organizations to find space and funding for the events and projects they wanted to engage in. Abigail, a Métis woman, used her social media skills to become an effective youth organizer within the *Idle No More* movement. She believed that her success in bringing people together resulted in resentment on the part of some adult activists, causing her to redirect her work and energy into helping to start the *Indigenous Nationhood Movement*.

Simran's involvement in her local Sikh community encouraged her activism, both within that community, and as she moved into post-secondary studies. Her passion for justice and equality resulted in planning events at her university to educate her peers about the Sikh faith. Similarly, Dawn worked to combat racism at her institution and to improve access to supports for herself and other Indigenous students. Parmis' post-secondary activist involvement grew out of her high school experiences as an Iranian youth, where she initiated diversity and multicultural clubs so that she and her classmates could find a place to belong during their lunch breaks. Safe spaces were so important to Amelia and Josh that they co-founded a dedicated space in their high school for students to engage in social justice initiatives. Their prior experiences as youth working in activist circles made them realize the important role that mentors can play in supporting the work of younger activists. Jared was a student who benefitted from their mentorship.

Findings and Discussion

In their interviews, participants revealed, by freely describing their successes and growth, that they valued the activist work they engaged in through their schools or as concerned individuals. Despite these positive accounts, their stories shared a common, concerning theme: Every one of these participants encountered barriers and pushback from within their own cultural, school, or activist communities. In some cases that pushback came from the participants' own cultural or geographical communities, while others felt it from school administrators and the general structure of educational systems. Still others explained how they felt bullied or undervalued by older activists they encountered in activist circles. Facing these barriers placed a heavy weight on some of the participants, and their stories show that misconceptions about youth and their abilities are still prevalent in activist circles. By sharing their experiences of dealing with obstacles from their communities, the participants provided insight into the role that educators can play in improving the experiences of youth activists.

Barriers Within Communities

At times, problems arose simply because of the traditional, problematic norms that were present in the particular locations that these youth grew up in. Exposure to issues like homophobia and racism, when mediated with adult guidance, can provide valuable learning experiences for youth who are interested in walking an activist path. Personal interest in better understanding these issues sometimes required stealth on the part of the youth and their adult allies (Sazama, & Boston teens, 2013). Linda recalled her high school activist group arranging an LGBTQ+ presentation, an experience that revealed to her as a straight, cisgendered White female both the difficulties of doing social justice work in a potentially hostile environment and the danger that members of this marginalized group experience within her own community. She explained,

> We had to be rather quiet with how we promoted it but we had a gay man and a lesbian woman come in and talk about their experience of discrimination … and I remember we really couldn't talk too much about it; it wasn't that we hid it but [we called it] a diversity presentation 'cause if it was a gay presentation we might have had problems with teachers and parents and stuff. And I remember that being really powerful.

Such an experience helped Linda and her peers in understanding how to engage strategically with these ideas and experiences, and not shy away from activist work even though pushback might occur at both the community and school levels. Her work in organizing these first speakers soon led their school to be the first in its area to form a Gay/Straight Alliance program. The hushed nature of the presentation within the school itself indicates the challenge by many in her community to even speak about either LGBTQ+ issues or homophobia itself. Linda's subsequent description of how the same woman who gave the presentation had a cross burned on her lawn shows how dangerous speaking out against injustice and inequity can be for specific individuals in the very communities they call home. It is vital for educators doing this type of work to show students who may not have already witnessed them the dangers inherent in engaging in social justice initiatives, while at the same time providing a safe space in which all students can learn about and process their new understandings.

Some participants' experiences were much more personal. While some youth have to deal with homophobic attitudes because of their individual gender and/or sexual identities, others have lengthy histories of combatting racism in their day-to-day lives. As a self-identified

Indigenous person, Dawn spent her life dealing with racism, and was not spared from it as a university student. In her interview she brought up a university newspaper opinion article entitled, "First Nations Don't Deserve Squat," which she and her fellow Indigenous students countered with a two-page editorial. Having to constantly "fight this stuff" can be draining for many youth whose very identities are attacked in mainstream communities and societies.

Simran also spoke of the blatant racism that she encountered in her youth. A proud and active member of the Sikh community, Simran reflected on negative reactions to the Sikh community's attempts to both celebrate and share their faith and culture with others by hosting a parade. Even though Simran and her peers had grown up in the city this incident happened in, they were faced with graffiti on their temple walls depicting Nazi symbols, the word terrorist, and the insulting phrase, "Go back home, you monkeys." She said, "Even if it was just a handful of people, it brought [racism] to the forefront for the youth. Like this still is something that's going to hit us in the face every time we try" to showcase their religion and culture in public.

Unfortunately for Simran and her friends, other attempts to educate the public about their background created tension between them and the elders of their own culture that they were striving to spotlight. In a bid to educate both themselves and their university peers about Sikhism, the youth researched and then performed a play about important historical Sikh women, one of whom was the sister of the first Sikh guru. While their artistic endeavour was well-received at the university, Simran said, the youth,

> had a lot of negative feedback from our own community about the fact that we portrayed real life. Sikhism doesn't believe that you should ever have anyone who is a religious teacher, you can never portray them in acting or drama or anything like that. So, because we did something like this, it was hit with a lot of controversy.

Pushback from their cultural community was strong enough to prevent Simran and her peers from undertaking this particular educational enterprise again. Simran said she "spoke up against [the negative interpretations of the work] a lot because it was about learning, right?" Rather than deal with the fallout from any possible future renditions of the play, however, the group felt forced to turn to other methods of engaging with the larger university community.

Barriers Within School Communities

Attempts to engage politically in ways that fall outside traditional norms create problems for youth in schools as well in their communities and cultural groups. Leah pushed the bounds of good citizenship in her school and became a "bad activist" (Kennelly, 2009a, p. 17) by trying to establish a Gay/Straight Alliance in her Catholic high school so that all LGBTQ+ students, including herself, could feel safe and supported. After several rejected requests from administration, Leah was finally able to officially organize the school's GSA but afterwards, the principal took away their right to designate a name for their own group by giving them a board-approved name that masked their identity as an LGBTQ+ organization. Adult attempts to override youth-initiated movements and ideas can lead to these youth feeling betrayed by the very individuals who are put in place to protect them (Gordon, 2010).

It is not just individual administrators who can leave youth feeling misunderstood and frustrated, however. School structures themselves can impede the development of an activist identity. Josh, an activist educator who worked as a co-facilitator of a student-driven space in a large urban high school, noted that there were few access points for social justice in school. With

limited ways of being invited into activist circles (Kennelly, 2009b), youth may miss opportunities to find issues they are passionate about and then collaborate with others to make progressive changes in the world around them. The whirlwind pace of schooling further limits youth exposure to activism as teachers are often left scrambling to get through the curriculum in time for final exams. And yet, as Josh pointed out, sometimes students simply need time to work through the high-level concepts that are involved in activist work. He shared that one younger student was struggling to understand a particular talk about feminism and because he knew the person well, he was able to recognize that the student "is not going to get it right now. You have to let him go home and have conversations with other people and read up on this. You can't just harp." The frenetic pace of the school year may limit the curricular connections that could be introduced in other courses, thus diminishing the number of pathways that students can travel towards social justice work (North, 2008).

Barriers in Activist Communities

Though Parmis, Linda, Katie, Jared, and Amelia told us they appreciated opportunities to get involved in activist work during their high school years, they along with other participants expressed concern about the unforeseen struggles they encountered when they entered the field on their own after graduation. Time spent working with teachers who strived to create safe spaces for students to engage in activism may have provided the youth with a particular understanding of activist movements as encouraging and community-minded spaces. Upon leaving high school, however, youth may find themselves in a different world of activism, one that is not as warm and welcoming. For instance, some young people may experience disrespect at the hands of seasoned activists. Such experiences can drain young, idealistic activists, leaving them jaded and burnt out early on in their activist careers. Dallas's reflection on her own work in the activist world provides an illustration of the struggles that youth can encounter within various movements. In responding to the question of whether she had experienced backlash from the work she had done, she replied that,

> this is sad, but the most that I've felt, and I know there's a place for everybody [in activist movements], but the most resistance I've felt has been from within the whole activist concept. It's very difficult. In the [school] Conference there was a lot of maneuvering after the students ran it with the teachers coming back in to run it. When we ran it, there really wasn't any trust that we could pull it off and it ended up being the biggest and best up to that point. That was a huge example of, you know, adult activists "eating their baby" … disempowering young people, trying to take any power you do have away. Trying to co-opt that.

Her experience of tension within the field of activism reinforces the notion that there can be an inability or unwillingness on the part of older, experienced activists to make room for youth within their movements, even after these individuals have left high school and are legally considered adults themselves (Shaker, 2012). The reason for the lack of apprenticeship in these networks has not been well-documented, but there may be several factors that contribute to the unease that youth feel when entering into the "real world" of activism. Perhaps activists believe they are too busy to take on a mentorship role with youth or are themselves feeling the effects of burnout from engaging in the work they do (Gorski, 2015; Gorksi & Chen, 2015), leaving young activists to find their own paths within the work.

Another possible reason for a hostile reception to young activists in established groups is the idea that activists who have devoted their lives to particular causes may feel threatened by the arrival of younger activists and may fear becoming obsolete in their own movements (Rebick, 2013). Jealousy can result when the achievements of youth just emerging on the activist scene are recognized, an experience that Abigail encountered first-hand as a key youth organizer in the early stages of the *Idle No More* movement. Even though she was particularly adept at organizing events through social media on short notice and had important contacts within the movement itself, she often found herself relegated to menial tasks when working with older activists:

> As a youth organizer, I was kind of, I was more like the helper, as opposed to someone on an equal playing field with these organizers that had years of experience … they didn't even bother talking to me, they didn't bother sharing with me the layout of the day or the agenda, but the one thing they did make sure to ask me was to make sure that I picked up the garbage at the end of the rally.

Abigail pinpointed jealousy as a factor in her negative experiences working with adult activists, which may provide one clue as to the ongoing tokenization of capable, eager youth within these movements. Relegating youth to the status of "citizens-in-the-making" (Gordon, 2010, p. 205) rather than as equals in the fight for justice may be reflective of an adult perception of the need to socialize and prepare youth for the future.

The aforementioned limiting view of youth activists has them seen merely as assistants or workers rather than full-fledged activist partners, a conception of the young that essentially justifies assigning them insignificant or unappealing roles instead of engaging them in meaningful activism in the present (Taft & Gordon, 2013). Having to consistently deal with situations of adultism (Bell, 2013; Taft, 2011; Taft & Gordon, 2013) in which they are essentially forced to pay their dues, leaves some youth uninspired to join with and contribute to adult-led activist initiatives. Not being taken seriously in such organizations deprives those groups of insights and enthusiasm that youth can bring while also stripping the young people of important apprenticeship opportunities where they could enhance their skills and become tied to the larger activist community (Lund & Nabavi, 2010). In so doing, youth can further understand the historical and current interconnections of the issues and those working to impact them (Garmulewicz & Ireland, 2010; Ginwright & Cammarota, 2007; Taft, 2011; Warner et al,, 2010; Wheeler & Edlebeck, 2006).

When Barriers Become Burdens

Abigail's frustrations over having too little responsibility in the activist work she was passionate about directly contrasts with Chantal's experience of being buried beneath heavy responsibilities without an adequate knowledge or skill base to deal effectively with them. Chantal gave an extreme example of how her activist work came with larger burdens than she anticipated and with very little backup from any adults. She described her work in a youth-led group where she was a key organizer with little to no training in supporting others with their emotional or behaviourial issues. From dealing with suicidal youth to dealing with those with anger management problems, Chantal quickly learned of the importance of having adults to turn to for legal and emotional support when issues such as the following arose:

> One time right before I left, there was a 13- or 14-year-old in the group who somehow ended up connecting with like a 20-year-old. And there were allegations that they were

> having some sort of relationship and then all of a sudden [the adults in the sponsoring organization that donated space to the youth group] were like, "You're an accessory to statutory rape" and I was like, "What are you talking about? Like I'm just a kid!" … And it was a liability issue, and I had to write out a statement and they're like, "The police are gonna call you at home" and I was like, "You gotta stand behind me, right?"

While Chantal very much appreciated the freedom in her youth-driven group, she recognized the need for a balance of both structured independence and support from adults or other organizations. The donations of a physical space for the group's meetings and minimal funding for supplies, while appreciated, were not enough in her case. Having escaped from any legal troubles from the situation described above, she was keenly aware of her own lack of knowledge in regard to complex legal and psychological issues. Youth like Chantal need reassurance that their adult mentors will support them when things go sideways in their activist worlds. Without this, youth could see their dreams dissolve as they wind up facing accusations or more serious consequences brought forward by adults who are less concerned with supporting their younger colleagues.

The support required by youth activists includes more than just legal counsel as would have been necessary in Chantal's case. Amelia talked about how she viewed all of the students she worked with as activists who were concerned about the world around them. She saw a sense of helplessness in youth who did not know where to begin in developing meaningful socially just projects. She had witnessed the hypocrisy these youth encountered when they received messages from both popular media and teachers and other adults that they would "be the change." At the same time, they were provided with no tools, support, or funding to fix the problems of the world they inherited (Lund & Paul, 2014). Amelia's annoyance with the inadequacy of current school-based social justice training initiatives came through when she sarcastically added that kids consistently hear such encouragement as: "You can do this … because you're creative!" with little further direction or assistance. Phrases designed to empower youth may instead cause them to freeze, unable to act due to the tremendous burden of dealing with problems that seem overwhelming and beyond the scope of their abilities.

Despite feeling that she was frequently given menial tasks due to her age, Abigail was also forced to deal with the problem of lacking the necessary emotional and social tools for engaging in activist work. Had she and her peers been given more support, they may not have felt as Abigail stated,

> We were out there alone, so we felt like we were letting our heads hang in the wind too [laughs]. We felt like we were absorbing all this negative energy and jealousy, and anger, and it was really hard to not only experience that, as the counterpart, but to see how hurt and bullied we were. And for a bully to start understanding their actions, people have to call them out on it.

Knowledgeable, experienced, and concerned adults could have mentored Abigail through the process of calling out the bullying behaviour of these other activists, and importantly, they could have shielded her and her peers from the negative repercussions. Youth should not be saddled with the responsibility of making visible the negative, harmful actions that are sometimes performed by adults trying to maintain control over their activist movements.

Advice for Activist Educators

It is likely unsurprising that the weighty responsibilities our participants mentioned, coupled with the conception of youth as not fully formed people, might result in feelings of despair on the part of these emerging activists. In spite of moments of frustration that participants shared, they noted that their feelings of disillusionment were countered or could be countered, either with the help of adult allies (Coe at al., 2015) or through their own evolving understandings of what it means to be an activist. Explicit and implicit mentions of the need for having safe spaces in which youth could learn about and engage in activist work, allowed them to feel more secure about what they were doing and their individual activist identities. The safe spaces that participants described in the interviews comprised both physical spaces within schools or other organizations, and the emotional spaces where they were free to be themselves and ask difficult questions about the issues with which they were most concerned. Building connections between students and individuals outside of the school community can expand those safe spaces beyond the school walls.

Designating actual physical, youth-led spaces in their schools, and then providing adult allies to support youth within those sometimes emotionally messy areas, could go a long way to helping young people become vital, skilled activists who feel competent in pushing for change. Some form of physical space was helpful for the youth we interviewed to feel as though they had agency to get involved and develop projects in their schools. Amelia and Josh were youth co-facilitators of one such space in an urban high school where the students were given the freedom to design the space and explore issues that piqued their interest. Their adult allies equipped Josh and Amelia with further knowledge and supplies—including financial assistance when necessary—so they could bring their projects to life. Jared, a student who actively used the space throughout his high school career, noted that these opportunities supplied him with the most memorable lessons from those four years.

While finding physical spaces that students can claim ownership over in schools is beneficial, it may not be absolutely necessary for the success of youth activist projects. Katie and Linda were both members of their high school social justice group and even though they did not have their own dedicated room for their work, aside from their teacher ally's classroom, they found a deep sense of belonging in being a part of this group. Linda explained,

> I think really it was a group that was truly inclusive of diverse kids and back then there was a lot of different involvement. It gave us a space to kind of connect. There weren't a lot of groups at the time where I think alternative people would connect to.

Connecting to both peers with similar interests and an encouraging teacher in a similar safe space was foundational to Parmis' growth as an activist as well. She shared that one teacher, who "wasn't the nicest person you'd probably meet but she was very helpful," arranged a spot for Parmis in a youth camp where she expanded her leadership and organizing skills. Parmis believed this experience encouraged her to make the school clubs she founded inclusive of everyone, particularly international students who had been struggling with finding a "comfortable place to be" in the school.

Amelia noted that "safe spaces are messy places" and educators and mentors need to be prepared to deal with the discomfort that comes when young people feel comfortable enough to talk with their adult allies. Her experience with counseling youth whose personal lives were causing them to "fall apart" made her realize that the student-led space she co-facilitated was

really a safe space for the youth. By providing them with a place to fall apart in, she was better able to "put supports and resources around them" to both help them through their current difficulties and teach them how to access resources in the future. Educators who establish respectful relationships with their students have a better chance of supporting youth through the messiness they will inevitably encounter in high school and throughout their activist careers.

Educators who are able to connect youth with activist communities outside of school can help students to expand their activist networks and potentially find other apprenticeship opportunities. Through their program, for example, Josh and Amelia utilized their own activist contacts in their city to bring individuals into their school to provide learning opportunities for their students about various relevant issues. They were also able to take students out into the city for different projects, such as planting fruit trees in the city's river valley as an accessible food source, learning from individuals doing restorative justice work, or partnering with local seniors to learn sustainability skills like woodworking, canning, or knitting. By finding community members they trust to partner with youth, these educators were trying to help students develop relationships and supports that they can still access after they leave high school.

Conclusion

Our research sought to identify some of the frustrations and limitations of activist work from the experiences of former youth leaders in social justice, and their insights can indeed inform those wishing to encourage greater youth participation in social justice projects. Teachers can be activist mentors to students while simultaneously providing access to other adults who can assist with the education of interested and eager youth. By looking at young activists as partners, or even as apprentices, as Garmulewicz and Ireland (2010) suggested, they can be encouraged into more meaningful roles within organizations, events, or movements with the support and mentorship of older, more experienced activists (London et al., 2003; Yohalem & Martin, 2007). This may prevent youth from seeing more seasoned activists in the community as jealous or even vengeful as they reported in this research.

The young people with whom we collaborated for this research shared a number of sources of resistance to their social justice activism, including from fellow activists, school leaders, their own community members, and their adult mentors. It is essential for the adult mentors to create structures where young activists feel appreciated and capable of making a positive and significant impact. Giving youth access to personally and organizationally significant roles in movements, even while they are still in high school, could help them to see themselves as an integral part of the activist community and stop them from becoming adult activists who, "became the enemy they were fighting against." It could also link youth to other activist groups in their area because, as DePape (2012) said, "once you're plugged into one activist community you'll find yourself plugged into a whole activist network across Canada and the world" (p. 16).

The necessary collaboration that can occur in more supportive "intergenerational kinship networks" (Walia, 2012, p. 39) could go a long way to develop a more community-minded forms of activism from which everyone can benefit (O'Donoghue & Strobel, 2007; Wheeler & Edlebeck, 2006). We believe that the insights gained from the participants in this research hold much promise in informing future policy, planning, and curriculum in social justice education**.** By creating supportive and thoughtfully structured leadership opportunities for young people,

educators and other adult mentors can provide the necessary contexts in which their junior activist colleagues can best learn and flourish.

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Endnote:

1. All of the participant names are pseudonyms.

Communicating Elevated Academic Expectations: Positioning Students as Thinkers with Ideas to Share

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Abstract

The focus of this qualitative study is upon 15 Grade 12 students situated in an English Communications (ECM) classroom in rural Nova Scotia and the impact a daily classroom circle had upon their academic engagement. ECM is intended for students who may require further support to develop their skills as readers, writers, and language users as they enter the job market or community colleges. There is no formal curriculum for ECM, and often the demographics of such classrooms are comprised of some of the province's most vulnerable populations. In this paper, we demonstrate the impact the daily classroom circle had upon late adolescents' understanding of themselves as thinkers with ideas to share. Overall, we see this study as significant for teachers in high-poverty contexts, particularly the importance of using a classroom circle as a consistent space to communicate elevated expectations for students who have experienced academic struggles.

Keywords: adolescent literacy; circle routines; qualitative case study; restorative practices

Communicating Elevated Academic Expectations: Positioning Students as Thinkers with Ideas to Share

> Lia[1] greeted me as she wrote the agenda on the whiteboard asked if I might pass out the novel *Night*[2] (Wiesel, 2006) to each student. Turning to the class, Lia explained that the question to be discussed as a quick write in their journals and later, more fully, in the classroom circle was the same question. Lia explained at the end of Chapter 2, the author, Elie Wiesel, had a defining moment and asked the students what it was. Two students suggested "hatred" and "nothing"; Lia said both were correct although hatred was, for Wiesel, the defining moment in this instance, as it was the first time he could remember feeling such emotions. Lia said, "The question I am asking you to consider is: What is a defining moment in your life?" (Field notes, October 25, 2017)

This moment was a typical beginning in Lia's Grade 12 English Communications (ECM) class located in a mid-sized high school in rural Nova Scotia (NS). ECM is intended for students who may require further support to develop their skills as readers, writers, and language users as they enter the job market or community colleges. There is no formal curriculum for ECM, and often the demographics of such classrooms are comprised of some of the province's most vulnerable populations.[3] For the purposes of teaching ECM, teachers are expected to adapt grade-appropriate, academic English curriculum and outcomes. While the opening moment highlights a common routine that most literacy teachers and teacher educators will recognize, what made it remarkable was how the classroom circle served as an instructional signpost for literacy activities and how students, with histories of academic struggles, positively responded to the daily routine.

As an experienced teacher and department head of English, Lia chose, and regularly scheduled herself, to teach this course. In NS it is not uncommon for early career teachers and/or teachers with little to no training in English literature content or English Language Arts (ELA) pedagogy to teach ECM. Consistently, Lia directly, and indirectly, demonstrated to students that they could use ideas from their own lives to inform their thinking, reading, writing, and analysis of texts. Informed by Lia's understanding of restorative practices (Watchel, 2016) as well as the learning principles underlying literature and Socratic circles (Moeller & Moeller, 2013), we present Lia's daily classroom circle as an example of pedagogical bricolage[4] (Campbell, 2019).

Overall, we see this study as significant for NS teachers, particularly the importance of elevating academic expectations for students in ECM classrooms; we also believe it may resonate with others who find themselves teaching in contexts with similar constraints. Because few studies have considered the views of late adolescents[5] situated in high-poverty rural school contexts, and their understanding of how they might apply literacy skills in contexts beyond the classroom (Behizadeh, 2014a), the purpose of this paper is to tease out, and demonstrate, the impact a classroom circle routine had upon 15 Grade 12 students' understanding of themselves as thinkers with ideas to share.

Teasing Out the Potential of Circle Routines With Learners who Struggle Academically

Scholars agree that when understanding and assessing learners who experience challenges with literacy (Bauer & García, 2002; Dawson, 2009; Ganske et al., 2003; Phegley & Oxford, 2010, Pitcher et al., 2010) there are multiple factors to consider (some of which include home context, cultural background, prior learning experiences, teacher expectations, and the interplay of these elements). While it helps if adolescents feel a sense of investment in the development of their

literacy abilities (Dawson, 2009), teachers need to be clear in their overall understanding of 21st century literacy demands and pedagogical approaches that support and engage learners, particularly when assessing those who struggle (Bauer & García, 2002; Dawson, 2009; Ganske et al. 2003; Minguela et al., 2015; Peskin et al., 2010; Van Zoost, 2011).

The ideas underlying pedagogical practices used to inform the facilitation of circle routines are complex. Although circle-based activities and routines in secondary ELA classrooms are widely understood in terms of design and implementation, how they pedagogically unfold varies in response to teacher beliefs and educational backgrounds, curricular purposes, and underlying approaches intersecting with age range and abilities of learners. For example, in the NS Regional Centre for Education[6] where the study took place, relational principles informing teacher and student relationships are based upon a province-wide project focused on a restorative approach in schools (NS Government, n.d.). With the backdrop of this endeavor in mind, in our review of the literature, we were mindful to consider the recent influences of a restorative approach upon ELA educators, as they engaged in pedagogical practices informing the facilitation of circle routines, while we also explored research about the benefits of common circle activities (i.e. literature circles and Socratic circles) that promote active literacy engagement in the teaching and learning of ELA (Moeller & Moeller, 2013).

The Benefits of a Restorative Approach and its Practices

The interest in community-building approaches informing relationships and interactions in schools has seen the emergence of a restorative approach (Schumacher, 2014), as many schools, districts, and systems have sought alternatives to zero tolerance policies (APA Zero Tolerance Task Force, 2006). Evolving out of restorative justice work in the judicial system (Llewellyn et al., 2013) and based upon ethics of justice and care (Noddings, 2013), a restorative approach aims at fostering open communication through a collection of restorative practices in which affective statements and questions may inform conversations, meetings, conferences, and classroom circles (CCRCE, n.d.; Llewellyn et al., 2013; NS Government, n.d.). As restorative practices are focused on communication and daily interactions that capitalize on "the use of informal and formal processes that precede wrongdoing, those that proactively build relationships and a sense of community to prevent conflict and wrongdoing" (Watchel, 2016, p. 1), gathering in circles as a way to foster communication is viewed as an essential component (Gregory et al., 2016; Ortega et al., 2016; Schumacher, 2014). Convening in circles for the purposes of building relationships and discussing issues relevant to communities is an ancient practice and way of knowing among Indigenous communities and peoples (Graveline, 1998; Peltier, 2017; Pete, 2004); the practice of meeting in circles using an approach informed by a consensus- and relationship-building process is recent phenomenon in school contexts. Most common to restorative practice circles are approaches that address conflict or disruptive social behaviors (peacemaking circles) and those that nurture relationships as part of inhibiting future conflict or rule breaking (proactive circles) (Costello et al., 2010).

The bulk of school-based research on restorative practices has focused on their impact, particularly in the decrease of disruptive student behaviors and declines in suspensions and expulsions (Gregory et al., 2016) as well as their positive influence upon school culture, social skill development, peer to peer interactions, and teacher-student relationships (Schumacher, 2014; Ortega et al., 2016). Altering the emphasis from blame and reprimand to a focus on developing and supporting affirmative relationships, scholars have attributed positive behavioral results to the implementation of a restorative approach and its practices in schools (Gregory et

al., 2016; IIRP, 2009; Ortega et al., 2016). Little research has considered the impact of restorative practice principles upon teacher instructional decision-making, particularly through the responses and perceptions of adolescents who struggle academically.

Circle-Based Routines and Activities in Secondary ELA Classrooms: Benefits and Limitations

The secondary ELA classroom is an increasingly complex context where expectations for teachers and learners are multifaceted. Connected to not only traditional emphases on reading and writing, expectations are also informed by approaches and ways of thinking related to enhanced usage of alternative texts, contemporary media, and instructional technology (Schoffner et al., 2010) for the purposes of deepening communication, comprehension, construction of knowledge, and critical thought (Gee, 2001, 2007; Kalantzis & Cope, 2011; Kane, 2011; Lind, 2008; Pahl & Rowsell, 2012; UNESCO, 2008). Circle routines and activities are well aligned with the aims of 21st century literacy teaching and learning, as they function, when effective, in ways that enable learners to capitalize on opportunities for deepening critical thinking, acquiring and applying academic vocabulary, and developing analytical skills using a variety of texts and contemporary situations.

Benefits and Limitations of Literature Circles

A common circle-based routine in ELA is literature circles (Daniels, 2006; Eeds & Wells, 1989; Thein et al., 2011; Young & Mohr, 2018); a strategy in which small groups of learners engage in focused discussions upon student-selected texts. Literature circles are generally depicted as providing consistent routines for learners to engage in conversation about chosen texts in which they have a genuine interest (Daniels, 2002; Daniels & Steineke, 2003; Moeller & Moeller, 2013). Although a bulk of the research on literature circles has tended to focus on application and design (Almasi et al., 2001; Bond, 2001; Clark, 2009; Daniels, 2002; Day & Kroon, 2010), scholars have found that literature circles do foster student engagement and satisfaction (Batchelor, 2012; Flowerday et al., 2004; Moskal, 2019; Peralta-Nash & Dutch, 2000). Their durability and long serving success in ELA classrooms may be attributed to what Daniels (2006) summarized as four key principles: engagement, choice, responsibility, and research. Much has been written about the positive benefits of literature circles upon learning (Young & Mohr, 2018) in how they increase problem solving skills (Blum et al., 2002), improve reading comprehension (McElvain, 2010), boost language learning (Su & Wu, 2016), bolster decoding and vocabulary development (Piazza & Duncan, 2012), and strengthen reading strategy use across a range of reading abilities (Whittaker, 2012). Some scholars also attribute regular student participation in literature circles to enhancing inclusive learning environments (Blum et al., 2002; Whittaker, 2012). Although there is wealth of research championing literature circles, scholars have identified limitations, particularly the tendency to be overly prescriptive (Daniels, 2006), the ways student interactions may be based on perceptions of ability (Allen et al., 2003), the potential for student discussions to reinforce stereotypes (Alvermann, 1995), and in how students may fail to take up critical perspectives when discussing texts (Thein et al., 2011). These critiques highlight the significance of teacher pedagogy upon the structure and facilitation of literature circles (Sanacore, 2013).

Benefits and Limitations of Socratic Circles

To foster exploratory talk and support deepening understanding of a topic among learners, Socratic circles are constructed around the discussion of purposeful open-ended questions

(Copeland, 2005). Ideally, Socratic circles are designed to create a dialectic as a way to provoke among participants deeper understanding of complex ideas. The success of this approach depends upon a well-developed opening question in connection to a text that students have critically read, one that has no right answers, with the potential to foster speculation, evaluation, clarity-seeking, and the generation of new questions (Styslinger & Overstreet, 2014; Styslinger & Pollock, 2010). Typically, students sit in two concentric circles with the inner circle discussing the question and text and the outer circle actively listening, taking notes, and providing response to the inner circle about the process of discussion (Brown, 2016; Copeland, 2005). Advocates of Socratic circles argue that the strategy provides opportunities for students to take partial control, identify the direction of discussion, and govern collectively where students and teachers' opinions are weighted equally (Copeland, 2005; Styslinger & Pollock, 2010). Scholars have attributed the regular use of Socratic circles to enhancing abilities to ask better questions (Thomas & Goering, 2018), to use evidence to support arguments (Brown, 2016), to develop critical awareness about social, cultural, political, and historical events (Balbay, 2019), and to participate more fully during a variety of discussions (Dean et al., 2016). Despite the advocacy for the implementation of Socratic circles, little research has focused on teacher pedagogy and the facilitation of this teaching strategy (Brown, 2016; Dunne, 2014; Friesen & Stephens, 2016; Higham et al., 2014; Styslinger & Overstreet, 2014). The little that is known about the knowledge and skill needed to successfully implement and facilitate Socratic circles brings into focus the need to better understand how teachers may use this strategy to engage learners who identify as experiencing struggles with literacy.

Looking Across Literature and Socratic Circles

Of particular interest to our focus was the significance of teacher pedagogy during the enactment of circle routines and activities. A review of the literature revealed an abundance of studies that focused directly on the design, implementation, and procedures associated with the practical facilitation of common circle routines and activities in the teaching of ELA. The remainder identified the impact regular circle routines have upon student learning. Overall, there is limited research on how secondary students who academically struggle perceive participation in classroom circles, on how they come to understand themselves as learners in response to engaging in such processes, and, little to no research, on the influence of restorative practices on adolescents' willingness to persist with circle routines and activities that engage literacy knowledge and skills. In what follows, we explore the experiences, and perceptions, of 15 late adolescents participating in a classroom circle that was a regular feature of their ECM class.

Theoretical Framework

Attempting to understand what adolescents' perceived as useful and authentic to their literacy learning (Behizadeh, 2014a), particularly when they had experienced struggles, required the design of the study to be exploratory and informed by a willingness to inquire into the observed and told stories (Butler-Kisber, 2010) that adolescents shared over time. We draw upon an understanding of 21st century literacy and its multifaceted emphasis on the kinds of literacy practices and skills individuals need to successfully communicate and navigate technologically advanced societies. Viewing literacy in this way not only allows for reading and writing, but also acknowledges a multitude of social practices, purposes, and interactions used to deepen understanding, communication, critical deliberation, and fostering of knowledge in contextually relevant ways (Gee, 2001, 2007; Kalantzis & Cope, 2011; Pahl & Rowsell, 2012; UNESCO, 2008). As part of this view, particular emphasis is upon how teachers and learners interact in

classroom contexts shaped by local constraints and social requirements (Beach et al., 2016; Downer et al., 2010; Forzani & Leu, 2017). Buckelew and Ewing (2019) described the ELA classroom as a unique environment where

> individual components of the classroom ecosystem are not static, but fluid and dynamic; the information and lessons shared are reciprocal. Both the teacher and students are transformed by each other. While the teacher may be the lead facilitator, the interdependent and transactional nature of the ecosystem acknowledges that both teacher and student are transformed by the transactions that occur in the classroom. (p. 14)

The complexity of such a learning environment grounds our understanding of the possibilities and challenges associated with teaching and learning in ELA classrooms, where "a conundrum of change" (Forzani & Leu, 2017, p. 20) is expected and can be embraced. Leu et al. (2013) argued that the nature of literacy in the 21st century is deictic in how the meaning of the word changes rapidly in response to emerging information and communication technologies, all of which have new literacies demands (Leu, 2000; Pahl & Rowsell, 2012).

Circle routines and activities are well aligned with the aims of 21st century literacy teaching and learning, as they function, when effective, in ways that enable learners to capitalize on opportunities for deepening critical thinking, acquiring and applying academic vocabulary, and developing analytical skills using a variety of texts and contemporary situations in community with others. The relationship building and consensus-seeking nature of restorative practices further complements the academic emphasis found in many circle routines and activities, as the aims of nurturing relationships and communication, we observed, enabled the participants of our study to take that leap of faith, share ideas, and respond to others. In the daily classroom circle, participants were positioned as holders and constructors of knowledge and this way of knowing is reminiscent of what Aoki (1993/2004) referred to as "teaching as in-dwelling between two curriculum worlds," where the origins of curriculum, "curriculum-as-plan" informed Lia's knowledge of the achievement of outcomes and "curriculum-as-lived" revealed her understanding of the uniqueness of those participating (pp. 14-15). In this way, the daily classroom circle served to position, honor, and remind students of who they were and what they knew. In short, this regular routine was about students and their lives, first, and curriculum as mandated outcomes, second (Connelly & Clandinin, 1988; Schwab, 1983).

Of particular importance to our inquiry were our attempts to better understand and document how learners, who have experienced academic challenges, were engaged in the ECM classroom. In our design of the study and recursive analysis of data, we were drawn to scholars that advocated for the potential of integrating restorative practice principles into daily instructional practices (Gregory et al., 2016), noting where we saw particular emphasis on literacy teaching and learning applicability. For example, Winn (2013) argued for the reimagining of the English classroom as "restorative English education," an approach that includes restorative justice principles, practices, and circle processes as secondary youth and teachers use literature and writing "as sites of restoration and peacemaking" (p. 129). To counter the punitive nature of zero-tolerance policies and their tendency to categorize, mark, and segregate particular youth, Winn (2013) argued that ELA teachers need to incorporate "a discourse of restoration" and "reimagine English classrooms as sites for relationship-building, peacemaking, and peacekeeping" (p. 127). For us, the impact of restorative English education is most visible during the daily practice of classroom circles, as it is a process bounded by time, place, and social interactions as participants (teacher and learners) engage in dialogue about

literature and contemporary issues in ways that are personally relevant, and which position everyone as thinkers who are working at finding and expressing voice as they mediate and engage with others (Winn, 2013).

Foundational Considerations: Context

The study's location, demographics, and adolescent literacy and teacher pedagogy considerations are significant threads that we chose to include throughout this paper. We view this combination of threads as an interconnected web; as one thread is pulled forward and discussed, it ripples across and brings forward the consideration of other threads. First, the student participants of this study attend an ECM class in a large high school situated in a high-poverty, rural location of NS. Their lives outside of school shaped and informed perceptions of their learning experiences in the ECM classroom as well as how they looked forward to life beyond graduation. Related to participant understanding of who they could be in ECM, and, arguably, into the future, was the pedagogical decision making of their teacher, Lia Lewis. As outlined in review of the literature, there are subtle differences among the purposes of circle routines, specifically, literature circles, restorative practice circles, and Socratic circles. For our purposes, we use the term "classroom circle" to convey the multifaceted nature of this routine in Lia's classroom.

Throughout the paper we maintain a focus upon the complexity of participants' lives in context, pulling forward these threads as relevant to the discussion. Below are the research questions of the study:

1. What are the perspectives of adolescents who have experienced academic struggles about the relevance of literacy to their lives beyond the classroom?
2. In what ways, if any, are secondary students academically engaged in the ECM classroom?
3. In what ways, if any, are secondary students' willingness to engage academically positively impacted by the classroom circle?

In the following methodology section, we discuss how these questions were addressed, as we inductively analyzed the data that emerged.

Methodology

Using a single qualitative case study design focused upon a common case (Yin, 2018), our aim was to document the everyday circumstances and conditions of student engagement in an ECM class. Yin (2018) suggested case study design is well-suited for research that seeks to understand a contemporary phenomenon and makes the assumption that such understanding will involve significant contextual considerations (Yin & Davis, 2007). The premise underlying our intent in this study was to better understand the perspectives of high school students, specifically those who identified as experiencing academic struggles, about their experiences in ECM. We attended to how these individuals interpreted and attributed meaning to their experiences (Merriam & Tisdell, 2016) about the kinds of literacy learning they saw as relevant/authentic to their lives outside of school, as they looked ahead to entering the job market or attending community college. Conducted over the course of the fall semester (October-January) in the academic year of 2017-2018, the study was situated in a Grade 12 ECM classroom located in a NS high school with a student body of roughly 900 students. Approximately 120 students are registered across Grade 11 and 12 ECM classes and typically there several sections of ECM in any given semester (e.g. Grade 11: 60 students; Grade 12: 60 students).

Establishing Classroom Circle Norms in ECM

Although Lia approached teaching through a relational lens, she did not alway maintain intentional, restorative, and relational practices in her classroom setup, conflict resolution, and curriculum delivery. Lia's conscious effort and intentional practice to infuse restorative practices into her teaching developed as a result of struggling to connect with reluctant learners in ECM classes. Lia was first introduced to the language and specific strategies of a restorative and relational approach through formal and informal professional development opportunities. While these ideas felt familiar to her, she recognized the opportunity for further growth and development. For example, Lia learned that language is a significant component of restorative practices and is key in establishing and maintaining healthy and productive relationships. Drewery and Kecskemeti (2010) explained that words can be used to "open options, and invite the other into useful dialogue, rather than offering them positions that they may object to" (p. 106).

Over time, Lia intentionally changed the physical setup of her classroom in order to facilitate a more student-centered environment and to encourage further development of authentic connections and relationships. Simple changes in the physical set up of Lia's classroom drastically shifted the interactions between the students, and between the students and her. Lia learned to start and end class in a circle formation, without physical barriers (such as desks) between people. While there is no magic in the circle itself, Lia observed, there was significance in ensuring that no one had their back to another person in the room. Because students had to look at one another and could no longer "hide" behind desks or cellphones, they were held more accountable to Lia, to each other, and to their own learning. In addition to changing the physical layout of her classroom, Lia also focused on more purposeful openings and endings to lessons. This strategy is restorative in nature because it fosters connection between students, student and teacher, and students and curriculum (Drewery & Kecskemeti, 2010). She began to ensure that the opening and closing prompts (responses can be verbal, written, or both) provided opportunities for important information about the students as learners *and* as humans.

Entering the Classroom and Data Collection Methods

Once ethics approval was received from the Research Ethics Board at St. Francis Xavier University and permission was granted by the Regional Centre of Education, the first author, Jennifer visited Lia's classroom in early October 2017. The first visit was brief; its primary purpose was to provide Jennifer and the students an opportunity to meet and for the students to learn about the study. As a way of beginning, Jennifer, Lia, and the students sat in a circle and introductions were made. Following introductions, Jennifer first explained the concept of informed consent and emphasized that it was their decision whether, or not, they participated. They were also informed that they could withdraw from the study at any point and without penalty. During the opening conversation, some of the students expressed surprise over the fact that Jennifer, a university professor, wanted to spend time in their classroom. Later, Jennifer and Lia shared details about what to expect by participating, specifically, the duration of the study, the nature of Jennifer's observations, and the kinds of questions they could be asked during individual interviews. Also outlined was the amount of time that they could expect to invest in the study and Jennifer emphasized that their teacher, Lia, would not see transcripts of interviews until the semester was over and grades had been submitted. Students were encouraged to ask questions throughout as Jennifer and Lia described the study and its activities. To give students time to think over the invitation, Jennifer left the class after 40 minutes. Two weeks passed

before Jennifer's return; during this period of time, Lia answered follow-up questions and collected consent from interested students. Out of 22 students, 15 agreed to participate.

As part of our focus on 15 Grade 12 ECM students, we were also deeply mindful of the school context in which the study was situated. Many of the students are bussed in from surrounding rural communities and in recent years the mid-sized town where the high school is located has experienced severe economic fallout due the closure of several significant industries. Frank and Saulnier (2017) identified the region as an area where child poverty rates are documented at over 30 % and according to Statistics Canada data, NS is the lone province where child poverty has increased since 2015 (Statistics Canada, 2019). More recently, Frank and Fisher (2020) found that the number of children living in poverty in NS is close to one in four. It is important to emphasize the financial vulnerability of the context, as many of the youth who took part in this study experience poverty and/or home insecurity.

Between October 2017 and January 2018, Jennifer visited Lia's Grade 12 ECM class once a week and conducted a 75-minute observation for a total of 10 visits. During the observation, Jennifer wrote field notes on a laptop with a focus on participants' actions and words, as well as participants' responses to one another and classroom environment. As part of these visits, Jennifer also participated in the classroom circle. Depending upon the topic and student responses, classroom circles tended to run between 20 to 30 minutes; as described earlier, Lia employed circles to create relational connections among the group (with her and each other) and to foster academic connections to the texts and issues under examination. Field notes were shared with Lia at the end of every class; Lia added commentary to Jennifer's observations and contributed reflective field notes bi-weekly. To document student perspectives, Jennifer individually interviewed participants twice during the semester (the end of November and January). Finally, student samples of writing that focused on personal interests and out of school learning experiences were also gathered. The first item was a questionnaire that encouraged students to identify their interests in and outside of school (October) and the second item was a post mapping exercise where students self-identified positive attributes of their learning (January).

Data Analysis Process and Activities

We began our analysis by reading through the data sets and open coding (Merriam & Tisdell, 2016), identifying repetitive instances of student behaviors and responses. This opening round of analysis was guided by our two primary research questions: What are the perspectives of adolescents who have experienced academic struggles about the relevance of literacy to their lives beyond the classroom? and, in what ways, if any, are secondary students academically engaged in the ECM classroom? These interrelated research questions drew our attention to the daily classroom circle. In next stage of analysis, we clustered tentative categories we each had developed, looking for common threads and differences. As we focused our gaze on these categories, we noted references to observable academic engagement connected to the classroom circle, moments where questions and discussion in preparation for the circle as well as during the circle later influenced student responses and interest in the same lesson. The development of this paper about the impact of the classroom circle on student willingness for learning was not something anticipated while planning or conducting the study. The presence of the classroom circle as influential emerged from the data, which caused us to create a third research question: In what ways, if any, are secondary students' willingness to engage academically positively impacted by the classroom circle? Once we identified the frequency of participants' mentions of

the classroom circle, we reviewed the data with this lens and found examples across transcripts and field notes in which the classroom circle played a pivotal part in positively impacting student learning. Further analysis enabled us to identify patterns related to the relationship between the classroom circle and discernible student willingness in engaging in positive relational interactions as well as in literacy practices. Our understanding of student willingness and engagement is directly connected to documented frequency of participants' behaviors, particularly positive social interactions and persistence with literacy tasks (Francois, 2013), as they discussed and wrote about literature and current issues in ways that were personally authentic (Behizadeh, 2014a) and inclusive of others in the classroom as individuals with ideas and thoughts to share (Winn, 2013). In the next section, three themes are discussed using excerpts from interview transcripts and field notes of classroom observations. Each theme represents a recurring, common response to the circle over the course of the study and across data sets.

Findings: The Positive Impact of a Classroom Circle on Late Adolescents Willingness to be Academically Engaged

As the previous section describes, analysis of the interviews and observations led us to identify three main areas in which we saw positive impact of the classroom circle upon participants' willingness to be academically engaged. Part of this willingness, we believe, was attached to the nature of the practice in how students knew that the daily circle was bounded by a certain amount of time (20-30 minutes), a specific seating arrangement (circular configuration), and established parameters regarding social interactions (CCRCE relational principles).[7] Enclosed in the trust and safety of the circle and knowing the social guidelines and expectations placed upon all involved, we observed the willingness of students to persist with topics under examination and to take risks with their thinking (Mitton & Murray Orr, in review). The presentation of the three themes are organized to reflect the impact of the circle on students as well as its pedagogical complexity in how it is a two-fold process that requires concurrent self-reflection and awareness of others. The excerpts illustrate a holistic view of the theme under discussion and provide a sample of the frequency with which positive impact examples about the classroom circle were present in participants' accounts of their learning and in the field notes of classroom observations.

Theme One: Circle Engagement as Opportunities for Developing Social and Communication Skills

Interview 1: November 30, 2017

Student participants noted the importance of the classroom circle to how they interacted with one another. Participant recognition of the circle as significant for their learning happened gradually, however. We note in the first interview that a small minority of participants framed the daily classroom circle as something better suited for elementary; for example, one participant described the circle as being "like a kindergarten class a lot of the time, as opposed to a Grade 12 class" (Matt). While this was not a common response, it is important to highlight, as it may be partially attributed to participants' wariness of one another as well as to the negative stigma attached to ECM, a class widely known as the English course for students who were not going on to university studies. A few students were quick in the first interview to point out the differences among students and how this made for challenging learning conditions. For example, Matt explained that "this English class gets me quite stressed out … just, the different types of people

that are in our class … I guess, I just have a hard time accepting it." Another student, Harper, said, that he had not "learned a lot in this English class; it's mostly [because] a lot of them are just goons." Contrary to these opinions, other students emphasized the variety of people in the class and saw the circle as a way to get to know them. For instance, Tom described the class as a context in which "everyone's got their own [story] … they're pretty interesting … Yeah. They all got their own stories to tell. Pretty interesting group overall, really."

Interview 2, January 19, 2018

By the end of the semester, the majority of participants demonstrated their awareness of how the classroom circle enabled them to successfully engage with peers who they did not know at the start of the semester. Participants, overall, attributed their participation in the daily circle as creating opportunities for social and communication skill development. A most notable shift was found in participants who in the first interview had expressed their disdain for the daily circle. For example, in the second interview, Matt, who had described the classroom circle as better suited for kindergarten-aged students, pointed out that "in ECM … you're able to express yourself a lot more. It might not be an academic-based course but as far as real-life goes and the skills you need for actual everyday life, I find ECM is better for it." Harper, a student who had expressed negative opinions about some members of the class, identified how ECM was helpful for "our communications skills. They've gotten much better, all of us. At the beginning, our communication skills were horrible, but now they've gotten a lot better." In response to the question, what has been most beneficial for your learning in ECM, participants overwhelmingly, identified the classroom circle; for example, Beau pointed out that it was "definitely, the circle. To engage with everyone around." and Tom, echoing Beau, explained the biggest benefit in ECM was "the circle that we always had … [it] helps you with your talking and sharing with other people." Viewing student participants' perspectives on the positive impact of the classroom circle upon their communication skills, enabled us to see the ripple effect the daily routine had upon students' willingness to engage in other literacy practices, particularly in the analysis of academic texts.

Theme Two: Circle Engagement as Opportunities for Deepening Textual Connections and Fostering Stamina

Throughout the study, we noted how the opening classroom circle provided opportunities for students to demonstrate their understanding of how to create connections across a wide range of texts. In the following we share three different excerpts from the same observation to highlight how the classroom circle engagement grounded and informed other stages of the lesson enabling students to not only show deeper learning but also a willingness to share ideas that were personally meaningful.

Preparing for the Classroom Circle

> Lia greeted me as she wrote the agenda on the whiteboard asked if I might pass out the novel *Night* (Wiesel, 1960) to each student. Turning to the class, Lia explained that the question to be discussed in their journal and later in the classroom circle was the same question. Lia explained at the end of Chapter 2, the author, Elie Wiesel had a defining moment and asked the students what it was. Two students suggested "hatred" and "nothing"; Lia said both were correct although hatred was, for Wiesel, the defining moment in this instance, as it was the first time, he could remember feeling such emotions. Lia said, "The question I am asking you to consider is: What is a defining moment in your

life?" Lia asked Nicole, a quiet girl seated close to her, if having Laura, her daughter, was a defining moment for her. Nicole smiled and said that becoming a mother was such a moment in her life. Lia provided a few other examples, "For example, when you got a job or when have to take care of someone else." Lia checked again to see if the examples helped student understanding. Lia asked Leo if he had an example about a defining moment and he suggested "getting a job"; Lia agreed. Lia moved about the room as students completed a quick write in their journals in response to the question (Field notes, October 25, 2017)

During the Classroom Circle

Using the responses from their journals, students took turns sharing examples of personal defining moments. Tom wrote about getting his driver's license and explained it was like getting freedom. Kasey was next and also identified getting his license as important and then shared a story about driving without a license a few times and getting caught by the police. Allan described the moment he realized he was good at technology and math and Leo explained how driving his dirt bike enabled him to go where he wanted to go … half way through the circle the examples became gradually more personal … Tucker quietly shared the moment when he won his age group at the Atlantic Canadian Bow Shooting Championship … Lewis shyly described moving from PEI in Grade 9 and that it changed him for the better … Harper told a story about hurting his ankle during a basketball game and how he had to get surgery; he said the pain was unlike anything he had experienced before and it now made him really careful when playing … Matt quickly described the death of his grandmother two years ago and explained that the event had negatively impacted him and changed his decision making in "not always in a good way."

Following the Classroom Circle: Analytical Discussion

Lia praised their examples and suggested that they could put away their journals and return their seats. She asked them to turn to page 23 of *Night* and to make sure they had paper and something to write with … Lia explained that while they read, they should pay attention to intense imagery because she expected them to find three vivid examples in the novel … later, as they discussed a moment in the novel as a young boy comforted his mother who seemed to be going mad as she shouted about visions of fire as they approached the concentration camp inside the train, Lia asked why this was important. Allan suggested, "It shows that this place [Auschwitz] is making them purely mad." Kasey suggested that it shows the little boy's mother was vulnerable and that they both will probably be put to death. Leo suggested that the little boy was attempting to take care of his mother. Beau suggested this moment reminds him of the episode on the *Walking Dead* when the main characters arrive at Terminus and the group think it's a nice place until they figure out that it is evil. (Field notes, October 25, 2017)

Over the course of the study, examples of how the daily classroom circle positively impacted student engagement for the duration of the lesson were recurring. As depicted in this moment, the classroom circle served a two-fold purpose in how it provided structure to the topic under examination and in how it created opportunities for students to share ideas in varying ways: as they prepared for the circle (journal writing), as they engaged in the circle, listening and responding with personal examples, and later following the circle, as they analyzed the text (text annotation, writing, and discussion). While the lesson's central idea (the identification of a

defining moment) enabled students to focus their thinking, we highlight how participation in the circle encouraged students to become more personal with their examples. Described in the order in which students took turns in the circle, the examples that were shared show how students gradually moved from safe answers (getting a driver's license) to examples of accomplishment (winning a major championship) to instances where pain was experienced physically (ankle injury) and emotionally (grandmother's death). More often than not we found student engagement in the circle positively rippled into the literacy activities that followed and it was common for students to persist with the topic previously explored in the circle. For instance, as evident in this lesson, we highlight students' ability to plausibly infer about the possible motives of the boy and his mother as well as one student's insight into the novel, *Night*, and the connection he made to the television series, *The Walking Dead*. In both instances, the moments focused upon characters' uncertainty as they entered unfamiliar contexts (Auschwitz and the post-apocalyptic community of Terminus) with the hopes that they may be safe places to only soon discover the danger of their new homes.

Theme Three: Circle Engagement as Opportunities for Enhancing Understanding of Self and Others through Content

For many students who take ECM, post-secondary plans tend to include entering the job market and/or attending community college; because of this one may wonder about the purpose and relevance of reading literature with students whose plans do not include university studies. To counter this perspective, we highlight sociocultural perspectives on literacy (Scribner & Cole, 1981; Street, 1995) and the view that literacy is more than discrete sets of skill development located in academic settings. Classrooms, homes, peer groups, neighborhoods, schools, and so forth are part of who learners are and inform how they make sense of practices and events associated with literacy and texts (McCarthey & Moje, 2002). Such perspectives emphasize that literacy is not just processes related to skills but are also connected to learners' identities, enabling learners to sharpen their gaze in the analysis of texts (Langer, 2002; Rosenblatt, 1995). Scholars also argue that the study of literature provides opportunities for learners to better understand themselves through the study of others (Darragh & Boyd, 2019; Singer & Smith, 2003). Of the literacy practices, events, and texts (Francois, 2013) in which participants were regularly engaged, the daily classroom circle provided students with the opportunity to collaboratively analyze academic content through the frames of their own lives.

> Lia started the circle by asking the students about what has been going on lately in the school. Beau and Leo were quick to describe the fights on school property. Lia then went on to ask about what they and others did when they saw people fighting and Beau replied, "Nothing" … Picking up on this idea, Lia explained that the day's focus is the idea of doing nothing, or indifference, which is connected to the book, *Night*, and what Elie Wiesel called "the danger of indifference." Lia explained that they would not read much today but would spend more time in circle and small groups discussing the idea of indifference. Lia said, "give me an example of seeing people indifferent to an event and of people not responding to what is happening." Beau described watching a couple fighting over a baby in a stroller and he called the police because he didn't think he could step in and do anything … Harper described a disagreement between a couple outside of his house and when the girl broke down as the guy drove away, he stayed in his house and laughed. He explained this couple does this stuff all the time and he did not take it seriously … later in the circle, Lewis asked for a repeat of the question; Lia reworded the question. Lewis

> replied that when he was younger, around the age of five, his parents were always fighting and that he wished he could have stepped in … he said he wanted to help both of them, but he could not. The room got very quiet after he said this. … At the end, Lia made a connection to Elie [Wiesel] and reminded them that Elie asked in the novel asked how women and children could be burned alive as the world remained silent. She said, "We're going to continue to explore this topic of indifference in small groups." (Field notes, November 10, 2017)

Lia was purposeful in the kinds of questions asked at the start of the classroom circle, and she made strategic use of school-based incidents to ground the conversation. As depicted in this moment, it was not uncommon for students to offer deeply personal experiences and ideas in response to Lia's question. Inside the circle, vulnerable responses like the one Lewis shared, were not unusual. Conversation in the circle tended to be circular in nature in how Lia focused the question at the outset by connecting it to the topic and/or text under examination and in how she returned to this focus at the end of the circle once everyone had shared. As emphasized in discussion of the second theme, the classroom circle was not separate from other literacy practices, events and texts in the classroom, rather, it informed all of these constructs and may be viewed as an example of "literacy as a social act" (Francois, 2013, p. 142).

As the circle unfolded each day, Lia did not censor ideas and modeled for students that it was appropriate and authentic to share real opinions. At times, some students attempted to outdo the preceding story through the sharing of vivid details that were sometimes violent and/or illegal. In such moments, Lia listened, asked follow-up questions, and responded in ways that showed her attempts to create space for their story, although she did not condone such behaviors and expressed her lack of approval if actions were illegal and/or vicious. The circle, for participants, was a space where they were positioned as thinkers: Academic texts were negotiated through personal connections and multiple interpretations were encouraged and viewed as essential to deeper understanding.

Discussion: The Ripple Effect of the Daily Classroom Circle

The purpose of this study was to better understand how students with histories of academic struggles understood the relevance of literacy to their lives and how they responded to learning in the ECM classroom. As students who had mixed feelings about school, we were curious about the kinds of practices, events, and texts (Francois, 2013) that would elicit their focus and engagement while supporting the development of their literacy skills. A formative presence in the backdrop of this study was the context in which it was located; a region where one in four children live in poverty (Frank & Fisher, 2020), where the closing of industries has created severe financial constraints, and where job prospects in the area are limited. Much has been written about the impact of poverty on children and adolescents' academic achievement (Ahmar & Anwar, 2013; Reardon, 2011; Sirin, 2005) and the compounding factor of attending schools located in low-income areas where higher rates of teacher turnover and resource constraints create additional barriers (Carver-Thomas & Darling-Hammond, 2019). Scholars have argued that such conditions reduce opportunities for learners to achieve academic success, leading to feelings of frustration and discouragement in young learners (Joffe & Black, 2012) with the potential to evolve into little academic motivation in adolescents (Breslau et al., 2009), and the increased likelihood of leaving school before completion of studies (Brownell et al., 2006; Brownell et al., 2010; Roos et al., 2006).

With respect to the links between poverty and literacy, Statistics Canada (2020) reported that 13.8% of 15-year-old youths across the nation had low literacy skills in 2018 and 11.7% of Canadian youth (15 to 24 years old) were not engaged in employment, education, or training in 2020. The lifelong implications of poverty further hampered by low literacy skills are revealed in unmet housing and health needs as well as chronic homelessness (Statistics Canada, 2020). Socio-economic disadvantage at the outset has lifelong implications not only in terms of reduced salaries but also in the actuality of shorter life spans (OECD, 2018, p. 3). Intergenerational mobility, the OECD (2018) argued, may be understood as "sticky floors" and "sticky ceilings," as children from disadvantaged backgrounds strain to move up the social ladder and as children from middle to high income families have opportunities hoarded to ensure their advantages.

Throughout the study we were mindful of the potential impact of our location upon the future prospects of student participants: The possibilities of their lives after graduation in terms of employment, post-secondary education, or training. Viewed through this lens, the role enhanced literacy skills can have upon individuals' lives comes sharply into focus, particularly the economic mobility that becomes possible with the advance of literacy skills and their positive ripple effect upon secure housing, food security, and health care access (OECD, 2018; Statistics Canada, 2020). To support social mobility, education is critical; curriculum and policy design can grant learners equal opportunities, access to high quality early and formal education while inhibiting early school leaving (OECD, 2018). Yet, in the NS context, formal curricular attention has not been given to ECM, circumstances which highlight not only the importance of experienced literacy teachers and their pedagogy (Campbell, 2019), but the pressures they experience.

Prior to implementing intentional restorative and relational approaches in her classroom, Lia struggled to engage the majority of her ECM students. Specifically, she struggled to engage them in deeper thinking in relation to texts introduced in class. Lia observed that students did not necessarily see themselves as capable of reading or connecting with novels, especially texts like *Night.* Many of her students were used to being given "lower level" reading material that they could read independently (or, as many students admitted, texts that they could easily "fake read"). In Lia's experience, many ECM students had learned to hide and remain hidden in English classrooms.

By implementing the classroom circle, Lia observed, students were unable to hide as easily and they became more accountable because they, literally, had to look one another in the eyes each day. This accountability was, at first, uncomfortable for many. As their confidence grew each class through meaningful check-ins, opening discussions, and supportive questioning of their ideas, however, Lia noted they began to rise to the occasion. Their responses to questions moved from safe and surface-level, to reflective and rooted in personal experience. Their desire to hide diminished more than students Lia had previously taught. They grew to believe that their voices mattered and were welcomed, and gradually Lia observed how they learned to take risks in their learning because they knew it was safe and meaningful to do so.

Engaging Learners who Struggle Academically While Experiencing Poverty: The Challenges

Given the lifelong implications of literacy, it is paramount to consider what kinds of pedagogical routines and activities positively engage learners who struggle academically while also experiencing poverty. Considerable attention has been given in the research literature to the

value of differentiated literacy instruction and strength-based adaptations (Pitcher et al., 2010; Troyer, 2017) in response to adolescents' needs, interests, and preferred modes of communication and meaning making (Casey, 2008; Dressman et al., 2005; Franzak, 2006; Scheffel, 2012, 2016). Yet, challenges arise when convincing learners who have struggled in school to persist with cognitively demanding literacy tasks (Benko, 2016), particularly processes and products that are based on constructing knowledge and making claims using evidence and reasoning. Such tasks have particular literacy demands and scholars have found that learners who struggle with literacy, in particular, have a gap in their ability to decode words, decipher vocabulary, and understand sentence fluency (Lovett et al., 2012). While it is understood that developing such skills can be targeted in the teaching of reading and writing, (Kim et al., 2017; Murphy et al., 2017), what remains elusive is the kind of literacy practice, event, and/or text that will capture learner interest and willingness to persist, particularly when they have experienced academic struggles. Scholars have suggested that to have merit with learners, school-based literacy engagement needs to be perceived as authentic (Behizadeh, 2014a), as connected to real world examples, and as supportive (Josephs & Jolivette, 2016; Scheffel, 2017; Thompson et al., 2008). If such conditions are in place, the research shows that adolescents are more likely to take an interest in literacy tasks (Ivey & Johnston, 2015; Nystrand, 2006; Pittman & Honchell, 2014). In knowing this, student-centred pedagogies (Behizadeh, 2014a, 2014b), out-of-school literacies (Corbett, 2005; Skerrett & Bomer, 2011) and relevant young adult texts (Fogarty et al., 2017; Lesley, 2008; Moje et al., 2008) become significant when thinking about ways to nurture student willingness, particularly those who struggle, to persist with learning. The results of this study contribute to this body of work and offer new ways to consider how to foster adolescent willingness towards enhancing their literacy skills.

Immediate and Long-Term Impacts of the Classroom Circle

While this study reaffirms some of what is known about how to provoke adolescent interest in terms of topic and perceptions of task authenticity, it also highlights the pedagogy underlying the facilitation of the classroom circle as restorative practices intersected with the kinds of academic dialogue that are associated with literature and Socratic circles. Viewing participants' responses to the classroom circle revealed positive academic and social gains, particularly their increased engagement with texts, enhanced understanding of how to use their experiences as a filter through which to analyze and make meaning of texts and issues, and increased awareness of the benefits of working and learning from unfamiliar others. Overwhelmingly, by the end of the semester, participants identified the classroom circle as having a positive effect upon their communication skills and saw it as an authentic task (Behizadeh, 2014a, 2014b) in that they were able to interact with others they saw as different from themselves. We also found that the classroom circle fostered student stamina for learning, as they regularly persisted with the topic under discussion during, and following, the circle. In knowing that their personal examples were a relevant frame through which to examine texts, and that they were in a supportive space to do so, participants took risks with their thinking and created connections that revealed insights about themselves, others, texts under discussion, and contemporary issues. Restorative practices complement the kinds of literacy activities and events that regularly happen in ELA classrooms, particularly as learners are often encouraged to draw upon their personal experiences to navigate academic texts. Making personal connections, hearing how others made such connections, and seeing links between multiple interpretations and society, have been found to have a positive impact on adolescents' reading development (Francois, 2013; Langer, 2002;). Yet, to get to a place where learners, particularly late

adolescents, are willing to share stories and insights about themselves, trust must be established. Learners who perceive a sense of belonging in classrooms are more likely to engage in cognitive effort to make learning possible (Walker & Greene, 2009).

While the long-term effects of the classroom circle are currently unknown, based upon the evidence presented in our study, we suggest, participants are likely to experience better communication and interpersonal skills as well as enhanced critical engagement.

Concluding Thoughts

We acknowledge that there is no universal pedagogical solution and that there are many factors when understanding adolescents who encounter challenges with literacy (Bauer & García, 2002; Dawson, 2009; Pitcher et al., 2010), while experiencing poverty (Ahmar & Anwar, 2013; Reardon, 2011; Sirin, 2005). Considering, however, how restorative practices can be infused into the daily instructional practices (Gregory et al., 2016; Ortega et al., 2016) of ELA teachers is hopeful and warrants further inquiry. Daily routines such as a classroom circle, where trust is established, the personal is welcomed, and the aim is analytical thinking and dialogue, are reminiscent of what Buckelew and Ewing (2019) allude to as a "breathing space,"[8] a space that allows for the fire of one's thinking to burn and strengthen.

The results of this study revealed how participants over the course of a high school semester came to see the classroom circle as relevant to their lives and learning. In response to this regular routine and its guidelines involving peaceful interactions, respect, relationship building, and trust, participants connected to each other, texts, and issues as they persisted with ideas. Taking risks with their thinking and making connections among texts became a regular occurrence, as they grew accustomed to the classroom circle, the support of this space, and the idea that personal experiences were a legitimate way to make meaning. Enabling adolescents who academically struggle to have more knowledge of themselves as thinkers with ideas to share (Vetter, 2010; Winn, 2013), and the kinds of approaches that allow them to do so, is an area in teacher education that holds promise for those engaged in supporting teachers and learners in high-poverty contexts.

Endnotes

[1] Lia was the teacher of this class and is the second author of this paper. All other names are pseudonyms.

[2] *Night* (Wiesel, 2006) is an autobiographical account of the author's survival as an adolescent in the Nazi death camps.

[3] Based on course enrolments in the Chignecto-Central Regional Centre of Education (CCRCE), the Regional Centre in which this study took place, there is a "disproportionately higher number of males and students of Indigenous ancestry enrolled in English Communications in comparison to other English courses at Grades 11 and 12" (CCRCE, 2019, p. 4).

[4] Campbell (2019) defined pedagogical bricolage as "a way of considering teaching not merely as a set of behaviours that determine certain outcomes, but as a concatenation of possibilities, realized in an infinite number of permutations by those who operate successfully within the teaching profession" (p. 38).

[5] The term late adolescents is used to define the age range (17-21) of the participants in this study.

[6] The term Regional Centre for Education is used to reflect what other school systems may refer to as school boards or districts.

[7] The Chignecto-Central Regional Centre of Education (CCRCE) created guidelines for relational principles for practice based upon a restorative approach (Llewellyn et al., 2013); these practices are identified as relationship focused, comprehensive/holistic, inclusive & participatory, forward-focused, and culturally aware (CCRCE, n.d.).

[8] Buckelew and Ewing (2019) include Judy Brown's poem *Fire* as a poetry connection at the end of a Chapter in which data collection that is well suited for action research in ELA classrooms is discussed.

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Digital Citizenship in Ontario Education: A Concept Analysis

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Abstract

Digital citizenship indicates one's place in digitized society; however academics have not established a cohesive understanding about how digital citizenship is characterized. The Ontario Ministry of Education also does not provide a central conceptualization of digital citizenship and instead encourages Ontario school boards to construct and communicate ideas of digital citizenship. Accordingly, Ontario policymakers, educators, and students use differing understandings of digital citizenship, which ultimately impedes educational initiatives and hinders the overall development of the concept. For this paper, therefore, I inquired as to how Ontario public school boards portray digital citizenship. Using concept analysis, I examined digital citizenship documents from the 10 largest English Ontario public school boards. The results suggest that digital citizenship is predominately characterized by responsible and ethical technology use. I conclude with a discussion about how this representation relates to democratic citizenship more broadly and the implications this may have on youth civic engagement.

Keywords: digital citizenship; technologies and education; democracy and education; democratic citizenship; concept analysis

Digital Citizenship in Ontario Education: A Concept Analysis Introduction

The near-total integration of digital technology into daily lives changes how students interact with and respond to the world. Recently, Statistics Canada (2018) found that essentially all youth aged 15 to 24 use social networking sites, while 75% of Canadians aged 15-34 use digital technology to remain updated with current affairs. In addition, digital technology offers youth novel spaces to publicly discuss interests, ideas, and issues (Dahlgren, 2003; 2009), while simultaneously exposing youth to complex algorithmic and surveillance mechanisms (Hintz et al., 2019; Turow, 2015). These developments affect democratic citizenship, as Dahlgren (2009) explained: Democratic citizenship is "concerned with social and cultural patterns, identity, and other dimensions … [pertaining] to … suitable civic grooming and socialization in civil society" (p. 98). These technological developments have incited the formulation of digital citizenship (Mossberger et al., 2008). However, academic characterizations regarding digital citizenship are largely disjointed (Choi, 2016). This discrepancy amongst scholars to create a cohesive definition of digital citizenship is problematic as it leaves policymakers, educators, and students without clear guidance about how to teach, facilitate, learn, and enact digital citizenship. As digital technology affects "the nature of democratic life" (Middaugh & Kahne, 2009, p. 194) it is important to assess the concept of digital citizenship as it is conveyed to educators and students.

The Ontario Ministry of Education (OME, 2016) recognizes digital citizenship as an emerging priority and includes the concept in provincial school board initiatives (Curriculum Services Canada, 2017). However, unlike other provinces (see Alberta Education, 2012; and Saskatchewan's document, Couros & Hildebrandt, 2015), Ontario does not have a central conceptualization of digital citizenship. Such conceptual ambiguity impedes educational initiatives (Jones & Mitchell, 2016). Moreover, the Ontario government's recent decision requiring secondary school students to take a minimum of four online courses throughout their secondary school enrollment (OME, 2019a), further emphasizes the urgency in understanding digital citizenship in Ontario education. Indeed, the COVID-19 pandemic will further entrench the online learning experiences of Ontario students and reinforce the importance of understanding and articulating a cohesive conception of digital citizenship. Doing so is important according to Mattson and Curran (2017), who explained that while digital citizenship has been in use for over a decade, "and legislation requires schools to foster digital citizens, there is still a looming question: How do educators *define* a digital citizen, let alone teach one?" (p. 145). This posed question was the motivation for this study. However, as Choi et al. (2018) asserted, researchers cannot understand how educators teach and facilitate digital citizenship without first examining educators' influences. Accordingly, my study examined the following research question: How do Ontario public school boards (OPSB) conceptualize digital citizenship? Using OPSBs as the subject of examination is vital as district school boards are responsible for developing policies that promote and support responsible citizenship (OME, 2018a). My aim in this study is to provide conceptual clarity for digital citizenship within Ontario education and to contribute towards the development of the concept across education systems more broadly.

Literature Review

Although digital citizenship is frequently espoused as an emerging identity in reference to digital trends and social integration, what it means to be a digital citizen has different connotations depending on who is referencing the term. This is unsurprising as the term "citizenship" alone has multiple meanings with complex historical, political, and social influences (Abowitz & Harnish, 2006). Also worth noting is that citizenship itself, in the democratic sense, has wide

implications regarding citizens' roles and responsibilities towards societies (Westheimer & Kahne, 2004). Furthermore, the technological apparatuses that digital citizens necessarily rely upon and navigate profoundly affect notions of citizenship and civic engagement (Bennett et al., 2009; Kahne et al., 2013). Accordingly, to make sense of these ambiguities and tensions and to inform the results of the study, in the following section, I will examine the scholarship regarding digital citizenship as the responsible use of digital technology, critical digital citizenship, educational research examining digital citizenship, and the relationship between digital technology and civic engagement. While the literature review highlights the scholarship of digital citizenship, it concludes by reviewing the relationship between digital technology and youth civic engagement and shows how digital citizenship educational research ultimately ignores this connection.

Personally Responsible Digital Citizenship

The theoretical conception of digital citizenship is differentiated by two camps of thought. On the one hand, academics have characterized digital citizenship as an individual's responsible use of digital technology. In fact, digital citizenship was introduced by Ribble et al. (2004) to denote the ethical use of technology. Ribble (2012) subsequently conceptualized digital citizenship in nine components revolving around the safe and responsible use of digital technology. This approach encapsulates the necessary behaviours and actions to use digital technology and is informed by "concerns that are affecting … schools and students, whether these are technology related or not" (Ribble, 2012, p. 149). The International Society for Technology in Education (2016) also embraced this approach as its grounding framework and much of the available digital citizenship research does so as well. Researchers have referred to Ribble's model as personally responsible digital citizenship (Krutka & Carpenter, 2017; Mattson & Curran, 2017) because the implications of technological use are limited to a sense of responsibility to others, technology, and digital communities. This personally responsible model of digital citizenship is used by researchers in developing digital citizenship scales (Isman & Gungoren, 2014; Kim & Choi, 2018). Kim and Choi (2018) created a youth digital citizenship scale for adolescents termed the SAFE framework, which comprises of four categories involving digital identity and reputation, positive and safe online behaviour, digital literacy, and ethical online behaviour. However, such conceptualizations exclude the potential of digital technology to be used for democratic processes (i.e., researching social issues, critically navigating various news sources, signing and sharing digital petitions, etc.). Does this limitation therefore insinuate that democratic values and processes are not related to digital citizenship? The following theoretical conception of digital citizenship rejects such an exclusion.

Critical Digital Citizenship

Advocates of the second theoretical conception, referred as critical digital citizenship (Choi et al., 2017), certainly object to limiting the role of digital citizens to only responsible digital technology use and instead perceive digital citizenship as an extension of democratic citizenship. Similarly, other researchers (Choi et al., 2018; Krutka & Carpenter, 2017; Mattson & Curran, 2017) have appropriately explained that digital citizenship must develop beyond personally responsible frameworks and include broader notions of civic agency and community involvement. Although Kim and Choi's (2018) SAFE framework for digital citizenship predominantly addresses safe and responsible digital technology use, the researchers nonetheless have admitted that digital citizenship education should encourage students to interact "with other citizens with various interests in the online community to solve various community and global

problems" (p. 168). The researchers' perception that digital citizenship should include both responsible use as well as civic engagement aspects aligns with Choi et al.'s (2017) multilayered conception of digital citizenship. They have distinguished the concept according to the four strata of: digital ethics, media and information literacy, participation and engagement, and critical resistance. Interestingly, university students seem to share this understanding as they perceive digital citizenship as comprising of the technical, safe, and responsible use of digital technology, but also recognize digital citizenship as involving political, social, and cultural actions (Kara, 2018).

In considering how digital media reconfigures the ease to produce, distribute, and follow news, Hobbs, et al., (2013) have asserted that digital citizenship education should facilitate literacy skills required for democratic dialogue. Similarly, Gleason and Gillern (2018) examined how digital media applications may encourage citizenship education for middle and secondary school students and demonstrate how community organizations may facilitate civically engaged forms of digital citizenship. The researchers acknowledged that digital citizenship is partly characterized by its normative conception of appropriate technology use; however, they have extended this understanding to facilitate civic agency in youth. They specifically explained that "Digital media offers an engaging way for young people to learn about significant dimensions of citizenship and civic education while lowering barriers to participation" (p. 208). Accordingly, such critical conceptions of digital citizenship recognize the deliberative, democratic capacity of digital technology to motivate youth towards civic engagement.

Using Ritzer and Jurgenson's (2010) idea of the prosumer, McGillivray et al. (2016) developed a theory of critical digital citizenship, whereby critical digital citizens value creating online content while simultaneously being critical of online information consumption. As the researchers explained, critical digital citizens ultimately, "ponder how digitally mediated publics operate, and think carefully about … ownership, privacy, security, and risk in the school setting and beyond" (p. 736). Indeed, critical digital citizenship prioritizes an evaluative attitude towards online information. This critical approach to navigating information relates to the disciplinary literacy that Wineburg and Reisman (2015) connected to digital citizenship and also correlates to the conception of digital citizenship as envisioned by Choi (2016). That is that digital citizenship "includes abilities, thinking and action regarding Internet use, which allows people to understand, navigate, engage in, and transform self, community, society, and the world" (Choi, 2016, p. 584). Such constructions of digital citizenship impact student information processing, as Kahne and Bowyer (2017) found: Media literacy education positively influenced students' critical acquisition of online information. As opposed to Ribble's (2012) personally responsible digital citizen, the critical digital citizenship relates to democratic citizenship as it considers civic involvement in a community and implications for improving society via digital technology. This conceptualization is concerned with being critical of information during the process of engaging with and navigating the world, and also extends informed and critical perspectives to civic engagement. However, how does educational scholarship approach digital citizenship with regards to these two conceptual paradigms?

Educational Research and Digital Citizenship

Overwhelmingly, educational research examines digital citizenship within the personally responsible framework. For example, Berman-Dry (2013) encouraged sixth grade students to debate digital technology issues that students their age may encounter, thus demonstrating that digital citizens adequately navigate and avoid risks posed by digital technology. Similarly, in

examining middle school students' social media use, Martin et al. (2018) emphasized the risks associated with social networking. Consequently, these researchers associate digital citizenship with both the awareness of risks posed by digital technology as well as the appropriate and responsible use of digital technology. In addition, other researchers (Kirkman, 2014; Mesch, 2018; Nebel et al., 2009; Ohler, 2012; Young, 2014) understood digital citizenship as responsible use of digital technology and avoidance of associated risks, while Jones and Mitchell (2016) have asserted that digital citizenship must incorporate greater emphasis for respect and tolerance. Emphasizing ethical behaviour, Robb and Shellenbarger (2013) explained that students, as digital citizens, are responsible for maintaining academic integrity while using digital technology to conduct academic research. Similarly, Winn (2012) focused on digital citizenship as digital etiquette and discussed how his PreK-12 school used a school social networking site to facilitate learning, while specifically reinforcing digital citizens as well-behaved digital technology users. This corresponds with Hollandsworth et al. (2011) who expressed the concern that ignoring the risks of digital technology will perpetuate the negative consequences of digital technology. They explained that digital citizenship should prioritize creating "good citizen[s] in the digital community" (Hollandsworth et al., 2011, p. 38), by specifically considering safety, improving educational experiences, and engaging with proper ethical and legal behaviours. Accordingly, digital citizenship is very much framed according to responsible technology use, respectful behaviour, and being cognizant of the risks associated with digital technology use.

However, James (2014) found that youth perceive such limited digital citizenship approaches to merely perpetuate a fear-driven narrative regarding digital technology use. Indeed, while educational research frames digital citizenship as the appropriate use of digital technology, it does so largely by emphasising the risks of digital technology and of highlighting the consequences of failing to ignore responsible use (i.e., academic integrity). Of course, the responsible use of technology is essential; however, as Choi et al.'s (2017) framework reflects, responsible use of digital technology is one part of a multilayered conception. Instead, educational research excludes the full potential of digital technology to influence democratic practices by ignoring digital citizenship as related to democratic citizenship. Accordingly, if digital citizenship is related to democratic practices, what is the relationship between digital technology youth civic engagement?

Technology and Youth Civic Engagement

Researchers question the efficacy of traditional civic education (see Bennett et al., 2009; Manning & Edwards, 2014) and have found that digital technology is reformulating civic identities (Bennett et al., 2009; Coleman, 2013; Couldry et al., 2014). The quick development of new digital technology and social media fundamentally changes how citizens interact and ultimately "lower[s] the threshold for involvement in collective action and, eventually, politics, [which] changes the power dynamics of participation" (Bakardjieva et al., 2012, p. i). In their seminal work on digital citizenship, Mossberger et al. (2008) optimistically associated digital technology with removing the social barriers hindering civic engagement.

Researchers have asserted that the use of digital technology increases youth civic engagement (Fournier-Sylverster, 2013; Kahne et al, 2016; Kahne et al., 2013; Lee et al., 2012) and have argued that this aspect should be incorporated into civic education. Similarly, in their study of the blogger community, Panke and Stephens (2018) found that social media use promotes civic engagement and civic reasoning. Even non-political online activities enable

political participation. For example, Wojcieszak and Mutz (2009) found that more than half of adults participating in non-political interest-driven online discussion (i.e., sports, hobbies, etc.), expressed and discussed political opinions with one another. Similarly, Kahne et al. (2013) determined that online interest-driven participation positively predicts levels of youth civic engagement. They explained that "different kinds of online participation are associated with different kinds of civic and political activity, such as volunteering, political expression, and voting" (Kahne et al., 2013, p. 11). In fact, online participation influences offline civic engagement (Baumgartner & Morris, 2010; Kim et al., 2017; Mossberger et al., 2008; Pasek et al., 2009).

However, this raises important questions about the limit of being a digital citizen. For example, when someone shifts from digital technology to physical means of civic engagement, does that individual therefore cease to become a digital citizen? Or does digital citizenship merely refer to democratic citizens navigating and civically engaging via digital spheres, hardware and software? The following section will explain the methodology I used to determine whether Ontario public school boards integrate such considerations and notions into their conceptions of digital citizenship.

Methodology

Theoretical Framework

This study understands democratic citizenship as enacted through civic action and considers digital citizenship as similarly requiring elements of civic engagement. This aligns with scholars of both critical digital citizenship and those who perceive a positive relationship between youth technology use and civic engagement. In addressing the type of democratic citizens necessary for supporting an effective democracy, Westheimer and Kahne (2004) developed three conceptions of democratic citizenship: personally responsible citizenship, participatory citizenship, and justice-oriented citizenship. These conceptions characterize types of democratic citizenship; however, each type has differing underlying assumptions about the roles and responsibilities of democratic citizens. For example, the personally responsible citizen obeys established laws and is responsible to their community. The participatory citizen actively participates in society as a way of improving society. Lastly, the justice-oriented citizen critically inquires, assesses, and questions structures in order to solve social problems. Richards (2010) further connects digital citizenship to democratic citizenship through creating pedagogical ideas to model digital citizenship education along with these three conceptions. I therefore employed a democratic theorization of digital citizenship that prioritizes civic agency. Specifically, the results presented here were compared to Westheimer and Kahne's (2004) conceptions of democratic citizenship to understand how OPSBs construct and convey digital citizenship.

Concept Analysis

This study used a concept analysis to examine how OPSBs conceptualize digital citizenship. Because concepts are unfixed and discursively communicated to create meaning through their use (Toulmin, 1972), analyzing how concepts are communicated, yields an understanding towards further conceptual development (Rodgers, 1989). Choi (2016) also applied this research method to her review of digital citizenship research. Due to the fragmented research on digital citizenship, it is important to understand how school boards conceptualize digital citizenship and communicate the concept to teachers and students. The conceptual ambiguity of digital citizenship impairs educational initiatives (Jones & Mitchell, 2016);

however, concept analysis can extrapolate its current meaning in use and further develop the concept (Foley & Davis, 2017). I used Rodgers' (1989) method of concept analysis and adhered to the following phases of:

- identifying and naming the concept of interest,
- identifying related terms of the concept,
- selecting an appropriate sample for data collection,
- identifying attributes of the concept,
- determining the references and consequences of the concept, and
- identifying concepts related to the concept of interest. (p. 333)

Attributes indicate the meaning of a concept in use (Rodgers, 1989). Accordingly, when examining OPSB digital citizenship documents, I specifically searched for how documents characterized digital citizenship. Data were first open coded to recognize attributes and categorize common themes by using descriptive coding to identify the basic aspects of digital citizenship (Saldaña, 2013). This analysis adhered to descriptive coding as outlined by Linneberg and Korsgaard (2019), who explained that these segments of data are labeled to indicate "the meaning of the segment of data in relation to the overall research topic" (p. 16). Subsequently, axial coding was conducted to establish categories and saturate the data. Axial coding categorized the segments of data as they related to one another, which ultimately sorted the segments into conceptual categories (Charmaz, 2006; Saldaña, 2013). To categorize segments of data, data was inputted and tracked with a tree diagram to determine robust categories. These concepts were ultimately identified and extrapolated upon by comparing categorized themes with Westheimer and Kahne's (2004) types of democratic citizenship.

Sample

The 10 largest OPSBs were included in this study, determined by the total combined number of elementary and secondary schools in each district. This was calculated through school information and student demographic data provided by the OME (2019b). As a result of selecting this sample by size, all examined OPSBs were English boards. Upon calculating the total board size, the only criteria for inclusion into the research sample was to have a publicly accessible document outlining the school board's perception and description of digital citizenship. Documents were located through searching school board websites. One school board was excluded from the sample because the board did not have an accessible digital citizenship document. The following 10 Ontario public district school boards (DSBs) were selected for data collection: Toronto, Peel, Thames Valley, Ottawa-Carleton, Durham, Waterloo Region, Hamilton-Wentworth, Halton, DSB of Niagara, and Simcoe County. Using data from the 2017-2018 academic year *Ontario Public Schools Enrollment* (OME, 2018b), I calculated that students from these 10 OPSBs comprise nearly 64% of the total Ontario public school student population, and, therefore, a sample of these 10 OPSBs was deemed a robust sample. A list of examined documents are presented in Appendix A.

Results

In following Rodgers' (1989) steps for concept analysis, I next present the results from examining the surrogate terms of digital citizenship as well as the attributes related to digital

citizenship. The discussion then addresses the implications of OPSBs' conceptualization as well as elaborating upon digital citizenship as a related concept to democratic citizenship.

Related Terms of Digital Citizenship

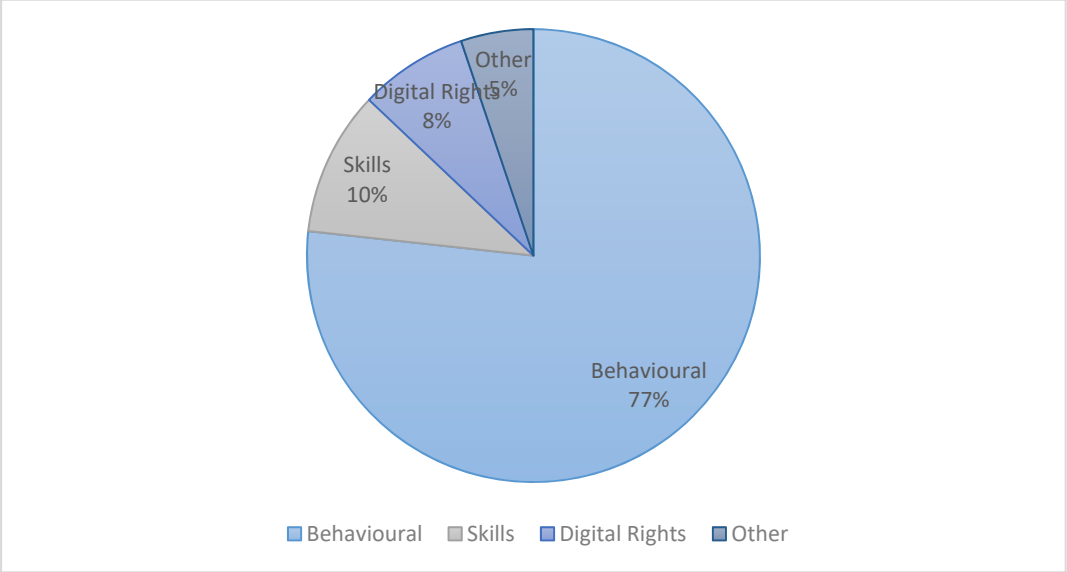
In reviewing academic literature, Choi (2016) found that digital citizenship has the following related terms: *online citizenship*, *cyber citizenship*, *e-citizenship*, *networked citizenship*, *technological citizenship*, and *Internet citizenship*; however, my search of OPSB documents did not correlate with this finding. In fact, no related terms were found. Therefore, I conclude that OPSBs approach is to use the concept specifically as *digital citizenship* and the common term for exploring the concept is digital citizenship.

Digital Citizenship Attributes

The analysis yielded the following three major attribute categories constituting digital citizenship: *Behavioural, Skills,* and *Digital Rights*. Three other codes were identified; however due to their low consistency and incompatibility with other categories, these codes were not individually categorized. These codes are presented as *Other* in Figure 1 (see below). These Other codes were: *health* (*n*= 4), *surveillance compliance* (*n*= 1), and *connection to activism* (*n*= 1). Behavioural attributes were the predominant characterization of digital citizenship, (*n*= 89), while skills attributes were the second most common (*n*= 12), and digital rights (*n*= 9) were the third most common. The total percentage of these categories in relation to each other is presented in Figure 1. The following discusses these attributes and references.

Figure 1

Attribute Categories of Digital Citizenship



Note. This figure illustrates the four attribute categories composing digital citizenship.

Behaviour Attributes

The behavioural attribute of digital citizenship ultimately comprises of four subcategories: *safe behaviour*, *responsible behaviour*, *respectful behaviour*, and *legal behaviour*. Safe behaviour (*n*= 28) involved the recognition that digital technology poses numerous threats which require the need to protect personal privacy, consider cybersecurity, and recognize the

risks posed by cyberbullies and predators. However, safe behaviour was most often described as emphasizing a need to protect privacy in general terms, emphasizing the awareness of the need to ensure personal data is secure and shared with discretion.

Responsible behaviour (*n*= 26) revolved around the appropriate use of technology. This focused on using digital hardware and software for its intended purpose, balancing online activity with offline activities, being cautious not to overshare on social media, and recognizing that unintended audiences can view user activity. Digital citizenship suggests that the digital citizen is accountable either to oneself or to technology itself. According to this attribute, digital citizens should be particularly cautious about being too public online and representing oneself positively online. Furthermore, the link between school and technology was established by highlighting the use of technology for its intended purposes, and not, as one instance specified, as a distraction to classroom learning. Digital citizenship also required responsible behaviour, using digital technology in a manner that preserves student academic integrity.

Respectful behaviour (*n*= 22) regarded as being respectful towards oneself and others, also included being respectful towards school board technology and reporting instances when school board technology is not properly operating. This also included showing respect to digital devices and respecting others' personal privacy and data. Respectful behaviour also included being tolerant of differing opinions and avoiding and reporting instance of cyberbullying.

Lastly, legal behaviour (*n*= 13) regarded using digital technology within the confines of federal and provincial law, and school board codes of conduct. Digital citizens were expected to understand and not infringe on copyright licensing. Furthermore, digital citizens were also expected to understand that all data was legally owned, stored and could be accessed by the school board.

Skills Attributes

The skills attribute of digital citizenship included three subcategories: *technical skills*, *critical skills*, and *academic skills*. Technical skills (*n*= 6) pertained to the ability to search for information online and the capability to effectively use digital platforms. Critical skills (*n*= 5) included the literacy skills necessary to understand the strategies that marketers will use to persuade consumers as well as the evaluative skills to determine the validity of online information. This also correlated with having literacy skills to navigate marketing messages. Lastly, academic skills (*n*= 1) involved understanding the proper method of citing online materials. This of course, also aligns with the responsible behaviour to use digital technology in a manner consistent with preserving academic integrity.

Digital Rights Attributes

Digital rights were specifically described by recognizing that all individuals have the *right to access* digital technology and *basic rights*. The right to access (*n*=6) included student rights to access personal devices and that students have the right to access educational resources while using their personal devices on school board property. Such access was restricted to only using personal devices for educational purposes. Basic rights (*n*=3) included the right to privacy and the right to freedom of speech. Interestingly, despite *basic rights* including the right to privacy, one of the Other codes from an OPSB document informed students to accept that all digital technology use on school board property was eligible for administrative monitoring.

Discussion

The results are similar to Choi's (2016) review of digital citizenship research in that OPSBs largely describe digital citizenship as responsible and ethical behavioural. OPSBs expect digital citizens, as digital community members and digital technology users, to primarily engage in safe, responsible, respectful, and legal behaviour. Ontario digital citizens are expected to behave appropriately within the confines of established digital etiquette, rules, and laws. Accordingly, OPSBs conceptualize digital citizenship to accord with the personally responsible citizen (Westheimer & Kahne, 2004)—specifically in how a personally responsible citizen "acts responsibly in his/her community … [and] … obeys laws" (p. 240). According to OPSBs' conceptualization of digital citizenship, digital citizens are described as maintaining a safe digital community. However, this conceptualization fundamentally centralizes the role of the individual. Accordingly, such digital citizenship initiatives share the personally responsible citizenship education focus that emphasizes individual acts above collective efforts to address community issues and social justice (Westheimer & Kahne, 2004). In fact, only one Other code from an OPSB associated digital citizenship with community activism. Therefore, OPSBs mirror the behavioural understanding of digital citizenship as advocated by Ribble (2012; 2015), while critical digital citizenship perspectives are predominantly excluded. Such a conceptualization fundamentally ignores the technological influence on youth civic engagement. Instead, digital citizenship is primarily concerned with individual efforts to maintain an established digital social order. These excluded concerns for collective efforts impact the very democratic function of education and the positive role of digital technology influencing civic engagement.

While research demonstrates new understandings of civic culture and civic identity emerging from the integration of digital technologies, OPSBs do not include the civic potential of technology within their conceptualization of digital citizenship. Nor do OPSBs incorporate critical dimensions of digital citizenship. Despite the evidence that youth engage in lifestyle politics (Bennett et al., 2009), engage civically through digital technology use (Kahne et al., 2013), and that digital technology fundamentally redefines citizenship (Dahlgren, 2003; 2009), OPSBs' idea of digital citizenship predominately facilitates personally responsible citizens who maintain the social norm. This narrow focus is a failure with regards to democratic schools' purpose to create deliberative and critical citizens (Barber, 1992). Indeed, excluding the civic attribute of digital citizenship indicates how, "education can function either to create passive, risk-free citizens or to create a politicized citizenry educated to fight for various forms of public life informed by a concern for justice, happiness, and equality" (Giroux & McLaren, 1986, p. 224). My analysis reflects that OPSBs generate understanding of digital citizenship towards the former function. OPSBs' reliance on personally responsible citizenship aspects is both practical and important. However, solely relying on this understanding ignores the full potential of youth digital technology use as well as digital technology's capacity to foster civic engagement.

Limitations

While the sample used in this study was considered robust as it includes a majority of the student population in Ontario, different results may have been reached if a larger school board sample was used. Furthermore, it is possible that different results would be available had French school boards been included in the sample as well. Future research in this area should employ a wider sample with specific inclusion of French school boards. Lastly, a more robust study should compare OPSB digital citizenship documents with the Technological Education curricula to extract implied attributes of digital citizenship. Despite the fact that these curricula do not

mention digital citizenship, it is possible that such ideas of what a digital citizen is can be examined in these documents.

Conclusion

OPSBs' current conceptualization of digital citizenship is constrained by a narrow understanding of citizenship and should be developed to further reflect the influence of digital technology on civic engagement. Digital citizenship education in Ontario perpetuates an ideal of personally responsible digital citizenship, while excluding participatory and justice-oriented notions of citizenship. This insight is important to reflect upon as OPSBs' conceptualization implies a specific relationship between digital technology and ideas of citizenship. That is, in understanding how OPSBs construct digital citizenship, technology by proxy is perceived as a tool to be used within responsible and ethical means, and not as a mechanism for social inquiry and communication. While Giroux and McLaren (1986) discuss schools as generating either passive citizens or politicized citizens, my results indicate that the underlying framework to understand digital citizenship is overwhelmingly depoliticized. As such, OPSBs' characterization of digital citizenship very much accords to favouring passive digital citizens. This is done through describing digital citizenship as proper behaviour. In this attribute of digital citizenship, the behavioural aspects of digital citizens are: safe, responsible, respectful, and legal. Of course, my critique of this approach is not to antithetically suggest that digital citizens should be precarious, irresponsible, disrespectful, and criminal. Rather, in considering the research demonstrating a connection between digital technology and civic engagement, OPSBs severely miss the opportunity to redevelop ideas of citizenship connected to participation and social justice. There is no mention of using digital technology for social inquiry or civic engagement, nor how technology is a mechanism for communicating such perspectives. However, with the behavioural attributes of digital citizenship endorsed throughout the examined OPSBs, this paper hopes to influence further considerations for developing the idea of digital citizenship. The understanding of the personally responsible digital citizen is clearly established, however, the next step is to consider how digital citizenship might be infused with notions of participatory and justice-oriented citizenship.

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Appendix A: Digital Citizenship Documents and Associated OPSB

1. Toronto District School Board. (2007). *TDSB ICT standards: Digital learning for kindergarten to grade 12*.
2. Peel District School Board. (2013). *Policies and regulations*: *Digital citizenship*.
3. Thames Valley District School Board. (2019). *Digital citizenship*.
4. Ottawa-Carleton District School Board. (2012). *Enabling a culture of access and mobility: Planning for technology usage in the OCDSB*.
5. Durham District School Board. (n.d.) *Digital citizenship*.
6. Waterloo Region District School Board. (n.d.) *Digital citizenship*.
7. Hamilton-Wentworth District School Board. (2019). *Digital citizenship at HWDSB*.
8. Halton District School Board. (n.d.). *HDSB digital citizenship overview*.
9. District School Board of Niagara. (n.d.). *Information technology digital citizenship agreement*: *Intermediate and Senior Students*.
10. Simcoe Country DSB. (2017). *Information and computing technology Appropriate use guidelines for students*.

Unleashing the Learners: Teacher Self-Efficacy in Facilitating School-Based Makerspaces

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Abstract

This qualitative research project explored the key characteristics, attitudes, and experiences of makerspace facilitators in Saskatchewan. The aim was to gather knowledge and wisdom from early adopters of makerspace from a variety of contexts ranging from *tinkerspaces* to increasingly popular school-based spaces in order to inform early and career-educators of the skills and attitudes conducive to creating and leading dynamic activity spaces. The questions for the semi-structured interviews were based on Bandura's (1977; 1997) self-efficacy expectations: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. The findings align with those of other studies in that they point towards key areas of experience: the value of productive failure, relinquishing control, and modes of support. We conclude that there is a need to help preservice and early career educators to become prepared and confident makerspace facilitators. To this end, we offer four suggestions for new makerspace facilitators: aim towards unleashing, allow others to be the experts and leaders, celebrate success and failure, and openly seek and offer support.

Keywords: makerspace, self-efficacy, motivation, early career educators, productive failure

Unleashing the Learners: Teacher Self-Efficacy in Facilitating School-Based Makerspaces

As a counterpoint to today's fast-paced, consumeristic, product-focused society, the makerspace ethos is one of creativity, open sharing, experimentation, problem solving, and iterative prototyping. In general terms, a makerspace is a place where participants create new things and develop skills in an environment promoting discovery and problem-based learning (Bevan et al., 2015; Graves, 2014; Moorefield-Lang, 2015). Failure is embraced; sometimes it is celebrated. Makers, or those participating in a makerspace, are not only producers, but curators, networkers, and members of digital and physical communities. Participants may also negotiate and shift between various roles such as leader, learner, teacher, problem identifier, problem solver, inventor, designer, engineer, and manufacturer. In sum, makerspaces are more than just places, but represent an open movement wherein each makerspace instance reflects the unique characteristics of the participants, spaces, and resources available.

As makerspaces grow in popularity in primary and secondary schools in Canada, there is increasing need to train facilitators to support maker activities. Therefore, it is useful to know what skills, attitudes, proclivities, and support can help facilitators in developing dynamic and creative activity spaces. This project explored the self-efficacy of current facilitators and what they felt they needed to thrive as leaders within the maker environment. We defined facilitator self-efficacy as an individual's belief in his or her capacity to organize and guide a makerspace activity as well as his/her ability to encourage creativity, problem solving, sharing, making, and collaboration.

This paper begins with a brief description of the historic and pedagogical background of makerspaces, an examination of current research on makerspaces in teacher training, and finally a discussion of self-efficacy in relation to makerspace facilitation. The methodology section briefly outlines the process of recruitment, data collection, and analysis. After providing information about the participants' demographics, the results section offers excerpts drawn from qualitative coding analysis of the transcripts. Finally, the discussion highlights the main sources of tension and success that should be considered in designing training and experiential opportunities for preservice and in-service teachers.

Literature Review

What is a Makerspace?

Making things is not new; humans have been inventing and crafting by hand for centuries. Koole et al. (2016) provided an outline of the evolution of makerspaces from crafting societies held in libraries in the 19th century to the first computers and computer networks in the 1960s to the growing accessibility of personal computers in the 1980s. From the 1990s until today, the Internet has become increasingly ubiquitous and influential in the access and sharing of information, challenges, problems, solutions, and resources within today's makerspace context.

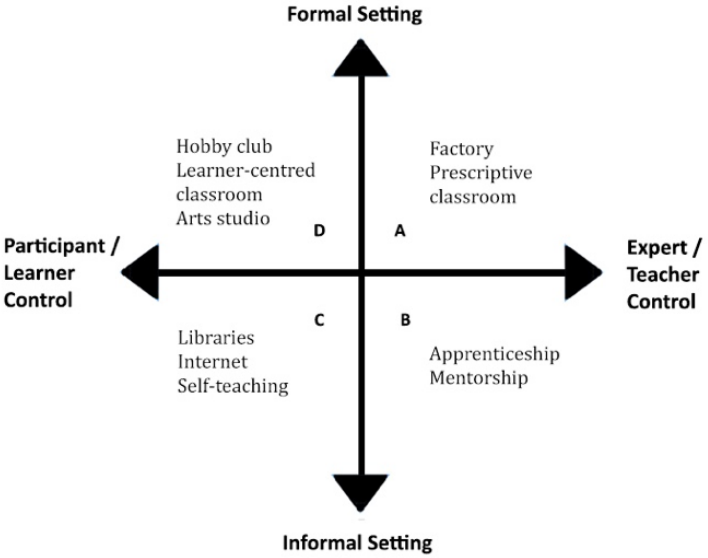
Pedagogically, John Dewey and Seymour Papert are considered to be the progenitors of the maker movement. While Dewey promoted active participation in one's own learning (Dougherty, 2012; Fleming, 2015; Martinez & Stager, 2013), Papert emphasized the importance of construction over knowledge transmission (Halverson & Sheridan, 2014). As personal

computers became available, Papert developed Logo, a programming language for children (Halverson & Sheridan, 2014). Since that time, other programming tools have been released for children such as Scratch. More recently, physical computing tools have begun to appear such as the Raspberry Pi (Arduino), Micro:Bits, and a variety of robots.

Although computers often play a significant role in makerspaces, programming or other "high tech" machines are not necessarily the focus of today's makerspaces. Rather, makerspaces emphasize physical and digital making, communication, problem solving, authentic learning, and active creation (Bevan et al., 2015). Makerspace proponents also highlight the self directed, iterative and creative nature of the "making" process. To many, the making process—inclusive of problem identification, exploring, hypothesizing, creating, prototyping, testing, and multiple iterations—is considered the goal of makerspaces, rather than the means to a product as typified by traditional production models (Smith, 2017). Makerspaces can also occupy any location on the formal-informal, learner-expert-control continua (see Figure 1) (Koole et al., 2016).

Figure 1

Formality and Control Continua



Note. In other words, a makerspace can take a variety of forms such as an apprenticeship/mentorship model, a prescriptive, teacher-driven classroom, a hobby club, or an open space for self-teaching.

Interestingly, the term "makerspace" has become problematic (i.e., it has become "turf" or conceptual "property") by those who see it as an exclusive, adult-based "tinkerspace" in which highly skilled experts work with high-end technologies. Makerspaces have also drawn criticism from those who view making as vehicle for egalitarianism and self empowerment. According to some critics, for instance, the encroachment of corporate interests and product focused making in makerspaces is anathema to the democratic foundation of the maker-movement (Smith, 2017) Although for-profit makerspaces certainly exist, this project examined non-corporate spaces. Moreover, this paper supports a much broader view of makerspaces as an open, grassroots movement characterized by a creative mindsets and varying contexts, where

participants of any age and skill level can engage in making or sharing (Bevan et al., 2015; Dougherty, 2012; Fleming, 2015; Graves, 2014; Moorefield-Lang, 2015).

Makerspaces have also been criticized for their resource intensiveness and wastefulness rather than taking advantage of "product life extension" opportunities through "repair, remanufacturing, refurbishment, reuse and recycling" (Prendeville et al., 2017, p. 277). For this reason, there is need for critical dialogue in terms of how to facilitate ethical, sustainable, and pedagogically meaningful makerspaces—not only in Kindergarten to Grade 12 but in community and corporatized makerspaces as well.

Teachers' Perceptions and Experiences of Makerspaces

As makerspaces and making in schools become increasingly popular, there is a corresponding need to help educators integrate making into their pedagogical practice. Other researchers have echoed this imperative (Stevenson et al., 2019) and new research on this topic has begun to emerge. As a result, research has shown that educators face a number of challenges when leading maker-based activities including the need to balance structure with student autonomy (Kajamaa et al., 2019; Rowsell & Shillitoe, 2019). A number of specific aspects that may be important for future teacher professional development include providing adequate structure for learning, embracing a culture of failure, effective preparation and planning, learning how assess problem based learning, and acknowledging the pedagogical value of maker based activities (Cohen et al., 2017; Kajamaa et al., 2019; O'Brien et al., 2017; Paganelli et al., 2017; Wilson & Gobeil, 2017). In one specific example, researchers observed 94 elementary students who participated in a weekly educational makerspace over one semester (Kajamaa et al., 2019). Researchers found that teacher-facilitators most commonly used an authoritative teaching strategy by directing the learners' work and decision making. Rather than asking questions, for example, some teachers would offer step-by-step instructions, which encouraged students to passively follow the steps without engaging in critical thinking or creative problem solving. The least used strategy, however, was the *unleashing* intervention strategy in which students are encouraged to explore their "existing knowledge … to compare and test their own ideas, and to identify conceptual or material resources for their work and reasoning" (p. 9). Since makerspace activities are complex, non-linear, iterative, and draw upon many domains of knowledge, the activities require creativity and freedom to explore. Thus, to stimulate student creativity, it is important for facilitators to move from authoritative strategies towards the unleashing of students, where students engage in self directed, creative and critically reflective making.

Rather than study how teachers facilitate makerspaces, some studies used professional development interventions simulating makerspace environments where the teachers took on the role of learners. Such experiences provided teachers with a unique perspective on the making process and its implications for learning and learners (Cohen et al., 2017; O'Brien et al., 2017; Paganelli et al., 2017). For example, in one study, participants noted the importance of the diversity of approaches in the accomplishment of the tasks and were not only able to see the benefits of collaboration but were also able to see connections to student engagement and learning as whole (Cohen et al., 2017).

Paganelli et al. (2017) conducted a phenomenological study involving 25 practicing teachers who were participating in a makerspace as students. During their qualitative analysis,

three main themes emerged as points of tension for the participants: the emotional component of the experience (i.e., confidence and doubt), the need for makerspace concept knowledge (i.e., creativity, engagement, hands-on, presentation methods, and collaboration), and the educational setting (i.e., perceptions of the pedagogical value). Paganelli et al. (2017) also noted that some of the teacher-participants, "struggled with the open-ended, problem-solving nature of makerspace sessions" (p. 234). In a similar study of a simulated environment, O'Brien et al. (2017) observed four preservice teachers facilitating a balloon rocket station activity at a Maker Faire. While guiding young learners through the design-thinking process, the four teachers in the focus group noted four areas of tension: the need for preparation in order to ensure learner success; the need to provide structure to the activity through such things as instructions, modelling, and guiding questions; the need for checking understanding (assessment); and the influence of parents' opinions. Thus, these studies reveal that teacher facilitators themselves often lack the confidence, skills, and knowledge needed to foster open, creative and self-directed making activities with students.

More importantly though, research suggests that teacher preparation and training can have a positive impact on a teacher's confidence and makerspace related skills. In a 2019 mixed methods study, Australian-based researchers found that participants' confidence and enthusiasm for integrating 3D printing into their classes increased as a result of professional development and "in many cases changed their practice towards more flexible, inquiry-oriented and student-centred pedagogies" (Stevenson et al., 2019, p. 1272). The greatest increases to confidence were found in teachers who reported the lowest confidence in the preprofessional development stage of the study (Stevenson et al., 2019). Similarly, in an exploratory, qualitative study, Cohen et al. (2017) studied the effect of makerspace training on educators' perceptions. Participants, who had little to no previous experiences with makerspaces, were enrolled in a university level course in which, "the majority of the class time was devoted to work on project-based activities designed to allow students to experience making" (Cohen et al., 2017, p. 5). As a result of the semester-long course, participants reported positive perceptions of makerspaces and showed a deeper appreciation and understanding for the collaborative and community-building potential of makerspaces. Researchers also noted that teacher candidates appeared more comfortable giving support and requesting help as a result of their immersive makerspace experiences. Thus, these professional development activities appear to be particularly effective in helping novice teachers develop the skills they need to confidently engage in makerspace facilitation. These studies suggest that professional development not only helps to build the knowledge, skills, and predispositions necessary for facilitating makerspaces, but may be particularly important for those with limited makerspace experience, as may be the case with pre-service teachers.

As shown, research indicates that professional development can be effective in developing teachers' comfort with maker-based activities and positively influencing their perceptions of makerspaces in general. However, there is little research on how facilitators view their own abilities. Depending on the makerspace context (as per Figure 1), a facilitator may be charged with provisioning resources, suggesting and/or guiding activities, or more generally supporting the interests and needs of the participants. The degree to which a facilitator is confident and competent undertaking these various tasks, however, will be influenced by their perceptions of self-efficacy. Therefore, in this study, we set out to explore facilitators'

perceptions of self-efficacy in the hopes of identifying the factors most consequential to their expectations for success.

What is Facilitator Self-efficacy?

A facilitator's beliefs about their own effectiveness can influence their willingness to engage in a novel situation or experience, like a makerspace activity. In his use of the term, *self-efficacy*, Bandura (1977) hypothesized that "expectations of personal efficacy determine whether coping behaviour will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (p. 191). Alternatively, educational researchers, Tschannen-Moran et al. (1998), apply Bandura's definition of self-efficacy to an education-specific context and define teacher efficacy as: "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 73). We have drawn upon, combined and modified these definitions in keeping with the makerspace-specific context of this study. As a result, we define a *makerspace facilitator's self-efficacy* to be an individual's belief in their capacity to organize and guide a makerspace activity as well as their ability to encourage creativity, problem solving, sharing, making, and collaboration.

As a result of his extensive research on self-efficacy, Bandura (1977) argued that higher self-efficacy expectations are likely to lead to greater perseverance and motivation in the face of threatening situations or seemingly difficult tasks. Bandura (1977) designed the self-efficacy theoretical framework to "explain and predict psychological changes achieved by different modes of treatment" (p. 191) and developed a self-efficacy scale to observe individuals and quantitatively measure successful performance in relation to threats and efficacy expectations (Bandura, 1977). Bandura's self-efficacy scale is also further delineated into two types of expectations: *outcome expectancies* and *efficacy expectations.* Outcome expectancy is defined as a belief in the likelihood that a "given behaviour will lead to certain outcomes" (p. 193), while an efficacy expectation is defined as one's belief that s/he can perform a specific or set of behaviours, which will lead to the expected outcome. As summarized in Table 1, there are four dimensions of efficacy expectations.

Table 1

Summary of Efficacy Expectations (Bandura, 1977, pp. 195–200)

Efficacy expectations	Description	Modes of induction
Performance accomplishments (PA)	Personal mastery experiences in which the individual is successful will increase expectations; repeated failures will lower them. A positive sense of mastery may increase resilience in instances of failure.	- Attempting performance; - Performance desensitization; - Self-instructed performance.
Vicarious experience (VE)	Observing others performing tasks successfully can help build	- Modelling; - Observation;

	a sense of self efficacy.	- Comparison to others.
Verbal persuasion (VP)	When individuals are told that they can successfully perform a task, their efficacy expectations are likely to rise.	- Suggestion; - Self encouragement; - Exhortation.
Emotional arousal (EA)	Recognition of and reduction of anxiety, fear, and vulnerability can increase efficacy expectations.	- Relaxation; - Attribution (cognitive awareness and labelling of emotional state).

Bandura (1997) and other researchers (Morris & Usher, 2011; Poulou, 2007) argued that all four efficacy expectations combined would have the greatest influence over an individual's self-efficacy, but of the four, performance accomplishments were the most influential and emotional states were the least.

Interestingly, studies which have attempted to measure the influences of and relationships between efficacy expectations have yielded inconsistent results. For example, in their qualitative study of Vietnamese, English as a foreign language (EFL) teachers, Phan and Locke (2015) found, that social persuasion was the most significant factor of all the efficacy expectations. For these teachers, social persuasion not only included verbal affirmation, but also forms of collegiality, sharing materials, and institutional support. This finding suggested to the researchers that, perhaps, cultural and environmental factors were also important to facilitators' perceptions of self-efficacy and questioned the narrowness of Bandura's framework. In some cases, vicarious experience emerged as the most influential factor, such as in studies involving preservice teachers (Johnson, 2010) and teaching assistants where trainees sought affirmation from their professors (Mills, 2011). In contrast, Morris and Usher (2011) noted that vicarious experience can sometimes be unimportant, particularly when the individual, such a professor, lacks opportunities to observe others. Instead, these authors argued, individuals might draw upon their emotional arousal to measure the quality of their own teaching.

Methodology

Purpose

Our team was interested in how to assist preservice and in-service teachers in becoming better equipped, motivated, and more confident in utilizing makerspace technology. The main research question was: How are self-efficacy expectations experienced by makerspace facilitators? Our study does not use a rating scale in a quantitative manner. Instead, this study uses the four self-efficacy expectations (Table 1) to qualitatively explore the attitudes, experiences, and needs of makerspace facilitators.

Participants

As criteria for inclusion, study participants had to be over 18 years of age and had to have facilitated one or more makerspace workshops/sessions at any level of education, after-school

program, or community organization. The participants were located and recruited through email, social media, the local university portal, advertisement through a teacher-oriented professional development organization, and word of mouth. All recruitment tools and consent forms clearly defined the term makerspace and described makerspace-type activities as per our definition (above).

Our team interviewed 13 facilitators. There were seven males and six females ranging in age from 30 to 59 years old. Table 2 shows the range of makerspace types with which the interviewees were affiliated. To clarify, we used the word, *classroom,* to describe a makerspace in which instructional time is dedicated to makerspace activities within a school (formal). *School-based* refers to a situation in which physical space is allocated for makerspace activities, but activities do not take place within classroom instructional time (informal). *Teacher-directed* means that the teacher or facilitator actively selects the making activity and directly guides the learners (teacher control). Finally, *maker-directed* refers to a setting in which the makers (children and/or adults) determine the problem to be solved, how to solve it, and take primary responsibility for doing the activity (learner control).

Table 2

Facilitator Demographics

Facilitator (Pseudonym)	Age Range	Gender	Position/Role	Type of Makerspace	Makerspace Participant Age
Andrew	30-39	Male	Board member (of makerspace)	Community based Maker directed	Any age
Howard	60+	Male	Principal (retired)	School based Maker directed	Elementary to junior high school
Bob	50-59	Male	Educational consultant	Classroom Teacher directed	Elementary to high school
Pat	40-49	Female	Technology consultant	Classroom Teacher directed	Elementary to high school
Amy	40-49	Female	Teacher	School based Teacher directed	Junior high to high School
Rose	30-39	Female	Public library manager	Public library Maker directed	Any age
Jim	30-39	Male	Teacher and technology instructor	School based Teacher directed	High school

May	40-49	Female	Teacher-librarian	Classroom Teacher and maker directed	Elementary
Tom	40-49	Male	Teacher	Classroom Teacher directed	High school
Ken	30-39	Male	Teacher and technology instructor	School based Community/maker and teacher directed	Any age
Linda	40-49	Female	Teacher-librarian	School based Classroom Teacher and maker directed	Elementary to high school
Cindy	40-49	Female	Teacher-librarian	Classroom Teacher directed	Elementary
Chuck	30-39	Male	Teacher	School based Teacher directed	High school

Data Collection and Analysis

Each semi-structured interview was approximately one hour in duration. The transcripts were coded and analyzed using Nvivo according to categories corresponding to the four efficacy expectations in Table 1.

Results

After coding the transcripts using the four self efficacy categories, the results were quantitatively summarized. As can be seen in Table 3, the largest number of coded segments occurred under performance accomplishments. The categories in Table 3 are listed from most to least prevalent. Since the purpose of this study was to qualitatively explore facilitators' self-efficacy perceptions, the codes were further analyzed in order to identify the key themes in each self-efficacy category.

Table 3

Top Level Category Coding Trends

Code category	Sub-categories	Number of quotes	Percent of total

Performance accomplishments (PA)	• Knowledgeability • Management	110	33%
Emotional arousal (EA)	• Excitement • Frustration • Fear of failure • Contagiousness	89	26%
Vicarious experience (VE)	• Networking • Learning from makers • Accessing references	77	23%
Verbal persuasion (VP)	• Verbal support • Concrete support • Breakdowns in support	61	18%
Total		337	100%

Performance Accomplishments

The transcripts contained anecdotes of mastery experiences, all to varying degrees of success. After reviewing the anecdotes, two main sub-categories emerged as shown in Table 4.

Table 4

Performance Accomplishments

Sub-category	Description	Example
Knowledgeability	Prior knowledge, skills and experience.	Bob: I have done robotics for a long time, so I knew which controllers we were going to use.
Management	Orchestrating activities and groups.	Howard: You really had to be prepared; you really had to think about what problems they would have.

Makerspace Knowledgeability

Knowledgeability refers to the state of being well-informed regarding procedures, technology, and facilitating maker activities. Some facilitators indicated that they had technical skills and interests prior to their involvement in their makerspaces. For example, Bob drew upon his prior experience as a science teacher using electronic circuitry and robots. Ken's personal interests in filmmaking, Raspberry Pi, and Web design drew him gradually into teaching technology classes and eventually into leading a makerspace. For others, such as Pat (science

teacher) and Bob (educational consultant), prior knowledge was a source of confidence and helped in the procurement of resources.

Some facilitators also sought out opportunities for hands-on learning about various technologies for their makerspaces through formally arranged professional development (PD) opportunities. In Rose's context, the librarians were assigned personal-learning tasks:

> Rose: Basically, we just take it out of the box and try and figure it out. That has been our strategy. We read about it a bit. But, yeah, we play with it. And also, we have given the staff assignments. . . So, if we're all trying to learn something, we will give one person the assignment of figuring it out and demonstrating it to others and then, they prepare a short assignment for others to do. . . It's been pretty successful.

An important issue for some facilitators was having time for hands-on experimentation with the technologies in an effort to buoy their own knowledge. Lack of hands-on time was sometimes viewed as a personal failing.

Makerspace Management

Management skills such as the organizing of activities and interacting with the makers were also noted. For pragmatic reasons, Linda and Chuck suggested that it is important to start small and let the makerspace grow. Acknowledging her heavy workload in her first year at the school, Linda recalls having purchased too much equipment and recommends to "start small and do it well and then, build from there."

Many of the facilitators learned to manage effectively through experience. Experiences that they deemed ineffective led them to alter their practices such as increasing time spent on writing reflections, planning better prior to a session, re-designing instructions, or encouraging better, sustained interactions in the makerspace. Ken notes his own learning trajectory:

> Ken: The first year, it was kind of a free-for-all. Well, whatever the kids are interested in, we'll help them do that. But we found that … they would do something for a couple of minutes, and then jump to a completely different thing. And there wasn't any direction. At the end of last year, [name] and I sat down and we designed like a passport basically … And then the students get badges for completing projects that answer the criteria of each of those project areas.

Comments by participants suggested that management skills could be honed through continuous reflection on and refinement of the process. In sum, performance accomplishments appear related to the need for capacity building, growth in confidence, and learning better management strategies.

Emotional Arousal

Consistent with Paganelli et al. (2017), we found that the facilitators emotions were a significant aspect of the educators' experiences. A great many expressed excitement but there were also less-positive reactions such as intimidation, fear of failure, and frustration. Table 5 provides a summary of the sub-categories for emotional arousal.

Table 5

Emotional Arousal

Sub-category	Description	Example
Excitement	Positive emotional reactions.	Pat: And the critical thinking skills, and their ability just to like to persevere, and problem solve, and not give up was honestly goose-bumpy.
Frustration	Tension and dissatisfaction.	Tom: Sometimes I feel like I'm running around in every direction.
Fear of failure	Fear, anxiety.	Andrew: It depends on the subject, it was for … 3D modelling one… I had to learn the software, so I was a little bit anxious.
Contagiousness	Sharing emotional reactions.	Amy: It's going to be what you put into it. So, if you're only putting in like a half-hearted approach, or aren't as enthusiastic…kids feed off your enthusiasm.

Excitement

Much of the facilitators' excitement was generated by watching the makerspace participants:

> Linda: You don't usually get [insight into] their thinking so transparently laid out, right?
>
> Bob: Me watching kids learn. There's nothing better . . . So, you can see the kids really digging in and trying things. And what I really like was the prototyping—when the kids would fail.

Tom indicated that he enjoyed managing social interactions and resolving conflict between kids. Other facilitators also expressed excitement at seeing the makers' creativity, inventiveness, perseverance, and problem-solving skills, for example:

> Linda: So, one student might be working on electronics and another student may be really into sewing and textiles and they might, "Oh! Look! I could make kinda wearable technology" or, or you know like, combining things in ways you wouldn't normally think of.

Opportunities that allowed makerspace participants to develop their skills and abilities also elicited excitement. For example, Linda was moved when observing the kids' skills and gifts

emerge during sessions while remarking on the potentially transformative effects upon the learners:

> Linda: I've had students say to me, "I thought I knew what I wanted to be when I grew up, but this changes everything."

An area that also seemed to affect the facilitators was when they noted how the makers overcame anxiety and showed resilience by working through repeated failures. Some comments implied that facilitators could play a valuable pedagogical role in developing resilience by validating the makers' ideas, Linda's for example:

> Linda: We want [the makers] to have those experiences where they fail, but that they build up resilience to get past that and figure what the problem is, and either, ok, maybe we have to abandon that idea and take on a new [approach].

Some facilitators, particularly the teachers and teacher-librarians expressed delight and affirmation when the makers would ask to continue, as seen in Amy's comment:

> Amy: The kids would ask me, "We're going to do that again?" Like when the kids want to do it, that's a good sign that you're doing something right.

Frustration

Sources of frustration reported by the facilitators were most often related to workload. Cindy's comment, for example, suggests that the number of makers per session and the integration of makerspace activities within the formal curriculum could be unwieldy:

> Cindy: [It] was frustrating. Like, because it's all one-on-one at the beginning and there's two of us and 26 of them.

Fear of Failure

Most commonly, facilitators indicated fear of failing to harness the technology and fear from having inadequate background knowledge. Jim noted how, at first, he was afraid of failing, but his confidence grew with experience:

> Jim: Now, when I'm designing something, if I get it right after like the third or fourth try, I'm celebrating 'cause it takes five, six, eight, sometimes ten times to get it right … Cause if you're a perfectionist going in, it'll be very scary for you. If you have that attitude of "I can't fail," then, you're not going to like being in a makerspace I don't think.

There was evidence that some facilitators felt they needed to be the "experts." These individuals emphasized the importance of being prepared. Tom suggested that locating and conceptualizing activities is a part of the responsibilities of a facilitator. Bob recounted the need for "ensuring all hardware is configured and supplies are available." For Tom, control started with "coming up with good project ideas." Amy, meanwhile, recommended being "uber-prepared" and doing practice runs prior to facilitating sessions.

While some facilitators felt that advanced preparation was essential, others were comfortable iterating through problems alongside the makers and even relinquishing control or *unleashing*. Tom, for example, was open to learning from his students, believing that they would

"really have to know what they're talking about" in order to teach something to him. Jim, too, was unphased by "not knowing something." In Chuck's case, he would ask the makers what they wanted to do and "gauge from them" how to proceed. Cindy, Tom, and Howard noted that prior experience taught them to anticipate potential difficulties, to know when to intervene, and when to let the activities evolve. Many commented on the fear associated with unleashing the learners:

> May: I think that sometimes people are intimidated by giving kids so much leeway and space in their learning. But I found they never disappointed and I could never come up with the ideas that they did.

Several facilitators, particularly Linda, who appeared comfortable in their facilitation role showed greater appreciation of others' knowledge as well as the benefits of allowing the makers to shine as the experts:

> Linda: … these kids surpass my knowledge right away with robotics. So, you know, I think when you're talking about characteristics of people who are willing to launch these kinds of spaces, you have to be willing to not be the expert.

Contagiousness

Throughout the interviews, our team noted that emotions were often shared amongst the makers and facilitators, such as Jim's response:

> Jim: … Joy, like watching them figure something out or watching them design it and seeing that look in their eyes or seeing them get excited about it. So, that spills over to me, for sure.

Negative emotion emotional reactions can also spread. Tom said that he was bothered when the makers were disengaged and described how it would affect the entire group. Jim, too, was frustrated when the kids did not appear motivated. To this point, May noted feeling "muddled" and frustrated:

> May: … hard core muddling through it. A couple kids got it. One kid was like, "I can't stand this!" [laughs] … And I thought, "Hey! It's ok. I am not enjoying myself either."

Facilitators' comfort levels with expertise seemed to fall along a continuum and the degree of the makers' control in the makerspace was connected to the facilitators' personal preferences. Higher levels of preparation and control were considered important for facilitators who identified more closely with the expert role while freedom and maker control were highlighted by facilitators who did not need to self-identify as experts. In sum, emotional reactions, both positive and negative, appeared significant for the facilitators' motivation and resilience.

Verbal Persuasion

Our team found evidence of both overt verbal support from self or others and other more concrete forms of support. Table 6 summarizes the key sub-categories.

Table 6

Verbal Persuasion

Sub-category	Description	Example
Verbal support	Social persuasion; indirect support.	You can do it.
Concrete support	Provision of materials, funding, and time.	Jim: And, [the administrators] said they'd put some [learning] time in our schedules.
Breakdowns in support	Interactions that have a deleterious effect upon facilitators.	Cindy: ... you are a good team. You just ... plan together, and you come in and you seem to just really bounce off each other. Other times, it feels like it's more on me and so then I try to make more room for the teacher to be involved.

Verbal Support

There are few explicit examples in which our interviewees described having been directly encouraged (i.e., "You can do it"). But, our interviewees—particularly those who occupied official support roles—shared anecdotes in which they verbally encouraged others. This was true for Cindy, May, and Linda (teacher-librarians) as well as Bob (educational consultant).

> Bob: So, right now we're actually looking at getting the teachers together to help them facilitate. We'll spend about an hour with the teachers saying, "Well, these are the kinds of things you can do. This is probably what you're going to see."

Comments in the transcripts suggested that working with like-minded colleagues provided a source of both support and stimulation. Chuck, for example, noted positive experiences in which teamwork with librarians, educational assistants, caretakers, teachers, and student services helped distribute the workload of a makerspace endeavour.

Concrete Support

Instead of receiving verbal statements of encouragement, comments from some interviewees suggested that support for them was demonstrated in more pragmatic, concrete ways from various sectors such as administration, community members, and technologists. Sometimes administrative support came in the form of budgetary assistance which allowed acquisition of resources and opportunities for professional development such as in Ken's school-based, community makerspace:

> Ken: It's really surprising. The administration has been really supportive; whenever I feel like buying a new toy or something like that, they've kind of been like, "Yeah, sure." … I

think that kind of foundational getting buy-in from the people that make the decisions and who set the budget priorities can be a huge boost for that sort of thing.

Breakdowns in Support

Community members could also be a source of criticism rather than support. Linda, a teacher-librarian, provided a glimpse into how parents might influence a makerspace facilitator:

> Linda: We ended up buying too much equipment and then, you know, I've weathered the feedback from parents like, "Well, that resource is not very well used." And, parents don't always understand that I'm in their school [only] two days a week.

Similarly, teamwork could sometimes break down, leading to a lack of support for facilitators. Linda and Cindy describe some situations in which they had to reach beyond a support role because the teachers' already heavy workloads often precluded more intense participation in maker activities. May noted that teamwork and sharing amongst community members could also breakdown if reciprocity was perceived as lacking:

> May: Makers are very generous. They want to help, and they want to collaborate, and they want you to come up with your best ideas … People might close themselves off a little bit if they feel that it's gone from a sharing or reciprocity to a taking [situation] … is that someone takes your idea just a little bit further, but markets it in a way that, maybe doesn't honour your intellectual property.

The facilitators' comments suggested that support from administrators and parents can play a key role in a facilitator's effectiveness and motivation.

Vicarious Experience

Seeing others perform a task successfully can raise expectations of success for the observer. The facilitators described how they would learn how to make things by observing the makerspace participants, engaging in reciprocal sharing, and accessing information online. This interpretation emerged from the sub-categories summarized in Table 7.

Table 7

Vicarious Experience

Sub-category	Description	Example
Networking	Contacting other facilitators and visiting other makerspaces.	Rose: And [the other librarians] are skilled in puppetry and so they have used a Cricut machine to design and print puppets—shadow puppets. So, yeah, I've hooked up with them and they're going to train us or give a little demonstration anyway in how to use the Cricut machine.

Learning from makers	Learning from the makerspace participants.	Cindy: I think it's really changed my view of kids as experts 'cause they really are little experts in lots of different ways.
Accessing references	Locating relevant non-human resources.	Bob: The teachers don't have to actually, maybe, know it all about a topic. But they have to know on the Internet where to find it.

Networking With Others Involved in Makerspaces

Our interviewees indicated that they actively sought out connections by visiting other makerspaces at other locations such as schools and talking to experts and other teachers. They described how sharing knowledge and information helped them become better facilitators. In some cases, they sought out organizations in order to more quickly acquire skills. Pat, for example, attended a "coding for girls" class where she learned Scratch (a programming language). Tom seemed to prefer interaction with people admitting, "I need people to teach me and I need to be able to network with people" and indicated a desire to visit some of the big universities in the United States to "find out what is going on." Others described situations in which they collaborated directly with other teachers and facilitators.

Learning From the Makerspace Participants

Some facilitators found personal and pedagogical value in learning from the makerspace participants. For example, Cindy, a teacher-librarian, recounted a situation in which she learned skills through interaction with the makers:

> Cindy: I thought that was kinda clever on [the maker's] part. Like, I really honestly hadn't thought of that . . . So, the bigger battery worked!

Accessing Reference Materials

Several of the facilitators accessed print and online resources to help them gain experience and acquire knowledge. Cindy, for example, referred to a book on assessment while Jim read Popular Science magazine. Rose, meanwhile, accessed numerous different types of resources:

> Rose: … a documentary called "Maker" that I had watched. So, I had an idea of what it was. And that term has been showing up in library professional journals for probably the past ten years, so I started to get curious about what it was and then that's when I did some reading … I also went to the [name of] conference last year and there were a couple of teacher-librarians who were demonstrating what they did with kids.

Online sources also appeared significant to the facilitators such as social media, particularly Twitter and Google. Bob suggested that knowing where to find information was perhaps more important than being the expert in an area.

Discussion

The main goal of this research was to explore how self-efficacy expectations are experienced by early adopters of makerspace facilitators and, subsequently, use this knowledge to help educators acquire the skills and attitudes conducive for leading such activities. What we have observed was that performance accomplishments (33%) and emotional arousal (26%) constituted 59% of our codes (Table 3). At first glance, these percentages support Bandura's (1997) contention that mastery expectations (performance accomplishments) are more influential in perseverance behaviours. However, when we selected comments from the facilitators' perspectives, we found significant amounts of emotional content; in fact, emotions seemed to pervade the other self-efficacy categories.

Performance Accomplishments

Similar to the findings of Paganelli et al. (2017), the main tensions that surfaced in the interviews surrounded the facilitators' sense that they needed sufficient hands-on knowledge of the technology and techniques prior to any makerspace activity. There was a general sense that activities needed to be structured, planned, and controlled. The interview comments support observations by O'Brien et al. (2016) regarding preparation and structure. Our results also suggest some of our participants were more comfortable with *authoritative* and *orchestration* teaching strategies rather than *unleashing* strategies (Kajamaa et al., 2019). For one participant, the development of a makerspace passport was an interesting solution; it was attempt to direct learners' focus and sustain attention whilst still offering a degree of learner agency and choice. In other words, the passport provides a form of structure and direction, but also permitted "what if" space (Rowsell & Shillitoe, 2019, p. 2).

Emotional Arousal

Besides frustration with large groups and the need to cover extensive curricula, some anecdotes illustrated that facilitators suffered from a need for perfectionism and control. Some of our facilitators felt they needed to be seen as the experts and needed to ensure all materials were fully sourced and available. Tom even felt he should choose the projects. By contrast, other facilitators aligned well with orchestration and unleashing strategies discussed by (Kajamaa et al., 2019). For example, May commented that when she relinquished control, the learners "seldom disappointed." Linda, too, indicated that the kids "surpassed" her knowledge of robotics. Rather than feeling intimidated, these two facilitators embraced the knowledge and creativity of the makers and even learned alongside them. Both Jim and Linda commented that fear of failure or fear of not being the knowledge keeper would be potentially discomforting for makerspace facilitation and even antithetical to the makerspace ethos. These comments coincide with findings from Cohen et al. (2017) whose teacher-candidate participants came to the realization that "no one can know it all" (p. 8).

The comments coded for emotional arousal certainly indicated the significance of emotions within the creative domain of teaching and learning. Recognizing pedagogical and

social value appeared exciting and inherently motivating. For example, the facilitators expressed positive emotions when observing the creativity, sharing, and "gifts" of the makers. The facilitators were excited to see how the makers worked through problems. Linda noted her excitement when observing how makers with different projects would combine their skills innovatively (such as when integrating electronics and textiles), and when some learners/makers responded positively (such as "but this changes everything"). While Rowsell and Shillitoe (2019) argue that there is a role for affect, we would argue that affect has a significant role in the makerspace experience.

Verbal Persuasion

Overt, verbal persuasion was the least represented code in the transcripts, but there were anecdotes regarding informal and concrete support. Verbal persuasion sometimes showed a degree of pedagogical value when facilitators encouraged other teachers (potential facilitators) who then decided to learn more about the topic or who then incorporated the information or technique into their own teaching practice. Negative forms of verbal support/persuasion appeared to have a deleterious effect on motivation—particularly in cases where the facilitators felt they had to "do all the work" or where there was a perceived lack of reciprocity in sharing ideas and attributing credit. Echoing the findings of Phan and Locke (2015) regarding effective forms of support (i.e., collegiality, sharing, and institutional support), we found that funding and provision of work time are concrete forms of support enabling the acquisition of material and resources—along with time for experimenting with them. O'Brien et al. (2016) noted in their research that some participants were "cautious about integrating these types of activities in their future classrooms due to concerns around peer and administrator support as well as lack of resources" (p. 4). For that reason, we regard this category as significant albeit less obvious in the transcripts.

Vicarious experience

Networking, accessing resources, and learning from others are key components of makerspaces (Koole et al., 2016). In our study, vicarious experience anecdotes suggested increased knowledge and confidence more clearly when the facilitators observed or learned from other makers/experts as opposed to observing or learning from makerspace participants. Similarly, Cohen et al. (2017) found that their teacher-candidate participants appeared more comfortable with asking for and offering help. Their participants also recognized how their colleagues would offer alternative and useful viewpoints during the making process. And, like Cohen et al.'s participants, some of our interviewees also realized that as facilitators/teachers they were in a dialogic, learning relationship with the makers.

Conclusions

In this paper, we defined facilitator self-efficacy as an individual's belief in their capacity to organize and guide a makerspace activity as well as their ability to encourage creativity, problem solving, sharing, making, and collaboration. For our study participants, emotional arousal appeared to underlie all four elements of self-efficacy—but was particularly influential upon confidence and motivation. This led us to conclude that affect is an inherent part of making and the facilitation of making. Also prevalent across all four self-efficacy categories was the importance of learner agency; that is, the need for facilitators to structure and control making activities versus allowing full unleashing of learners. Amongst our participants, those who were

more comfortable with relinquishing control appeared to experience less anxiety. This finding suggests that an egalitarian approach with facilitators and learners sharing expertise may be an important disposition to encourage in future facilitators.

There is a need to help preservice and early career educators to become prepared and confident makerspace facilitators. As a result of our analysis, we conclude that while facilitators need not be experts in programming, robotics, or sewing, they do require programs and supports that strengthen their sense of self efficacy. Using Bandura's four elements of self-efficacy (verbal persuasion, performance accomplishments, emotional arousal, and vicarious experience) to analyze the experiences of current makerspace facilitators, we offer the following suggestions for new makerspace facilitators: start with orchestration and aim toward unleashing; allow others to be the experts, organizers, managers, conceptualizers, problem identifiers, and leaders; celebrate both success and failure; and openly seek and offer support, both concrete and verbal.

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A Vision Towards Indigenous Education Sovereignty in Northwestern Ontario

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Authors' Note

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Abstract

To support the calls for Indigenous education sovereignty by the National Indian Brotherhood (1972) and the Assembly of First Nations, (1988), in this paper we explore Indigenous education as envisioned by six educators and knowledge holders in northwestern Ontario. Educators from six different schools and programs who took part in a national project called the National Centre for Collaboration in Indigenous education shared their descriptions and visions of Indigenous education. Findings reveal Indigenous pedagogies that align with Lee and McCarty's (2017) theoretical framework of culturally sustaining and revitalizing pedagogies to promote and support Indigenous education sovereignty. Their visions include pedagogies grounded in the need for equitable education; Indigenous-led instruction for land-based teachings, traditional practices and languages; and, community-based accountabilities. Their visions illustrate that a deeper understanding of the localized and nationhood contexts of Indigenous sovereignty over education is missing and needed in the ongoing movement towards educational sovereignty.

Keywords: Indigenous sovereignty; Indigenous education; culturally sustaining and revitalizing pedagogies

A Vision Towards Indigenous Education Sovereignty in Northwestern Ontario

In Canada, the movement towards Indigenous education sovereignty stems, in part, from the policy paper, *Indian Control of Indian Education*. Released in 1972 and presented to the Minister of Indian Affairs and Northern Development, the National Indian Brotherhood (NIB) called for educational sovereignty and the rights of First Nations communities to repatriate ownership and control of their children's education. The call for sovereignty included training and hiring Indigenous educators, implementing culturally relevant curriculum, and providing educational facilities and resources equal to non-Indigenous communities. In 1988, the Assembly of First Nations (AFN), formerly known as NIB, reiterated this call for ownership and control of education in the report titled *Tradition and Education: Towards a Vision of Our Future*. Since then, many communities have gained band-controlled education, whereby First Nations' leadership and their education authorities have administrative control over school operations, staff hiring, programming, and curriculum (Nishnawbe Aski Nation [NAN], 2012). AFN and its communities have long argued that band-controlled education does not meet the spirit and intent of First Nation control of First Nation education, which is to repatriate education (AFN, 2010). In 2018, First Nations communities in Ontario signed an Agreement-in-Principle with the Federal Government to commit to ongoing negotiations towards First Nations' authority over education within their communities (NAN, 2018). Agreements in principle represent the next step toward First Nations' sovereignty over education.

To support the movement towards Indigenous education sovereignty, in this paper we share the aspirations and hopes for Indigenous education as envisioned by Indigenous educators in Northwestern Ontario (NWO). We argue that these educators' visions exemplify Indigenous pedagogies that align with McCarty and Lee's (2014) description of culturally sustaining and revitalizing pedagogies (CSRP) that promote and support Indigenous educational sovereignty. Educators' visions include the following three aspects: the ongoing need for equitable funding for First Nations education; Indigenous-led instruction for land-based teachings, traditional practices and languages; and community-based accountabilities.

Situating the Study and Indigenous Education in Northwestern Ontario

The NCCIE is a national project that began at First Nations University in 2017. Its vision is to

> highlight innovative and exciting examples of Indigenous education from across the country, celebrating the dedicated work by communities to strengthen Indigenous education for all generations. We [NCCIE] connect people at the grassroots level where education is delivered and knowledge is passed on. (NCCIE, 2019)

To implement its vision to collaborate with Indigenous educators to strengthen Indigenous education, the NCCIE support network sought out Regional Leads within universities across Canada. Regional Leads were tasked to hire and mentor Indigenous and non-Indigenous graduate students to conduct Indigenous research approaches and connect to Indigenous educators within their regions (NCCIE, 2019).

Lakehead University in Thunder Bay housed the research team for the NWO region, which is one of 16 regions across Canada and one of four regions within Ontario. NWO is a geographically large area that spans from Michipicoten First Nation in the southeast to the Manitoba boundary in the west. NWO has a growing number of First Nations schools in rural and remote communities and in urban centres such as Thunder Bay, Kenora, Sioux Lookout, and

Fort Frances. Most community-based (i.e. on-reserve) schools offer early childhood education (ECE) programs and formal schooling from Kindergarten to Grade 8 (and rarely to Grade12, the final year of secondary education in Ontario). Some schools in urban centres offer secondary schooling (Grades 9 to 12). Thunder Bay is an educational hub for many First Nations communities: most First Nations lack secondary schools. Without options in their communities, many parents send their children to larger centres to gain a high school diploma. Within these contexts, we share the perspectives of six Indigenous educators that lead Indigenous educational programs across the NWO region. Their experiences, perspectives, and visions for Indigenous education are tied to issues of self-determination and sovereignty as First Nation communities and educational programs establish their own visions for Indigenous education. We introduce them in the Methodology section of this article.

As non-Indigenous authors, we now introduce ourselves before we situate this work within the literature. Melissa Oskineegish, a team member for NCCIE in NWO, began her teaching career in a fly-in First Nation community in northern Ontario. As a classroom teacher, she was guided by experienced and knowledgeable educators who mentored her to develop relevant and ethical pedagogies and curriculum in her teaching practices. Her experience directly influenced her research on effective strategies for non-Indigenous educators to develop culturally responsive pedagogies. Leisa Desmoulins is a non-Indigenous teacher educator who uses culturally sustaining and revitalizing pedagogies in her courses within the Department of Aboriginal Education in a Faculty of Education in NWO. She honed relationships through 15 years of community-led research within the region. She has served as Regional lead for NCCIE in NWO for three years. During that time, she mentored Indigenous and non-Indigenous students to conduct Indigenous research approaches that respond and give back to Indigenous communities. We both hold relational accountability to our families and communities as we work and live within NWO.

Literature Review

Cultural asset pedagogies, such as culturally responsive schooling (Castagno & Brayboy, 2008), culturally proficient instruction (Nuri-Robins et al., 2011; Terrell & Lindsey, 2009), and culture-based education (Demmert, Jr., 2011) emerged as educational strategies for transforming the academic and cultural policies, practices, and pedagogies within schools to affirm and value the cultural heritage of Indigenous students and their tribal communities. In Castagno and Brayboy's (2008) meta-analysis of culturally responsive schooling in the United States between 1980 and 2007, they argued that culturally responsive schooling can have a positive impact on Indigenous students' academic achievements when implemented systematically, institutionally, and over a long term.

The need for cultural asset theories stems from the primary use of schools used as a tool to assimilate Indigenous students into Eurocentric discourses (Battiste, 2013; White & Peters, 2009). The most prominent example, the Indian Residential School System (IRSS), explicitly and systematically operated to separate and eliminate Indigenous children's connection to their families, languages, ceremonial beliefs, and cultural heritages (RCAP, 1996; TRC, 2015). As Residential Schools closed and students transitioned to day schools, the Eurocentric operation of schools maintained the ongoing forces of colonization and assimilation. Battiste (2013) described the processes and curricula of schooling as rooted in "cognitive imperialism," which perpetuates "white-washing the mind as a result of forced assimilation, English education, Eurocentric humanities and sciences, and living in a Eurocentric context complete with media, books, laws,

and values" (p. 26). Cultural asset theories aim to transform the Eurocentric, middle-class cultural dominance of schooling by providing strategies and methods for incorporating pluralistic cultural pedagogies (Alim & Paris, 2017; Hammond, 2015).

In Alim and Paris's (2017) "loving critiques of asset pedagogies" (p. 4), they described how educators can enact cultural asset pedagogies moving forward:

> In this work we are committed to envisioning and enacting pedagogies that are not filtered through the glass of amused contempt and pity (e.g., the "achievement gap"), but rather are centered on contending in complex ways with the rich and innovative linguistic, literate, and cultural practices of Indigenous, Black, Latinx, Asian, Pacific Islander, and other youth and communities of color. (p. 2)

Lee and McCarty (2017) take up Alim and Paris's call for culturally sustaining pedagogies and extend the idea to culturally sustaining/revitalizing pedagogies (CSRP) that are grounded in Indigenous knowledges for Indigenous educational sovereignty. They described educational sovereignty as the right to self-determined education. They embed CSRP within "the experiences of Native American peoples [that] have been and are profoundly shaped by a unique relationship with the Federal Government and by their status as tribal sovereigns" (Lee & McCarty, 2017, p. 102), and combine cultural asset pedagogies with the "sociohistorical and contemporary contexts" (Lee & McCarty, 2017, p. 62) of Indigenous education.

While McCarty and Lee (2014) wrote about Indigenous sovereignty within an American context, Battiste, Bell, and Findlay (2002) wrote about Indigenous pedagogies embedded within Indigenous knowledges within a Canadian context: "Indigenous knowledge is not sufficiently and appropriately available through books, journals, monographs, theses, or dissertations, or from teachers or university professors" (p. 91). They explained that Indigenous knowledge lives within Indigenous communities.

Barnhardt and Kawagley (2005) provided an example of how Indigenous knowledge lives within communities by sharing a story of enacting "rich and innovative" Indigenous knowledge systems that benefit students' understanding in ways they can relate to:

> For example, when choosing an eddy along the river for placing a fishing net, it can be explained initially in the Indigenous way of understanding by pointing out the currents, movement of debris and sediment in the water, the likely path of the fish, the condition of the river bank, upstream conditions affecting water levels, the impact of passing boats, and so on. Once students understand the significance of the knowledge being presented, it can then be explained in Western terms, such as flow, velocity, resistance, turbidity, sonar readings, and tide tables, to illustrate how the modern [sic] explanation adds to the traditional understanding (and vice versa). All learning can begin with what the student and community already know and have experienced in everyday life. (p. 12)

Barnhardt and Kawagley (2005) explained that the purpose of sharing this story is to illuminate how Indigenous students, like all students, "will become more motivated to learn when the subject matter is based on something useful to the livelihood of the community and is presented in a way that reflects a familiar worldview (Battiste, 2002; Kawagley, 1995; Lipka et al., 1998)" (p. 12). Further, Lee and McCarty (2017) asserted that CSRP extends culturally responsive pedagogies by including critical examinations of the "enduring forces of colonization" (p. 62). They define CSRP through the following three action-based components:

advancing Indigenous sovereignty that "attends directly to asymmetrical power relations" (p. 62); revitalizing and reclaiming linguistic and cultural heritages; and implementing Indigenous community-based accountability. In this paper, we share the descriptions and visions of Indigenous educators in relation to these three components of CSRP, to amplify Indigenous educational sovereignty expressed by Indigenous educators in varied communities and programs across NWO.

Methodology

An Indigenist approach to research (Rix et al., 2018; Wilson, 2016) guided our work with this study. An Indigenist approach differs from an Indigenous approach because an Indigenist approach is open to anyone who follows its tenets (Wilson, 2016). Cree scholar Shawn Wilson (2016) described it as a strengths-based approach to create an Indigenous vision for the future by and for families and communities. Two tenets of an Indigenist approach at the heart of this research are that the voices, knowledge, experience, and opinions of Indigenous educators and the knowledge holders are the primary informants (Rix et al., 2018), and that relational accountability roots the research approach (Donald, 2012; Wilson, 2016). To uphold participants as the primary informants, NCCIE followed the First Nations principles of ownership, control, access, and possession (OCAP). NCCIE provided guidance to each region on informed invitations and consent forms, a ceremonial gift appropriate to the knowledge holder, and a review process prior to publication on the NCCIE website. Each region determined the specific approaches, gifts, and processes. Wilson (2016) explains that relational accountability exists when researchers "are accountable to and for maintaining healthy relationships" (p. 311). Maintaining healthy relationships for our team meant seeking guidance from Elders, educators and knowledge holders holding ongoing conversations with potential participants to ensure mutual benefit in participation and, adjusting to different approaches in the interview process. Wilson (2016) asserts "I'm not just *in* these relationships, but rather I am these relationships" (p. 313). For us, this shows relationality—our relationships with participants did not begin with this study in all cases and they extend beyond this study. We are in relation. We describe the specific approaches of NWO next in the methods section.

Methods

In the first year of the three-year project (November 2017 to April 2018), the Regional Lead for NWO gained approval from Lakehead University's research ethics board. Indigenous and non-Indigenous graduate students in Indigenous education served as Research Assistants for the NWO team. The Regional Lead trained them to follow the interview guide and interview educators (participants) using the video and audio equipment provided by NCCIE. Indigenous knowledge holders and educators from Indigenous communities, schools, and programs in communities across the NWO region were contacted and interviewed. NCCIE researchers for NWO selected many educator/participants through prior and ongoing relationships, a form of relational sampling (Wilson, 2008).

The NWO research team developed and followed specific protocols: They invited participants to partake in the research with a description of the project and commitment requested, provided informed consent and the interview questions prior to the interview, offered a gift of tobacco and an honorarium to all participants, and sent interview previews to participants for approval or changes. Within these protocols researchers and participants engaged in informal conversations and discussed ways to ensure mutual benefit for NCCIE and the

participant's school or program. Examples of mutual benefit included networking and sharing information about the school or project to a wider audience adding URL's in the video descriptions that linked to the school or project, and offering help towards participants' initiatives. Once participants approved the edited video or audio-taped interviews, a team member from the NWO region uploaded the interview to an NCCIE website. Research Assistants conducted seventeen interviews with educators in the NWO region in Year 1.

Interviewers used an interview guide from NCCIE with four questions:

1. How do you describe your program? (prompts-what is it called, who is it for, aim of the program, how do you measure success?)
2. From your perspective, what is Indigenous education?
3. What is your vision for Indigenous education over the next 10 years?
4. What information, materials, resources do you need to achieve that vision (aside from funding)?

Data Analysis

The analysis of data was guided by principles of grounded theory (Bryant & Charmaz, 2007; Creswell, 2014; Savin-Baden & Major, 2013). Our grounded theory analysis began with initial coding of all interviews that led to the development of multiple categories. A process of constant comparison between participants' experiences, perspectives, and vision followed to generate themes (Savin-Baden & Major, 2013). For this paper we coded the responses for three of the four questions stated above (i.e., educators' and knowledge holders' descriptions of their schools, programs, or initiatives; their perspective of Indigenous Education; and vision for moving forward), positioning codes within the theoretical framework of CSRP—known as axial coding (Creswell, 2014).

Educators' responses comprise the heart of this paper, as a means for us as teacher educators to learn from Indigenous peoples. We sent each participant the final descriptions and quotes for review. We asked them if they wanted their data included and if they wanted us to use a pseudonym. Three participants are provided with a pseudonym (Peter, Michelle, and Mark), and three responded with specific directions (i.e., one participant requested "D. Kakepetum"). We made all changes that were requested.

Introducing the Educators and Their Programs

In this section, we introduce each educational program and educator in the order they appear in the Findings section that follows.

Pelican Falls First Nation High School

Peter is a former principal at Pelican Falls First Nation High School (PFFNHS) in Sioux Lookout, Ontario. PFFNHS is a school for First Nation students from the surrounding communities in the Nishnaabe Aski Nation (NAN), many of which are fly-in communities in the northernmost corner of NWO. The school is part of a family of schools run by NNEC. Notably, PFFNHS is a "private, First Nations controlled and operated [secondary] school" (NNEC, 2014) that "offers unique and culturally relevant educational services to students from 24 First Nations communities" (NNEC, 2014).

Seven Generations Education Institute

Brent Tookenay is the Chief Executive Officer at Seven Generations Education Institute (SGEI). SGEI is First Nation owned and operated with locations in Kenora, Fort Frances, and Thunder Bay, Ontario. Originally formed in 1985 as an Education Authority to deliver trade programs and satellite high school classrooms for 10 First Nation communities in the Rainy Lake tribal area (of the Grand Council Treaty 3 Political Territorial Organization), SGEI expanded and grew as it sought to "provide secondary education for Anishinaabeg students who were not being accommodated in the public system, and who were at risk of ending their formal education" (7generations.org, n.d.).

Shkoday Abinojiiwak Obimiwedoon

Michelle is the Executive Director at Shkoday Abinojiiwak Obimiwedoon. She also oversees the Biwaase'aa program**.** Shkoday's Aboriginal Head Start program provides early childhood education for off-reserve children aged 18 months to six years who live in the urban centre of Thunder Bay, Ontario. Michelle describes the aim of the program to "teach culture." The Biwaase'aa program is a culture-based program provided within seven schools and one high school in Thunder Bay to youth.

Kiizhik

Mark is the former principal of an elementary school, Gaagagekiizhik Gakinoo'amaawadiiwi'gamig GaKinoo'amaawasowin, also known as Kiizhik, in Fort Frances, Ontario. The Bimose Tribal Council in collaboration with provincial Education Authorities opened the Kiizhik school as a First-Nation-operated, Anishinaabe school. Kiizhik serves students and families from surrounding First Nations within the Tribal Council. In September 2015, Kiizhik opened with 15 children. Today it offers classes from Kindergarten to Grade 5. Because Kiizhik exists alongside provincial schools in the area and with provincial funding, it has dual accountabilities to the province and its students, their families and communities.

Thomas Fiddler Memorial School

D. Kakepetum serves as coordinator of elementary school programming at Thomas Fiddler Memorial School, in Sandy Lake First Nation, Ontario. The school is part of the education programs offered to members of Sandy Lake, a fly-in community of 1500 people, 600 km northwest of Thunder Bay. D. Kakepetum is responsible for a variety of programs within the elementary school—from math and literacy to Introduction to Identity and cultural land-based learning where Elders give guidance for teachers and students (i.e. where ice fishing, rabbit snaring, walking around the trails, shore-line fishing and ice fishing, etc.). She also oversees language programs that Thomas Fiddler Memorial School offers for learners in Kindergarten to Grade 6. Language instructors for students in Grades 1, 2, and 3 use immersion approaches to ground students in the local Oji-Cree language.

Kay-Nah-Chi-Wah-Nung Historical Centre

Tara Montague served as a former Administrative Manager of the Kay-Nah-Chi-Wah-Nung historical centre, in Rainy River First Nation, Ontario. Kay-Nah-Chi-Wah-Nung means "the place of the long rapids" (Staniforth, 2019). It is commonly known as Manitou Mounds, for its burial mounds on the banks of the rapids. The historical centre is run by the Rainy River First Nation and serves learners from local First Nations as well as the general public who come to the historical centre. The following present their responses and visions.

Findings

All of the educators were managers of programs or schools in urban, rural, and remote communities within NWO. From these interviews, three central themes emerged from their visions of Indigenous education: Establishing equitable educational access and opportunities for Indigenous students, especially in technology and academic preparation; Providing Indigenous-led pedagogies anchored in Indigenous knowledges through practices such as land-based teachings and culturally sustaining ceremonial and traditional activities; and, integration, flexibility, and valuing of Indigenous pedagogies that acknowledge the whole child—the spiritual, emotional, intellectual, and physical—and within families and communities. We share educators' rich insights into each of these themes in the findings that follow.

Equitable Access to Educational Opportunities

Peter, former principal of PFFNHS, and Brent Tookenay, C.E.O. at SGEI, both served students and families from surrounding First Nations communities. Peter described Indigenous education as, "Learning your culture, [and] your history." Peter gave as an example, "learning about land and how to live off the land, [and] how we did things a long time ago." At PFFNHS, educators do this "by bringing in educators and guests who can share Indigenous knowledge." By highlighting Indigenous education as grounded in cultural, historical, and inter-generational practices guided by Elders and knowledge keepers, Peter's description places Indigenous knowledges at the core.

Peter shared a two-part vision. The first part was to end wait lists for students to attend his school. He wanted to see Pelican Falls expand in ways "that respond to the vision of communities and students." As one example, he explained that students want the option to take academic courses. Currently, PPFNHS offers applied courses. Because their degree limits them, student graduates from PPFNHS can apply only to college-level programs for further studies. Peter also saw other limitations for students at PFFNHS. Peter wanted, for example, to incorporate technology (e.g., e-learning and other technological resources) so that students of PFFNHS graduate with the same technological knowledge, skills, and abilities as their peers.

Beyond the limitations of students' options within PFFNHS, the second part of Peter's vision for Indigenous Education was for non-Indigenous people to become more aware of the history, culture and values of First Nation peoples:

> To make our vision a reality in the non-Native population so they can understand what First Nation people are all about, our connection to the land, our culture, our language and how we strive to connect our young people to success in the non-Native environment. (Peter)

In his vision Peter reiterated the core of Indigenous knowledges—land, culture, and language. Another aspect of his vision involves, "connect[ing] our young people to success in the non-Native environment." Peter's vision is to aid Indigenous students' with success in the broader world once they leave PFFNHS to pursue higher education for themselves and their communities. Peter addressed accountability to the communities PFFNHS serves when he articulated "that [PFFNHS] responds to the vision of communities and students." Peter tied this accountability to improving students' abilities to excel in varied learning environments.

Brent described one unique feature of SGEI's secondary school, which now "serves 15 of the First Nations [communities] in the Treaty 3 area" and uses satellite classrooms with itinerant

teachers who travel to communities rather than students travelling to attend school. This feature exemplifies "meeting students where they're at," in a place-based sense (Styres, Haig Brown, & Blimkie, 2013). Along with SGEI's practice of itinerant teachers travelling to communities, students have opportunities to learn from local Elders and knowledge keepers within their communities.

For Brent, Indigenous education provides "opportunities [for students] to learn language and culture" in their home communities. In a secondary school, this includes "opportunities to take courses where [Indigenous] content is incorporated in all courses," said Brent.

Moving forward, Brent said he envisions students at SGEI having "those same opportunities given to mainstream schools" which include the same course options for "technology, dual credits [that allow high school students to take college courses to earn both secondary and post-secondary credits], and e-learning" available to students in provincially-run secondary schools. Brent's vision for technological opportunities highlighted the longstanding inequalities in school facilities for Indigenous students (NAN, 2012).

Through their visions, Peter and Brent reflect McCarty and Lee's (2014) socio-historical realities of schooling, the first aspect of educational sovereignty. Peter and Brent envision their students having the same opportunities as their peers in publicly funded schools in Ontario. These opportunities include academic and other courses relevant for students access to technology and dual credits and opportunities that 21st century learners require to move into post-secondary learning.

Indigenous-Led Instruction

Indigenous-led instruction requires Indigenous educators, including Elders and knowledge keepers who serve as language and cultural guides (AFN, 2010; Barnhardt & Kawagley, 2005; Battiste, 2002; NIB, 1972). Indigenous-led instruction is essential to knowing one's culture and teachings and practicing culture through connections to land and language (AFN, 2010; Battiste, 2002; Cajete, 1999; Styres et al., 2013). Michelle and Mark shared ideas about the centrality of Indigenous-led instruction for students and their families within their programs.

Michelle addressed the socio-historical contexts of Indigenous education and the need to include Indigenous educators who connect to land:

> [Students] need to be educated correctly of what happened. Ideally, it would be Indigenous people teaching it to everyone. To do the true teachings that we were here on this land—this is our land—and to have the educators teaching it.

Michelle supported the elimination of pan-indigenous and culturally disconnected curriculum. She expressed concern over previous curriculum that was not localized, stating that "they weren't utilizing Elders to teach what was happening here. There was some, they would invite an Elder or a guest on June 21st to teach a little bit." June 21 is National Indigenous Peoples Day in Canada; however, these lessons included only material culture, such as, "how to make a dream catcher, or can you make earrings—these are important but not the only part of our culture," said Michelle. Michelle expressed the need for cultural and experiential teachings from and with Elders and knowledge keepers who are familiar with land-based practices and other spiritual aspects of culture, including language, land-based practices, and ceremonies. Shkoday's

Biwaase'aa program represented the beginning of this process with its in-school cultural presentations.

For Indigenous education, Michelle envisioned Indigenous pedagogical practices: "For educators in schools to provide Indigenous ways of teaching, we need to see it and do it instead of opening the book about culture, we need hands-on experience," she said. Michelle's vision directly connected to curricula and pedagogies that connect to land and local culture.

Mark shared that Kiizhik School is "a cedar lodge for learning." He talked about Indigenous education from an Anishinaabe perspective. Mark described education as rooted in culture and language:

> It's learning to be Anishinaabe. We talk about culture; we talk about language and the resources. What's important, what should we learn, what shouldn't we learn. Each and every person has something to offer, whether it be life experiences or education. And it's being open to those types of teachers, or different religions, whether it be First Nation, non-Native, its being open to that, that's what I think Anishinaabe education is. It's not just in a book, its everything that we do, how we treat each other. … It's Anishinaabe Bimaadiziwin (The Anishinaabe life).

Mark expressed a belief that educators at Kiizhik school model "Anishinaabe Bimaadiziwin" for students by how they conduct themselves. They are role models. He noted that, "being Anishinaabe is not just something on the wall; it's living it!" Mark's idea of "living your culture" ensures that culture is grounded in Anishinaabe knowledge through Elders, ceremonies, pedagogies, curricula, Anishinaabe language instruction, and more and infused through the school's courses and curricula.

Mark shared his vision for all, acknowledging that this grounding in one's Anishinaabe identity helps to determine who they are and their purpose in life. And that formal schooling is not the only path or the right path for everyone, as Mark stated:

> Learning the language, knowing who you are, and that springboard to other education … Not everyone will want to gain an education, just as long as they know it's there [for them] and as long as they're happy in the decisions they've made. We need to celebrate our different skills. With this school I hope the kids learn about Anishinaabe, their culture. And the teachers to learn more about the language.

Mark said that Anishinaabe culture cannot be learned from a poster on the wall; rather, it is an embodied process of coming to know oneself and their place in the world that one gains through practices, as Anishinaabe Bimaadiziwin. He reinforced the praxis of Indigenous education, Anishinaabe Bimaadiziwin, when he grounded his vision in students knowing who there are, the gifts they have, and determining their own purpose at Kiizhik.

Through their visions, Michelle and Mark activate McCarty and Lee's (2014) revitalizing pedagogies by infusing local communities' linguistic and cultural practices into daily learning at Shkoday and Kiizhik schools, respectively. Their visions show the importance that their communities place on changing schools into space where Elders, knowledge keepers, and language speakers serve as language and cultural guides for the students and their families. Both of them see the value in living the culture through hands-on experiences for teachers and students alike. Michelle tempers her vision by acknowledging, "Ideally it would be Indigenous

people teaching it to everyone." Both Michelle and Mark sought to bring Indigenous-led instruction into their schools that align with pedagogical practices.

Pedagogical Practices That Align With Indigenous Instruction

Pedagogical practices are embedded within Indigenous knowledge systems. Iseke and Desmoulins (2015) describe Indigenous knowledge systems as "integrated epistemological systems taught through Indigenous pedagogies that support an understanding of an integrated world and our places within it" (p. 31). These broader systems include Indigenous ways of knowing, philosophies, and values that undergird pedagogical practices (Barnhardt & Kawagley, 2005; Battiste, 2013; Castellano, 2000; Dei, 2011; Ermine, 1998; Hampton, 1995).

D. Kakepetum and Tara described Indigenous education within their contexts and their visions moving forward. D. Kakepetum explained how she saw culture-based learning and Oji-Cree language learning come together:

> Land-based and language come together when you're out on the land and you have an Elder with you and the Elder talks in their language. They [students] get in touch with their Native language. Their culture is stronger with language. That's how I feel about Native language.

Her feelings about Native language reflected Peter's conceptualization of the land-culture-language nexus described above. Michelle also stated the need for cultural and experiential teachings from and with Elders and knowledge keepers.

Further, D. Kakepetum explained her conceptualization of Indigenous education, bringing in intergenerational learning, and the need for knowing who you are. She reiterated the importance of language within the school's curriculum:

> To me, Indigenous education started way back with our grandparents and our parents… [They taught us that] everyone needs education. And then part of being Indigenous, it reflects who you are; it reflects us as First Nations, what we bring to young people, and who we are. And that I think is very important you know to be role models for the benefit of our young people, our children. And to continue on with the education and plus learning about who they are, too. Having that language and knowledge of who they are, it makes a big impact of being a First Nations. That's what I think.

Her ideas about knowing who you are as a First Nations person and educators serving as role models for students echo Mark's ideas of teachers as role models for students and the link between Indigenous-led instruction and Indigenous pedagogies localized through place.

When D. Kakepetum shared her vision, she circled back to these ideas of Elders as educators to pass on knowledge of culture and language to the next generation:

> I guess this is where we need our Elders and our resources to make our Native language and culture to be continued, I guess, by our young people. And to pass it along from what we learned and then they can carry it on for the next 10 years or the next 20 years so they can pass it along to their children too.

She explained how this happens through Indigenous pedagogies of storytelling:

> We need storytellers, too. We need our Elders to be more involved. We do have our Elders involved in our education here. But the more we have it [storytellers and Elders in

> the school] would make an impact on the young people. They'll see that it is really important for who they are and for their learning.

D. Kakepetum saw intergenerational learning through Elders and storytelling as central to teaching and learning.

Tara worked at Kay-Nah-Chi-Wah-Nung Historical Centre. The site is open year-round while the hours of operation change depending on the season. When the Historical Centre is open "visitors go through, work with the tour guide, learn some [socio-historical and cultural] contexts, learn protocols, and learn about what happened in the area," said Tara. While this is like classroom learning, there is an outdoor, experiential aspect of the programming. Tara continued,

> Then, they go outside—guided by a knowledge keeper through the property (Long Sioux). They learn about [burial] Mounds. They learn about preservation and respect. Burial mounds practices—to offer tobacco to the spirits, put down soil on the burial mounds. They learn about Ojibwe ways.

The purpose of the centre is for Elders to maintain the story of Manitou Mounds as local history. The centre embodies transformative Indigenous pedagogies for its visitors because "it changes mindsets. It changes perceptions. And now there's a greater appreciation [among the public and community members] for what took place in this area," said Tara.

Manitou Mounds privileges place and is part of its creation story (Staniforth, 2019). For this reason, Tara saw Manitou Mounds as a success story within Indigenous education because of the land-based learning that happens there. She explained, "Experiential land-based activities are a really great example of Indigenous education… there's the education of the culture. There's the education of the history. And framing it all."

For Indigenous education, Tara asserted that more could be done for youth for their improved future through stronger governance. She explained:

> Are we talking about educating Indigenous people? … And how are we educating Indigenous people? I think we all agree to focus on the youth. Because we obviously want to have hope that the [education for] youth will improve where we haven't. I think Indigenous education is very broad and it comes back to the theme of governance.

The focus for Tara was on governance connected to First Nations sovereignty. McCarty & Lee (2014) describe tribal sovereignty as "the right of a people to self-government, self-education, and self-determination, including the right to linguistic and cultural expressions according to local languages and norms (Lomawaima & McCarty, 2006; Wilkins & Lomawaima, 2001)" (p. 102). At Manitou Mounds historical centre, Elders and members of the Rainy River First Nation teach community members and visitors about the mounds through Indigenous pedagogies.

In her vision, Tara sees the community as a strengthened approach through collaboration to expand Indigenous education into a larger movement among Indigenous groups with shared goals:

> A lot of us are working on the same mission but we're all charging forth in these separate areas. I feel like if we merged—merged of all these great talents and the great intents—and formed them into one movement. It seems like it's still disconnected. We have a great example of Seven Gens Learning Institute [sic] and yet, I'm guilty of this, we're not

> working together. How can we bridge that? So that we're pooling our resources and we're not having to reinvent the wheel and we're not duplicating in the educational realm. We're all working together better somehow.

Tara expressed her vision of "working together better somehow" as a way to strengthen Indigenous education within the communities in the area.

Through their visions, D. Kakepetum and Tara activate McCarty and Lee's (2014) sovereignty over education through pedagogical practices that align with Indigenous instruction. They described Indigenous pedagogical practices grounded in Indigenous knowledge systems. These practices use place-based (land and water) practices that rely on ancestors and Elders as instructors and follow traditional cultural practices, while passing along these place-based practices to future generations.

Discussion

For the discussion, we return to McCarty and Lee's (2014) and Lee and McCarty's (2017) three aspects of CSRP: advancing Indigenous sovereignty that "attends directly to asymmetrical power relations" (p. 62); revitalizing and reclaiming linguistic and cultural heritages; and, implementing Indigenous community-based accountabilities. We connect each of these aspects to the educators' visions to consider how they envision Indigenous sovereignty over education.

Socio-historical Realities as Equitable Access to Educational Opportunities

The educators' visions for Indigenous education highlight what is missing for Indigenous students today and what they envision for their students. Some participants shared ideas about resources and educational opportunities for students that are available to their peers in provincially run schools. As examples, Brent wanted his students to have the technology opportunities that their peers in provincially funded schools in Ontario have, while Peter sought more academic level courses taught at the school. Many schools in NWO enroll students in the applied stream. This limits students' opportunities for advanced coursework and their ability to apply for post-secondary studies at university. Sadly, Peter's example of limiting Indigenous students' options for coursework and its implications illustrates the legacy of colonization and asymmetrical power defined in CSRP, which we turn to next.

Peter and Brent provided some examples of socio-historical contexts (Lee and McCarty, 2017) in Ontario that show inequitable funding and resources for Indigenous students that attend Indigenous schools. One significant example of structural inequity occurred in 1972 when the Federal Government agreed to but did not devolve control over education to First Nations communities. The Federal Government's failure to devolve has had repercussions for Indigenous learners for 45 years. Further examples (i.e. the Federal Government's 2% cap on funding for Indigenous schools from 1997 to 2016, and the ongoing issues of limited secondary school programming for students that Peter raised) illuminate why the Auditor General (2018, as cited in Sholey, 2018) called Federal Government programs for Indigenous peoples an "incomprehensible failure." These socio-historical contexts counter "the development of a sense of self in students; respect [for] individual, collective, and cultural knowledge; and [the ability to] "cultivate a sense of community and social responsibility (Dei, 2011)" (Iseke & Desmoulins, 2015, p. 49). The educators' visions for students and their families and communities reflect the socio-historical contexts that hinder student success within their schools. These schools

experience inequities for funding and resources in comparison to their counterparts in provincial schools.

Revitalizing and Reclaiming Linguistic and Cultural Heritages Through Indigenous-Led Instruction

A second theme that emerged from educators' visions is the importance of Indigenous-led instruction that integrates cultural teachings, perspectives, and practices. Michelle and Mark both highlighted the importance of teaching and learning accurate, localized, Anishinaabe knowledge from local Elders, knowledge-keepers, and speakers of the local dialects of Anishinaabe. Tara described cultural practices and teaching that connect to place. This vision illuminates the need for Indigenous communities to repatriate education for their communities.

Battiste (2002) asserted that universities should view, "Elders, knowledge keepers, and workers who are competent in Aboriginal languages and knowledge as living, educational treasures. These individuals comprise a functioning Aboriginal university based on Indigenous knowledge and pedagogy" (p. 21). Local Elders and knowledge keepers are key to Indigenous knowledges and pedagogies and, most importantly, to passing along knowledge and ways of doing to the next generation. As D. Kakepetum stated, this is "so that they [the young ones today] can pass it along to their children, too."

Michelle explained the connections between Indigenous educators and Indigenous education when she said, "For educators in schools to provide Indigenous ways of teaching, we need to see it and do it… we need hands-on experience." Mark also reiterated the importance of teachers and learners coming together to learn within an Indigenous education approach. He explained, "It's learning to be Anishinaabe …. Being Anishinaabe is not just something on the wall; it's living it!" These educators help us understand that Indigenous knowledges and pedagogies need activation. This activation occurs when learning is connected to Elders, knowledge keepers, language speakers, the land, and culture. Educators start from what students know and the place they come from to connect to concepts within the formal school curriculum.

Implementing Indigenous Community-Based Accountability as Pedagogical Practices

The educators shared their description of Indigenous education and their visions for Indigenous education within each of their schooling contexts. One thing that comes through all of them is their heart connection to Indigenous education: their visions for students, families, and their communities. Brent and Mark hold accountabilities back to the First Nations communities they serve. The Seven Generations Educational Institute that Brent runs also has accountabilities to members in the urban centres of Kenora, Fort Frances, and Thunder Bay. As the principal, Peter is accountable to the Ministry of Education and the First Nations communities. He explicitly stated his accountability to the 24 First Nations communities that send students to his school, although the education provided by the schools is governed through the Education Act of Ontario and its regulations. He envisioned the high school expanding in ways "that respond to the vision of communities and students." Peter tied accountability to improving students' abilities to excel in all learning environments. D. Kakepetum and Tara's educational programs run in the First Nations communities of Sandy Lake and Rainy River, respectively. Like Brent, Mark, and Peter, they share responsibility back to their communities. The educators' visions reflect what McCarty and Lee (2014) call revitalizing pedagogies, which serve "the needs of Indigenous communities as defined by those communities" (p. 103). Several educators shared

accountabilities to the Ontario Ministry of Education (OME): all shared accountabilities back to their communities.

Conclusion

The educational system founded in colonial assimilative practices does not serve the needs of Indigenous communities who seek Indigenous education sovereignty, while band-aid solutions have existed for too long (Battiste, 1998; Kirkness, 1998). Educators from six Indigenous schools and programs across NWO shared descriptions of their programs and their visions. Their visions unveil a call for Indigenous pedagogies that are grounded within the contexts of their communities and the longstanding need for equitable education; employ Indigenous knowledges that anchor Indigenous-led instruction and pedagogies for land-based teachings, traditional practices, and languages that hold cultural and sacred knowledge; and implement Indigenous community-based accountabilities. The educators' visions illustrate that they seek to apply localized and nationhood contexts of learning for their students, families, and communities. Their work in schools shows how they are serving their communities while being accountable to the OME wherever necessary. Meeting OME requirements ensures that their students have options, if they choose to continue with post-secondary learning. When participants seek agreements in principle for their schools, they acknowledge that their desire for full sovereignty over education is a longer-term goal in the ongoing movement towards educational sovereignty. The educators' visions illuminate how they are forging a path toward sovereignty over education for students and their families, as well as the communities to which they are accountable. We acknowledge their efforts for Indigenous students and for those who have yet to enter school.

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Understanding Meaningful Exchanges: Mathematics Discourse Analysis and Complexity Thinking

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Abstract

The focus in this paper is on the analysis of student-centered discourse through applying a discourse analysis tool that I developed to analyze data from an elementary mathematics classroom. The purpose of the analysis tool is to understand the impact of the complex learning system on the emerging classroom discourse. The minimum conditions for complexity created an invitational space for students that allowed interactions and meaningful exchanges to flourish through exploration of mathematical concepts and collective participation in classroom discourse. The analytic lens provides the teacher with a tool to understand more clearly the dynamics of meaningful exchanges identified as sharing, building, exploring and blocking.

Keywords: Classroom discourse; mathematics education; complexity

Understanding Meaningful Exchanges: Mathematics Discourse Analysis and Complexity Thinking

A concern for classroom teachers in mathematics education is the development of meaningful discourse among students. The effective mathematics teaching practices stated in *Principles to Action* (NCTM, 2014) include the suggestion for teachers to facilitate meaningful mathematical discourse among students in order to build shared understandings. Canadian curriculum documents remind teachers that, "Communication is important in clarifying, reinforcing, and modifying ideas, knowledge, attitudes, and beliefs about mathematics. Students should be encouraged to use a variety of forms of communication while learning mathematics." (NSDEECD, 2014; WNCP, 2006). Recently revised curriculum in British Columbia lists communication as a core competency across the curriculum and, specifically in mathematics, encourages students to communicate effectively "in an increasing variety of contexts, for a variety of purposes, and often with multiple audiences (BC Ministry of Education, 2019). Providing space for meaningful discourse and effective communication proves challenging for teachers working within crowded curriculum and classroom conditions, where student engagement may wane in the face of traditionally repetitive procedural tasks and mundane testing requirements.

When I was a classroom teacher, I understood the benefits for my students in participating in rich mathematical discussion. I also felt the pressures of curricular demands and time constraints which often led to a rise in student anxiety levels and to a dismal drop in student fluency, conceptual understanding and engagement (Willick, 2014). Observing the classroom as a learning collective rather than a collection of learners (Davis & Simmt, 2003) combined with my research in mathematical classroom discourse (Throop Robinson, 2016) underscored significant challenges for the mathematics teacher: What is the teacher's role in developing the classroom discourse? How does the teacher keep students engaged in learning about mathematics, given how much conventional classrooms instruct in what to do and how to do it? What is the best way for the teacher to encourage discourse as a learner/teacher rather than as a single locus of authority? Therefore, my 2016 research on classroom complexity asked and investigated the following questions: Could changing the classroom learning environment increase student engagement as well as fluency in the discourse of mathematics? And, more specifically, could the adoption of conditions that give rise to complex learning systems increase participation in the classroom discourse?

In "Mapping Complexity in an Elementary Mathematics Classroom" (Throop Robinson, 2018), I discussed how I altered the classroom's physical environment and the instructional methodology to create the necessary conditions for a viable system of learners. Complexity thinking in education invites researchers to investigate the classroom as a system of learners (Newell, 2008). These changes dramatically increased student interaction in terms of student movement around the classroom and in conversation. Mapping and documenting this connectivity highlighted the importance of student-centered discourse in developing shared understanding.

In this paper, I focus on the analysis of student-centered discourse through applying a discourse analysis tool I developed to analyze data from an elementary Grade 6 mathematics classroom. The purpose of the analytics tool is to understand the impact of the complex learning system on the emerging classroom discourse. It is my aspiration that teachers and teacher researchers will see the potential in their classrooms to create a complex learning system and will

understand the conditions required to give rise to such a system. In particular, they will have the tools to analyze students' meaningful exchanges by recognizing the patterns of emergence, represented by sharing, building, and exploring, which potentially will lead to the convergence of new mathematical learnings. The analytic lens introduced here contributes to the toolkit of discourse analysts and teacher researchers, who seek effective ways to increase student engagement in mathematics discourse. Therefore, my primary question is—In what ways, and to what extent, do students engage in mathematical discourse when the conditions for a complex learning system are met?

I begin with a brief overview of complexity thinking, the theoretical perspective guiding my research. I next highlight significant contributions, relevant to my question, of other researchers in the field of classroom discourse. To locate my classroom research, a description of the research context follows (i.e., setting, goals, topics and methods for analysis). However, the bulk of this paper will then focus on the use of my analytic tool and a discussion of the main findings of the discourse analysis, along with a view to possible future iterations of this study.

Theoretical Perspectives

Complex Learning Systems

This research investigates the mathematics classroom through the lens of complexity thinking. Complexity thinking enables educators to conceive of their role differently. The learning collective assumes responsibility for "taken-as-shared" knowledge (Cobb et al., 1992) that emerges less from a single body and more from a self-organizing network of learners including simultaneously students and teacher (Maas & Maas, 2005). What is required of learners is active engagement in conversation, giving rise to new ideas and ways of knowing (Miranda, et al., 2006). Informed by complexity thinking, Davis & Sumara (2006) described the learner as the collective itself rather than as the individual. As they stated, "Somehow … collectives develop capacities that can exceed the possibilities of the same group of agents if they were made to work independently" (p. 81). Complexivists refer to this phenomenon as *emergence* that is, in an educational context, what Wheatley & Frieze (2007) described as "a powerful cultural shift that then greatly influences behaviors and defines accepted practices" (p. 35). Such a shift brings new levels of skills and capacity for participants that were not present in individual efforts and far exceed any sum of their separate efforts. From wide-scale commentaries in education (Doll, 1993; Osberg & Biesta, 2007; Sawada & Caley, 1985) to smaller-scale classroom studies (Burns & Knox, 2011; Davis & Simmt, 2003; English, 2008) descriptions and analysis of *complex learning systems*, as they have come to be known, provide an alternative lens through which to view students and classrooms.

Davis & Simmt (2003) argue that the necessary minimum conditions to sustain a viable and complex learning system promote communication and productive discussion among students while strengthening student-to-student networks. The minimum conditions for complexity include, "(a) internal diversity, (b) redundancy, (c) decentralized control, (d) organized randomness, and (e) neighbor interactions" (Davis & Simmt, 2003, p. 147). When these conditions are met, emergence as a phenomenon of complexity occurs. Emergence is represented by the awareness of new possibilities, new ideas, or new ways of being. And, as the complex learning system strengthens, that which is emerging converges into a new order (Johnson, 2001; Urry, 2005).

Harrison Owen (1997), an author and large group facilitator, developed a simple meeting format that meets all of the above conditions in *Open Space Technology: A User's Guide*. For my research, I adapted, due to constraints of space and student time-tables, Owen's methodology for the classroom. Open Space Technology (OST) is an instructional methodology that relies on decentralized control, self-organization, and neighbor interactions (Owen, 1997; Throop Robinson, 2018). OST provides students the time and space to play with new ideas and ways of being, on topics of interest and in group configurations chosen by the students, in hopes of changing the discourse and generating new ways of knowing. This supports Sfard's (2007) recognition that learning mathematics requires changing its own discourse to modify students' existing everyday discourses. Sfard (2008) considered discourse to be a phenomenon of thinking and interpersonal communication. I adopted her conceptualization of mathematics as a discourse or form of communication that is distinguishable by its word use, visual mediators, routines, and narratives to build my own analytics tool.

As I touch upon all of the above conditions in this paper, I will focus on the student-to-student interactions and their meaningful exchanges fostered through the intervention of OST in the classroom. Understanding more fully these meaningful exchanges and their emergent patterns may provide insight into the development of meaningful discourse for teachers and promote more effective communication among students. Furthermore, the analytics tool, which I developed for the teacher-researcher, is intended to provide a lens through which the discourse is seen and analyzed.

Classroom Discourse

A significant body of research on classroom discourse provides extensive considerations of the many ways of communicating in the classroom (Barwell, 2005; Herbel-Eisenmann & Otten, 2011; Manouchehri, 2007) and the "speaking rights" of the participants (Cazden, 2001). Cazden's conception of classroom discourse informs my research as she explores critical questions such as: Who gets to participate in classrooms? How do they participate during classroom interactions? How does the classroom discourse privilege or disadvantage students? Cazden's data showed teachers predominantly using a predictable three-part sequence in traditional lessons: teacher initiation, student response, and teacher evaluation (IRE). She also noted that in non-traditional lessons the IRE sequence was less prominent as students were granted more speaking rights, or less prominent depending on "the ways by which students get the right to talk—to be legitimate speakers—during teacher-led group activities" (Cazden, 2001, p. 82). By granting more speaking rights, "each student becomes a significant part of the official learning environment for all the others and teachers depend on students' contributions to other students' learning, both in discussions and for the diffusion of individual expertise through the class" (Cazden, 2001, p. 131). This is consistent with a complexity thinking view where contributions of individuals give rise to a collective body of knowledge. Herbel-Eisenmann & Cirillo (2009) reiterate this in their description of purposeful classroom discourse that develops through focused and determined efforts by students to build understanding with each other through their mathematical language use. In complexity thinking, meaningful exchanges fuel emergence. Meaningful exchanges are those communications that lead to transformation and the building of new insights or new ways of knowing that transcend the original body of knowledge (Olson & Eoyang, 2001). Conversely, behaviors that inhibit the sharing of knowledge block or interrupt emergence.

Substantial research on classroom discourse explores diverse ways in which students and teachers communicate, often focusing attention, in the mathematics classroom, on teacher-student talk, with emphasis on transmission models of teaching and cooperative approaches to participation and/or engagement in mathematics (Cobb et al., 1993; Forman & Ansell, 2001; Pimm, 1987). In contrast, Sfard (2007) broadened the definition of discourse to include "the different types of communication that bring some people together while excluding some others" (p. 573). Sfard also suggested a metaphor to highlight the importance of mathematical conversation in learning: *thinking-as-communicating* (Sfard & Kieran, 2001). By focusing on the social nature of the individual student, Sfard argued that learning mathematics means becoming fluent not only in the mathematical language or vocabulary but the broader and richer production of discourse. Sfard conceives of mathematical discourse as the use of four inter-related features, including mathematical word use, visual mediators, routines, and narratives. Learning, according to Sfard, is initiation into mathematical discourse and so requires an understanding of the mediating tools of interpersonal communication and the meta-discursive rules that shape and guide the general course of communicative activity.

Although research conducted in mathematics education through the lens of complexity (Doll, 1989; Kieren & Simmt, 2009; Reeder, 2005) provides data for describing the necessary minimum conditions, few researchers suggest practical ideas for teachers to use in creating conditions for emergence, and fewer still, provide analysis of students' voices within a complex system. In mathematics, where thinking, or cognition, and communication necessarily go hand-in-hand, as Sfard's (2008) neologism, "commognition," implies it is vital that teachers find ways to stimulate meaningful communication and acquire tools to analyze the emerging discourse, so as to inform their pedagogy.

Research Context

Research Setting

I conducted this research within a community school set in a rural county of Nova Scotia, Canada. There were 10 boys and 13 girls in the Grade 6 class taught by one teacher with 14 years of experience at the elementary level. There were no visible minorities among these 23 students. Six students were receiving literacy support from a coach and two students were meeting with the itinerant teacher for mathematics support. The teacher described the overall achievement of the class in mathematics as average to low and generally stronger in the areas of literacy and social studies.

Goals of the Research Study

The primary goal of my research was to understand how and to what extent students participate autonomously in mathematical communication at the elementary level and to understand how student-centered mathematical discourse develops. Therefore, my goal differs from previous studies where the focus remained primarily on the role of the teacher and methodologies for teachers to try in order to promote, scaffold or develop discourse in the mathematics classroom (Chapman, 2009; Garrett, 2008; Nathan & Knuth, 2003).

As opposed to orchestrating a teaching experiment, I introduced the minimum conditions for complexity to increase autonomy, thereby creating an invitational space for student to explore independently their understandings of mathematical concepts and to participate collectively in the discourse of mathematics. Commensurate with a postmodern view of mathematics as

tentative and embedded in human practices (Ernest, 1993), I was inspired by Owen's (1997) comment for OST facilitators to "be prepared to be surprised" as opportunities for increased neighbor interactions and autonomy diminish teacher authority and encourage students' mathematical knowledge to emerge in unconventional classroom conversations.

In my study, the teacher's and researcher's roles were to hold the space open (Owen, 1997) for student autonomy, allowing interactions and meaningful exchanges to flourish. Decentralized control of the space fostered accountability and responsibility in students who made self-directed choices to move (or not) through the space. In what follows, I describe the results of the students' choices and analyze how the necessary minimum conditions for the complex learning system created possibilities for meaningful exchanges to occur.

The Research: Conversation Circle Topics

Sitting in one large circle, students were invited to propose topics for conversation. When a student offered a topic, they assumed the role of convener: to introduce the topic and to document the ensuing conversation. The following are examples of topics brought forth by the Grade 6 students:

- Donnie: Patterns and Patterning in Times Tables,
- Ethan: Word Problems,
- Marcus: Strategies in Operations,
- Claire: Art and Design in Mathematical Forms.

Students were given time to self-organize around topics of interest and meeting spaces. Relocated from their conventional Grade 6 classroom of desks and tables to open and fluid conversation circles, students freely moved about the room and quickly found ways to participate. As they considered which conversation circles to join, a cacophony of voices and chaotic movements followed. Corrigan's (2002) notion of "freedom shock" aptly describes the students' exuberant responses to such unprecedented amounts of choice and responsibility. Although OST provided a new and different format for the Grade 6 mathematics class, students reminisced about primary school storytelling circles. One student asked, "Are we supposed to feel like we are in Kindergarten again?" and another responded, "We can play telephone!" referring to the popular campfire game of whispering a message through a sequence of people that is typically played in a circle. This unusual setting in the mathematics classroom is nevertheless familiar to students and they quickly adjusted. Multiple audio and visual recordings stationed around the classroom captured the students' experiences of OST and the details within each conversation circle. These recordings documented students' movement and discourse, providing rich data for analysis.

Analysis

The data were analyzed iteratively with each pass focusing on one of the minimum conditions of complexity thinking necessary for emergence. I completed three iterations of analysis (see Table 1) to code the data. I documented the coding process to highlight the "language-in-use" (Gee, 2011) found in the data and then developed a discourse lexicon (see Appendix A) to assist teachers in the analysis of classroom discourse. The lexicon began with the first pass through the transcribed data to show instances of meaningful exchanges among students. Two subsequent passes through the data revealed themes and conversation threads among the conversation

groups. I used these to organize the lexicon into emergent patterns found in the data. In its totality, the three iterations form an analytic lens for classroom discourse. For teacher researchers, using the tool connects complexity thinking theory and discourse analysis methods by making visible the dimensions of meaningful exchanges occurring (or not) in the classroom.

As per Table 1, in the first iteration of the analysis, I focused on the internal diversity, redundancy, and decentralized control of the learning system. I observed and documented the self-organization of students, namely, how they formed and reformed their physical groupings and how they chose to engage in conversation. Coding was used to unpack the nature of discourse and to show the extent to which the students participated in univocal (transmitting, receiving information) and dialogic (generating, listening, questioning) discourse (Knuth & Peressini, 2001). I built upon Truxaw and DeFranco's (2008) model for mapping mathematics classroom discourse and conducted line-by-line coding of transcripts. Throughout the first iteration of the analysis, the coding of students' physical grouping (whole class, small groups, dyads, individual) as well as the univocal and dialogic discourse structures in use made visible the extent to which control was decentralized and self-organization was present. Although students demonstrated significant capacity for self-organization, I also identified typical IRE (initiation, response, evaluation) patterns of interaction, including "teacher mimicry and illusory participation" (Truwax & DeFranco, 2008, p. 491). The IRE triad highlighted the occasional persistence of teacher mimicry, as an obstacle to authentic student self-organization.

In the second iteration, I focused on neighbor interactions to analyze the development of student discourse as ideas arose and moved around the room, within organized randomness (i.e., the balance of constraints on student activity and the freedom to move and engage). OST provides enough structure and choice to enable productive self-organization, hence the term liberating constraints (Davis et al., 2008). Organized randomness opens a space of opportunity in a learning system for discourse to develop through meaningful exchanges; however, the openness is not unbounded. The structure of OST (e.g., agenda topics, convener and note-taker, and rules of engagement) ensures some organization, while allowing for some autonomy (e.g., the choice to join and contribute to one's preferred conversation circle and topic; the choice to move freely between conversation circles to ensure continuous learning or contribution; as well as, the choice to move outside of the circle formations and not participate). Stated somewhat differently, some structure *contains* student activity, *without limiting* discursive or creative possibilities. Teachers who work with the minimum conditions of complexity, such as organized randomness, may see a shift in student talk and classroom discourse as neighbor interactions bolster communication of mathematical understanding.

In the analysis of student discourse, I coded these possibilities as discourse functions (see Table 1), including initiating an opinion, giving information, elaborating, contextualizing, or evaluating ideas (Rymes, 2008; Setati & Barwell, 2006; Xu & Clarke, 2013). As part of this second iteration, I also coded mathematical discourse consistent with Sfard's (2007) framework of word use, visual mediators, routines and narratives as students turned to problem solving, reviewing and representing their forms of mathematical knowledge. I included a full list of codes in the discourse lexicon (see Appendix A) to provide teachers with a range of students' discursive moves for analysis. In addition, I created a discourse analysis table (see Appendix B) to further elaborate on each code used in the analysis. The discourse analysis table provides teachers with details about student dialogue and what to listen for as classroom discourse develops. I aligned these with examples from the data generated by the OST sessions to show the

discursive moves associated within a specific discourse phase. These discourse phases became clearer to me as I moved through the third iteration of data analysis.

Table 1

Complexity Thinking Analytic Lens for Classroom Discourse

Complexity Thinking: Necessary Minimum Conditions		**Overall Discourse Focus**	**Mathematics Classroom Discourse Focus: To What Extent do we See, Hear and/or Experience Student Talk**
First Iteration	Internal diversity	Participant's physical groupings/movement	Whole class, small group, dyad, individual
	Redundancy		
	Decentralized control	Discourse structures	Univocal—transmitting, receiving Dialogic—generating, listening, questioning
			Initiation, response, evaluation triad (including teacher mimicry and illusory participation)
Second Iteration	Organized Randomness	Discourse function	Initiating an opinion, Giving information, Agreeing, Encouraging, Clarifying, Elaborating, Re-voicing, Contextualizing, Complementing, Conjecturing, Evaluating, Self-reflecting
	Neighbour Interactions	Mathematical: 1. Sequence orienting 2. Forms of knowledge 3. Discourse use	Mathematical: 1. Commenting, organizing, problem solving, reviewing 2. Procedures, concepts, strategies 3. Word use, visual mediators, routines, narratives
Third Iteration	Emergence	Meaningful exchanges: Identifying emergent patterns	Sharing (e.g., offering, receiving, connecting) Building (e.g., organizing, reasoning) Exploring (e.g., testing ideas, playing with ideas, applying knowledge)
		Blocking: identifying obstacles to emergence	Telling more than listening, interrupting, controlling space, rejecting, criticizing

My third iteration focused on identifying emergent patterns within the student discourse. One pattern, I named "Sharing." This type of meaningful exchange represents offering an opinion or information; connecting with others through personal experience or stories; and accepting and encouraging others' ideas. A second pattern, "Building," signifies elaborating on or linking ideas to what others are saying. This type of meaningful exchange shows students orienting ideas through broader perspectives on issues, organizing thinking into greater coherence, and constructing or representing concepts through visual mediators. I termed a third meaningful exchange "Exploring." This pattern includes evidence of students' original and creative thinking (e.g., testing their ideas or make conjectures); expression of playfulness (e.g., entertaining new avenues of possibility, such as integrating poetry and mathematics, conveying a playful mindset in how they approach mathematics); and, articulation of "what-if"' possibilities in their investigations (e.g., evaluating proposed arguments, applying learning or new learning in new contexts, self-reflecting on ideas).

OST conversations give students the latitude to play around with their topics, encouraging mathematics discourse. This self-organized "play" yields opportunities for students to orient themselves towards exploring ideas. Davis (1996) reminded teachers that, "Playing must be thought of as a sort of *bricolage*—an engaging in particular activities because one is able to do so, not because they are directed toward achieving any knowable ends. The function of playing is to open a space of possibilities" (p. 220). If students see the classroom as a space where play is possible and encouraged, then a different experience might await, replacing the expected work of the conventional mathematics class with joyful, unstructured activity leading to unknown possibilities and new knowledge.

During this iteration, I also noted student talk that could function as an obstacle to emergence and coded these as "Blocking," which included telling more than listening, interrupting, controlling space, rejecting ideas and criticizing others. Blocking is often counterproductive to nurturing emergence, often preventing an idea from moving forward or creating a loss of focus so the idea is not fully developed and thereby compromising meaningful exchanges.

Self-organizing systems rely on meaningful exchanges to generate possibilities (emergence) that lead to a new order (convergence). The analytic tool of sharing, building, exploring and blocking, described above, provides the teacher researcher with a tool to understand more clearly the dynamics of meaningful exchanges. The discourse lexicon (see Appendix A) and discourse analysis table (see Appendix B) further clarify for teachers the types of meaningful exchanges found in the data with specific student dialogue examples. These examples parallel the coding used in each discourse phase as a means to support future classroom discourse analysis.

Meaningful Exchanges Using the Analytic Lens of Sharing, Building, and Exploring

Below are selected excerpts from conversations that took place with Grade 6 students participating in OST. I organize the descriptions according to the meaningful exchanges from the conversations. These excerpts are edited for readability and brevity. I omitted short segments of text for clarity; however, no words were changed from the transcripts. Teachers may recognize the sometimes disjointed feel of the students' conversations. This, in part, may be due to the self-organizing principle of OST (Owen, 1997; Throop Robinson, 2018), and the opportunity for physical groupings of students to change even as the conversation continues. Every effort to

identify students as they contributed to a conversation was made through the audio recordings. Visual recordings helped to confirm a student's presence in a conversation circle and also recorded those students who were present but did not contribute verbally to the discussion.

I present an analysis of the selected transcript excerpts to illustrate how students use the discourse of mathematics to share, build and explore knowledge with each other. While other conversations remained significant in other ways, I chose to focus on these examples as they show more clearly the extent to which meaningful exchanges became visible within the learning system.

Sharing (e.g., Offering, Receiving, Connecting, Clarifying)

Students who chose to talk about "Patterns and Patterning in Times Tables" began their conversation with an initial sharing of what they thought the topic involved. The convener of the circle, Donnie, opened the conversation by initiating an opinion.

Table 2

Conversation About Patterns and Patterning in Times Tables: Introduction

Speaker	Dialogue	Type of Meaningful Exchange
Donnie	I think the patterns are the key things to the times tables because you're just going up.	Sharing (Initiating an opinion
Ben	I know.	Sharing (Agreeing, Receiving an idea)
Laura	I think so	Sharing (Receiving an idea)
Katelyn	Maybe.	Sharing (Connecting with others' ideas)
Ben	One times 38.	Sharing (Giving an example)
Donnie	I think it is easier to use number patterns	Sharing (Offering an opinion)
	[Overlapping voices]	
Katelyn	Ok Donnie, make up something else	Building (Encouraging others to build ideas)
	[Inaudible]	
Donnie	So, in general what could patterns be used for?	Sharing (Encouraging others to share)
Ben	Patterns could be used for everything.	Building (Linking ideas)
Donnie	I know. When you think of it, it could be used for … anything.	Sharing (Accepting others ideas)

Katelyn	They could be used to help you with math.	Building (Re-voicing)

Note. What is significant to note in this introduction to a conversation are the students' efforts to generate ideas and accept the ideas on offer. Sharing of opinions and examples, prompting of further sharing and re-voicing of shared knowledge, set the stage for more meaningful exchanges.

The group continued to share ideas about patterns back and forth in this way, prompted again by the convener Donnie.

Table 3

Conversation About Patterns and Patterning in Times Tables: Development

Speaker	Dialogue	Type of Meaningful Exchange
Donnie	What's something else that patterns could be used for?	Sharing (Encouraging others to share)
Ben	Like they could be used for counting. They could be …	Sharing (Giving an example)
Laura	Yeah.	Sharing (Agreeing)
Ben	Like even… even, you know. Ahh… say you want to count something in a row.	Sharing (Giving an example)
Andrew	Very interesting topic.	Sharing (Making observations)
Ben	Like if you want to count the cars, you can count two at a time … like 2 4 6 8 10 12 and that's like a pattern. Like that.	Sharing (Contributing mathematical routine)

Note. As the conversation developed, more sharing was encouraged and ideas on offer were taken up and agreed upon. This led to Ben's sharing of the mathematical routine of patterning using multiplication facts.

The group continued to share information with each other, all the while linking the general discussion of patterns more and more closely with their stated topic (See Table 4).

Table 4

Conversation About Patterns and Patterning in Times Tables: Linking Patterns

Speaker	Dialogue	Type of Meaningful Exchange
Laura	I think that patterns are like this.	Sharing (Clarifying ideas), Building (Representing through visual mediators)
Ben	Patterns … all you need to do is find it.	Sharing (Offering an

		opinion)
Katelyn	Maybe patterns are used to help you.	Sharing (Offering an opinion)
Laura	Yeah.	Sharing (Agreeing)
Donnie	I think that they are.	Sharing (Offering an opinion)
Ben	You just have to add the number that you want.	Sharing (Contributing mathematical routine)
Laura	Times ten.	Sharing (Giving an example)
Donnie	I think that patterns are…	Sharing (Offering an opinion)
Ben	Times tables.	Building (Elaborating on ideas)

Note. Sharing an opinion took centre stage in the conversation as students engaged with the topic by making meaningful connections for each other.

Ben generalized the mathematical routine as Laura offered her visual mediator (see Table 6) as an example of patterning in the 10 times table.

Table 5

Laura's Visual Mediator

1	X 10	10
2	X 10	20
3	X 10	30
4	X 10	40
5	X 10	50

Further evidence of sharing occurs through story fragments as students began to offer ideas about patterns that connected with prior experiences. For example, a little later on in this group's conversation, Donnie invited others to share experiences on the topic.

Table 6

Conversation About Patterns and Patterning in Times Tables: Sharing Experiences

Speaker	Dialogue	Type of Meaningful Exchange

Donnie:	How about each of us tell a story about something that happened to them when they had to use patterns? Let's tell a story when each of us had to use patterns.	Sharing (Encouraging others to share)
Ben:	I use patterns all the time…	Sharing (Relating personal experience)
Laura:	You never know where…	Sharing (Receiving an idea)
Ben:	…like on games there are patterns.	Sharing (Relating personal experience)
Donnie	Like on video games.	Sharing (Giving an example)
Laura	Yeah.	Sharing (Agreeing)
Donnie	I use patterns going up to Halifax.	Sharing (Relating personal experience)
Laura	You see them every day.	Sharing (Receiving an idea)
Donnie	Like from the car.	Sharing (Relating personal experience)

Note. The students' offerings became more personal as students began sharing stories about using patterns outside the school and in a variety of contexts. Full transcripts of the conversation document Donnie's story about playing video games where he constantly recognizes patterns and during his car trip to the city. Willingness to relate personal experiences among peers in this way indicates the comfort that students feel with each other.

These exchanges are meaningful for a number of reasons. First, there is clear evidence of students sharing in conversation as they make connections to personal life experiences and use mathematical words to offer examples about the topic that are meaningful to them. Their examples show understanding of mathematical concepts as students use patterning narratives to describe their use and relate them to familiar routines in multiplication tables. Secondly, the engagement in the topic is clearly felt with each contribution that the students share. The students' input drives the conversation forward as each comment is accepted, inspiring others to make additional connections and share from their own perspective. Thirdly, students use the device of story fragments and the term "story" to motivate the conversation. These students predominantly chose to stay with this conversation circle throughout the math class, demonstrating engagement by their comments and questions.

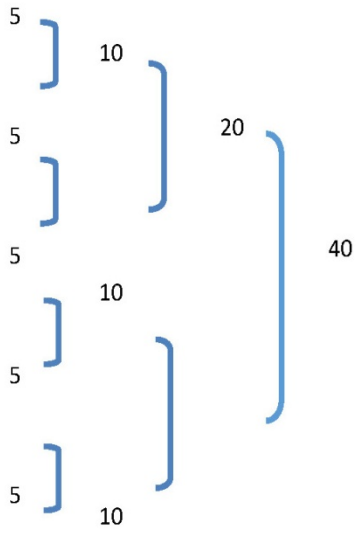
Building (e.g., Elaborating, Linking, Re-voicing, Organizing, Reasoning)

In the "Patterns and Patterning in Times Tables" conversation, the student talk shifted from sharing facts about patterns to building knowledge. Ben, working independently at first, drew a mathematical strategy to show others how he used a pattern to find solutions in

multiplication (see Figure 1). In general, students did not make use of visual mediators in their mathematics discourse; however, Ben's example proved to be meaningful for his group, as many of those students recorded similar visual mediators in their journals.

Figure 1

How Students Take up Patterning in Multiplication



Note. This sequence shows how students take up Ben's doubling patterning in multiplication to represent and construct their mathematical strategy piece by piece.

Table 7

Conversation About Patterns and Patterning in Times Tables: Efforts to Clarify Mathematical Thinking

Speaker	Dialogue	Type of Meaningful Exchange
Katelyn:	Ok wait, so what's our numbers?	Building (Organizing thinking)
Ben:	Put 8 fives down and look at the pattern...	Building (Reasoning in mathematical context)
[unknown]:	Times table.	Building (Contextualizing)
Ben	…and then you do the same thing with that… so, 20. Isn't that cool?	Building (Constructing mathematical concepts
Katelyn	Hanna, look at this … put 8 fives down … and then put … put that bar and what it equals.	Building (Representing through visual mediators)
Hanna	5, 10.	Building (Elaborating on

		ideas)
Katelyn	Yeah. Just put that bar and what it equals.	Building (Linking ideas)
Hanna	10.	Building (Elaborating on ideas)
Katelyn	Then you put two bars together for 10… equals 20 and then each equals 40.	Building (Reasoning in mathematical context)
Hanna	What do you mean like?	Sharing (Clarifying ideas)
Hanna	Ohhhh….	Sharing (Connecting with others' ideas)
Katelyn	Works out really cool.	Building (Complementing ideas)

Note. Taken together, Ben's introduction of the doubling strategy and his visual representation of the problem in his journal, along with Katelyn's remodeling of the instructions and the problem for Hanna, indicate efforts in this circle group to clarify their mathematical thinking via verbal and visual information and to build upon their mathematical knowledge with each other.

After the above discussion, Ethan joined the group. Ethan took responsibility for his own learning by choosing to leave his original group and join the patterning conversation. Ben welcomed Ethan, specified the immediate subject of conversation, and then proceeded to revisit the patterning strategy with him from the beginning. Ben confidently rebuilt the question for Ethan by retelling the patterning sequence and representing it visually on paper while Ethan elaborated on the pattern with his own problem: 12 x 12.

The relocation of mathematics to circle conversations, combined with movement between the conversations, helped students construct knowledge. Firstly, this cross-pollination of ideas through neighbor interactions built a new series of problems for this group to solve, based on Ben's doubling strategy. Secondly, a willingness to welcome new arrivals provided opportunity for the group to take more ownership of their math work. Explanations to the newcomer from various members were fluid and supportive, as they organized and demonstrated Ben's strategy. As a result, Ethan's role as a newcomer to this conversation circle helped solidify and spread the learning.

Other examples of building are seen in the "Art and Design in Mathematical Forms" conversation. Claire, the convener, suggested a challenging task. In doing so, she set the stage for her peers to work toward building on one another's ideas in the session. Immediately following the group's formation, she asked those present to create poems about mathematics collaboratively (see Table 8).

Table 8

Conversation About Art and Design in Mathematical Forms: A Collaborative Mathematical Challenge

Speaker	Dialogue	Type of Meaningful Exchange

Claire:	Ok. There was this game that I saw on the Internet a while ago … what you do is you take one starting word and then you go around in a circle and everyone will write the first thing that comes to their mind when they read the word that was written down above theirs and then you write it down and then you pass it to someone else and then, say if we started with the word eyeball, and then someone said blue, and then the next person said clouds, and the next person said sky and if the next person thought that the first thing that came to their mind from sky was water and it would start a whole new different topic.	Building (Encouraging others to build on ideas)
Overlap:	Oh, cool.	Sharing (Agreeing)

Note. Claire's willingness to share her experience puts an idea in the space for consideration and also signals her desire to move the group in a particular direction with a specific idea. Claire's collaborative mathematical challenge is unlike anything the students have come to know as "doing mathematics." Her activity invited engagement with a mathematics topic through language with the aim of creating a concrete outcome (a poem).

Claire's task challenged students to build on each other's ideas as they created the poem—a collaborative practice. It also simultaneously shifted their language use into a mathematical context, thereby establishing a link between numeracy and literacy learning. With Claire's insistence that their poem begin with a mathematics word, Hanna offered the first word to initiate the collaborative process. Claire guided the process and transcribed as the other students built the new mathematics poem:

Table 9

Conversation About Art and Design in Mathematical Forms: Linking Ideas and Organizing Thinking in a Meaningful Way

Speaker	Dialogue	Type of Meaningful Exchange
Claire	What word should we start with next?	Sharing (Encouraging others to share)
Anna	Pizza.	Sharing (Giving an example)
Claire	No, we should start with a math word.	Building (Orienting through broader perspective)
Hanna	Like dividing.	Building (Contextualizing)
Claire	First word that comes to mind.	Building (Encouraging others to build on ideas)
Amanda	Adding.	Sharing (Giving an idea)

Emma	Subtracting.	Building (Complementing ideas)
Hanna	What are you putting down?	Sharing (Clarifying ideas)
Claire	Plus sign.	Building (Complementing ideas)
Amanda	For adding.	Building (Linking ideas)
Claire	Numbers plus sign.	Building (Complementing ideas)
Hanna	You should put adding.	Sharing (Offering an opinion)
Claire	What?	Sharing (Encouraging others to share)
Chantal	Red Cross.	Building (Complementing ideas)
Anna	Favorite numbers.	Sharing (Offering an opinion)
Claire	Cool.	Sharing (Agreeing)
Hanna	Can I read them?	Building (Organizing thinking)
Claire	Sure.	Sharing (Agreeing)
Hanna	Division, math, numbers, adding, plus sign, red cross, favorite numbers.	Building (Re-voicing)

Note. Sharing continued at this conversation circle in a variety of ways: eliciting ideas, offering opinions, and clarifying comments. Additionally, students began to run with Claire's proposal and began elaborating on it by building mathematical context around the word play. Students added on to each other's ideas by linking ideas and organizing thinking in a meaningful way as Hanna demonstrated in her final re-voicing of the group's ideas. Of note is the initial stance that Claire assumed as the convener of this conversation. Initiating a new task prompted the students to share ideas and her generative comments encouraged them to build a math poem together, largely without directing the sequence. Through building, these meaningful exchanges represent genuine collaboration.

In this sequence, Claire and her peers had decided to "do mathematics" in a very different way. Claire's integration relocated mathematical thinking in the minds of her peers from a stand-alone subject area to one that encompasses at least one other subject area by building on the literacy model and opens the door to link mathematics potentially with other disciplines across the curriculum. Claire's topic indicates a belief about mathematics' broad applicability, with the potential to explore links across subject areas. Even Claire's title for the group, "Art and Design in Mathematical Form," expresses her topic in a way that promoted subject integration with her

peers, opening the subject up to greater possibilities than students would normally anticipate in a mathematics classroom.

The self-organization of OST allows for thought-provoking and perhaps unconventional topics, which in turn gives others an opportunity to participate in unexpected topics. Traditional spaces would make such student suggestions more difficult to surface. Or, teachers might evaluate what is a good idea or task and what is not, thereby potentially block or dismiss students' interests. The freedom for students to create their own conversations allows for sometimes surprising results and often leads to unexpected creative outputs.

Exploring (e.g., Expressing Playful Mindset, Testing Ideas, Evaluating, Self-Reflecting)

Students' enthusiasm and sense of play at the beginning of the "Patterns and Patterning in Times Tables" conversation demonstrates a mindset conducive to exploration. Students expressed the notion that they might have some fun while doing math. This comment indicates a student's sense of curiosity and play in exploring mathematical ideas. While working to find patterns in the times tables, the convener offhandedly made a comment that leads to play (see Table 10).

Table 10

Conversation About Patterns and Patterning in Times Tables: Playing With Patterns

Speaker	Dialogue	Type of Meaningful Exchange
Donni	Sometimes you just do it for fun.	Exploring (Expressing playful mindset)
Ben	I know. Sometimes you just want to have some fun.	Exploring (Expressing a playful mindset)
Marcus	I think that this group is really cool.	Sharing (Making observations)
Anna	Because Jason's group is talking about wrestling.	Sharing (Offering an opinion
Ben	You need patterns to make the tables.	Exploring (Conjecturing about possibilities)
Marcus	I'm going to go walk around, okay?	Sharing (Giving information)
Donnie	Okay.	Sharing (Agreeing)
Ben	Okay, I'll read what I wrote.	Sharing (Giving an example)

Note. The mindset expressed led the students to play around with patterns in multiplication, creating potentially new possibilities for knowledge building. Marcus, a visitor to the group, listened to the conversation from outside the circle and offered positive feedback. ("This group is cool"). Such encouragement helped to sustain exploration.

In the following segment, the teacher overheard the conversation and offered her own observation and additional words of encouragement. She did not alter the course of the conversation but simply helped sustain it, allowing the group to move from Ben's earlier demonstration of a doubling pattern in the times tables to exploring the strategy further (See Table 11).

Table 11

Conversation About Patterns and Patterning in Times Tables: Building Understanding Through Reasoning Together and Testing Out Possibilities

Speaker	Dialogue	Type of Meaningful Exchange
Laura	Let's find out a different pattern because this is really cool like…	Exploring (Playing with ideas)
Donnie	Uh… how about nine?	Exploring (Testing ideas)
Laura	Nine?	Sharing (Receiving an idea)
Ms. Stuart	There is definitely a pattern in nine's.	Exploring (Evaluating proposed arguments)
Katelyn	We had eight fives and then we doubled them and that equals….	Building (Constructing mathematical concepts)
Laura	10 … and then 20 … double again and that equals 40.	Building (Elaborating on ideas)
Ms. Stuart	That's awesome.	Sharing (Offering an opinion)
Katelyn	We made it really easy.	Exploring (Evaluating proposed arguments)
Donnie	How many nines do we have?	Sharing (Encouraging others to share)
Ben	It's got to be an even number of nine's or it won't work.	Exploring (Conjecturing about possibilities)
Katelyn	Huh?	Sharing (Clarifying ideas)
Donnie	An even number? Ok so, how many are we going to have?	Exploring (Encouraging others to explore ideas)
Katelyn	Eighteen … no, nine.	Building (Elaborating on ideas)
Laura	Eight… eight…eight	Building (Organizing thinking)
Donnie	No, nine.	Sharing (Clarifying ideas)
Ben	You got to have an even number.	Building (Orienting through broader perspectives)
Donnie	So the next one is even.	Exploring (Conjecturing about possibilities)
Ben	What's 18 and 18?	Exploring (Applying knowledge)

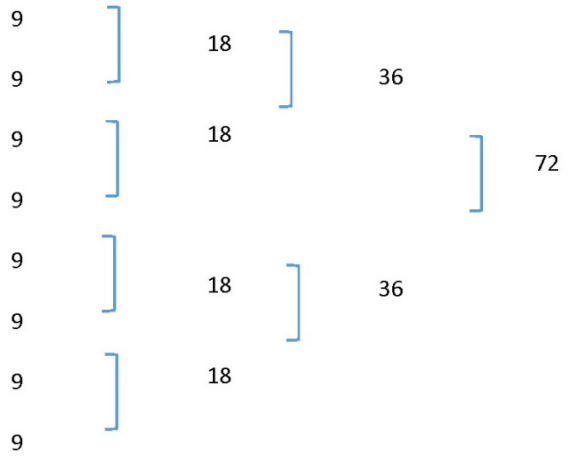
		Building (Representing through visual mediator)

Note. This longer sequence follows students as they build their understanding through reasoning together and begin testing out possibilities. For students, elaborating on ideas, added on to their understanding of mathematical procedures and strengthens mathematical concepts. Ultimately, this opened a space for play and conjecturing in the conversation as Ben's observation about selecting an even number of digits indicates. Donnie picked this up and played with the idea through a visual mediator to document the conjecture and to show his reasoning.

In this way, Ben's insistence on having an even number of numbers in order for his doubling strategy to work provided an occasion for the group to delve into unknown territory and explore new possibilities in the realm of number theory. Asking questions such as, "What would happen if you multiplied an even number of odd numbers (e.g., 3 × 3 × 3 × 3) or an even number of even numbers (e.g., 2 × 2 × 2 × 2)?" or, "What would happen if you multiplied an odd number of odd numbers (e.g., 3 × 3 × 3) or an odd number of even numbers (e.g., 2 × 2 × 2)?" opened the door to a wider conversation that integrated patterning concepts naturally with multiplication concepts. Students began to consider these patterns from the level of multiplicative thinking rather than relying solely on earlier conceptions of multiplication as repeated addition or, perhaps, memorization of facts. A systematic investigation of such issues in number theory allows students to consider what makes sense in any given situation, to deepen their understanding of number relationships and so develop a broader sense of numeracy and confidence in problem solving. Ben and Donnie did exactly this in their exploration of pattern (See Figure 2).

Figure 2

Ben and Donnie's Visual Mediator



To understand more fully the dynamics of fun, creative energy, and exploration, an excerpt from the "Strategies in Operations" conversation reveals how a new voice can infuse the group with new energy, influence a new exploration, and generate a more fun-filled and engaging experience for all, including those who are resistant to doing more work. As the "Addition Strategies" circle began to explore their topic, Chantal opened up the context for problem solving strategically (See Table 12).

Table 12

Conversation About Strategies in Operations: Opening Space for Different Strategies

Speaker	Dialogue	Type of Meaningful Exchange
Chantal	Can we use different strategies?	Exploring (Conjecturing about possibilities)
Anna	What's your other strategy?	Sharing (Encouraging others to share ideas)
Donnie	Yeah, let's try to make up one.	Building (Encouraging others to build on ideas)
Chantal	We can all think of one.	Building (Complementing ideas)
Donnie	I think if everybody made up a strategy and then we did them.	Exploring (Conjecturing about possibilities)
Kelly	What?	Sharing (Clarifying ideas)
Donnie	And then each other does their own strategy.	Exploring (Expressing playful mindset)
Chantal	Tell Ms. Stuart.	Building (Orienting through broader perspectives)
Marcus	I know one. I love your group; it's fun.	Sharing (Offering an opinion) Exploring (Expressing playful mindset)
Kelly	Next time, I'm going to make a group.	Exploring (Self-reflecting on ideas)
Chantal	I wish I was a group leader.	Sharing (Offering an opinion)
Kelly	So do I.	Sharing (Agreeing)

Note. Generating ideas led to a sense of playfulness as Chantal began to open the space wider to accept different ways to solve problems and to explore possibilities for creating unique strategies. Sharing and building are evident in students' clarifying and questioning moves while conjecturing becomes the impetus to move the group's conversation forward into uncharted territory without direct consultation from the teacher.

Anna, Donnie, and Chantal all encouraged the group to explore and invent other strategies to push the group's thinking further. Donnie's proposal demonstrates the power of minimal conditions to generate participant accountability for learning, rendering teacher authority unnecessary. Even when Chantal requested that the group inform the teacher about their new change in direction, no one picked up on her request. The group had established its autonomy and accountability. The group had created momentum and this energy attracted Marcus who described it as "fun." Coming together to explore a topic, generated meaningful exchanges, energizing and uplifting the group in the process.

Blocking (e.g., Telling More Than Listening, Interrupting, Controlling, Rejecting Ideas, Criticizing)

At times, student offerings in conversations are met with significant blocking (Baines, Rubie-Davies, & Blatchford, 2009) from peers, despite students' efforts to engage or contribute to meaningful exchanges. To ensure the viability of the learning system, students must be free to seek other conversations. This ability to self-organize is the lifeblood of the complex learning system. The aim is to provide just enough structure to guide students (shared purpose, basic rules of engagement) while maximizing autonomy to increase the probability of meaningful exchanges. Too little structure and chaos may ensue; too much and connectivity, creativity and possibility are compromised. The condition of self-organization allows students to freely choose where and how they will contribute. Met with others' efforts to block or inhibit contributions, as in the next excerpt, students are free to move to other conversations and away from the blocking to seek opportunities for meaningful exchanges.

Table 13

Blocking or Inhibiting Contributions

Speaker	Dialogue	Type of Meaningful Exchange
Sarah	Now it's only Marcus, Jerome, Laura and me.	Sharing (Giving information)
Laura	We need help.	Sharing (Offering an opinion)
…	[inaudible]	
Marcus	…trying to kill us all. Help us. Help us.	Sharing (Offering an opinion)
Jerome	She's not smart.	Blocking (Criticizing others)
Sarah	What's … divided by … ?	Sharing (Encouraging others to share)
Jerome	You don't even know that answer.	Blocking (Rejecting ideas)
Laura	Maybe we should try. I don't know unless I try it.	Exploring (Conjecturing about possibilities)
Jerome	Even if you tried you wouldn't know.	Blocking (Interrupting, Telling more than listening)
Sarah:	You take away 2 … how many do you have?	Sharing (Encouraging others to share)
Laura	Go do something else if you don't like it.	Blocking (Controlling space)

Note. Jerome's first block is a direct put down of one of the group members. Jerome positioned Sarah as "non-mathematician" perhaps in an attempt to build his own identity in the eyes of his peers. Increasingly, he subordinated her thinking to his own with a second and third block, thereby impeding the progress of the conversation. Rejecting an idea may only temporarily block a student from engaging in the conversation; however, blocking a speaker and controlling the space of the conversation verbally by talking over her or him will undoubtedly lead to complete shutdown. Admirably, Sarah refused to let him close the space for her; and, as Laura challenged

the block by asserting herself within the space, the two students returned to their problem. However, Jerome's behavior caused distraction and inhibited collaboration from the other students.

When students block it makes it more difficult for others to learn or contribute as the block functions as an obstacle to progress and inhibits or slows down meaningful exchanges.

Summary

The format of OST provided the conditions (i.e. internal diversity, redundancy, decentralized control, organized randomness, neighbor interactions) needed to create a complex system. These conditions encouraged networks of students to interact in meaningful ways through sharing information around a common theme, playfully building knowledge, and harnessing creative energy to explore possibilities and thereby supporting dialogic classroom discourse. With these conditions met, students appeared more likely to participate and engage in meaningful exchanges. From these extracts it is noted that particular students participated in collaborative conversations sustained through mutual interests and the excitement of creative input from peers, while in other sequences, students chose to inhibit meaningful exchanges through blocking. Insights from this phenomenon together with the meaningful exchanges will be discussed further in the section that follows.

As stated earlier, I have included a Discourse Lexicon (see Appendix A), to show the discursive moves of those students who engaged in sharing, building and exploring as well as those choosing to block or shut down conversations. My intention in building the discourse lexicon is to support teachers in identifying discursive phases in their classroom. In Appendix B, I have included a Discourse Analysis Table to provide examples of students' discursive moves together with sample student dialogue drawn from the data to show how each discourse phase was identified. The examples in the Tables above and in the Discourse Analysis Table were selected for clarity and are intended to be representative of the types of emerging classroom discourse rather than exhaustive. The Discourse Analysis Table may support teachers' analysis with examples of what to listen for in their classroom, examples of student dialogue that can be used as exemplars for the discourse phases, and from these, insights into developing more meaningful discourse and effective communication among students.

Discussion

Internal Diversity, Redundancy and Decentralized Control: Sharing Through Storytelling

Although all of the five conditions for a complex learning system work together to create emergence and a new order, internal diversity, redundancy and decentralized control lay a critical foundation for the sharing pattern. Student demographics, personal experiences, and thinking styles need to be different enough, yet similar enough to create creative possibilities through sharing. And, the de-centralized control provides the opportunity to share their stories.

Students participated frequently in sharing story fragments with their peers throughout all the conversations. Necessary student diversity and redundancy sustained the system and ensured that new ideas and insights could emerge from sufficient commonalities to work towards similar goals. Adequate internal diversity existed among the students, given the range of preferences and learning styles documented by the teacher and shared with me in our pre-research conferences. Yet, enough redundancy, given the students' similar schooling experiences with learning mathematics, ensured a cohesive impression of the working environment. Decentralized control

became an essential pedagogical shift in my research with the teacher present in the classroom, along with the researcher, with neither leading the students during their conversations. Decentralized control provided significant autonomy to students who, typically, were accustomed to being told what to do and when to do at school. For the teacher this meant a significant "letting go" (Davis & Sumara, 2006) of the role of authority figure and director for these students, who rose to the responsibility in many ways.

In some cases, students' appropriation of the IRE structure mimicked the teacher's voice and control of the classroom discourse. In others, students entered a dialogic phase of discourse in their listening, questioning and ability to generate conversation among peers. Overall, a general relocating of familiar exchanges and practices from the conventional classroom (e.g., reading, writing, telling stories) occurred in the mathematics classroom. Asking students to converse within a space created by the minimum conditions for complexity offered students an opportunity to integrate previously introduced classroom practices in the mathematics classroom, as they shared and developed mathematical knowledge. As a result, a rich classroom discourse emerged as students drew upon prior knowledge to create these meaningful exchanges.

Sharing, initially, became the discernible pattern for their meaningful exchanges. As students participated in sharing as storytelling (perhaps a natural result of the circle formation) and commenting on others' stories, they seamlessly and explicitly connected their understanding of mathematics to the wider world, thereby demonstrating meaningful exchanges. Students' stories contributed to the development and use of mathematics discourse as they also enabled more use of mathematical words, narratives, and routines (Sfard, 2007), which they used to make conversations personally relevant and meaningful to others. This is seen in their exchanges about the prevalence of patterns in their world (i.e. "they're everywhere"), the usefulness of patterns (i.e. in problem solving, multiplication, art and design), and the opportunities to create their own patterns (examples recorded in student journals).

Organized Randomness and Neighbor Interactions: Building Through Movement

The minimum conditions for a complex learning system moved the students from a hierarchically structured or conventional classroom to a self-organizing, open-space classroom full of movement, thereby increasing the opportunity for meaningful student interaction. Students were encouraged to leave or join circle conversations, using their level of engagement as a barometer to maintain a constant or as needed infusion of energy. As a result, there was generally considerable movement through the classroom space as students grouped and regrouped according to areas of interest, opportunities that arose, and changes to group dynamics. Physical movement was critical to transition to the sharing pattern, during which ideas are presented, to the building pattern, during which students add on to the ideas shared to move the ideas along and develop the discourse.

Claire convened her "Art and Design in Mathematical Forms" conversation with a clear purpose. Although task-oriented, she encouraged her peers to engage with new ideas and to build upon those ideas together, generating high energy and the fast-paced movement of fresh ideas. In contrast to conventional mathematical lessons, the task of collaboratively creating a poem, rather than independent practice of procedural skills, demonstrates the building pattern as students elaborated, linked, and constructed ideas resulting in a dynamic exchange. Her efforts to negotiate a task through sharing, (clarifying and accepting), laid the foundation for transitioning to this building pattern. Claire oriented the work of the mathematics classroom through a broader

perspective in successfully combining notions of literacy with numeracy and moving the subject matter toward an inter-disciplinary approach. Through their use of words, narrative, and routine, Claire's group participated in mathematics discourse to build and communicate knowledge together.

The temporary change to the mathematics classroom built networks among the students, increased students' self-motivation, and fostered the movement of ideas and energy through the system, as students showed their accountability for learning by moving into and contributing to conversation circles of choice. Some students' talk or neighbor interactions moved ideas through sharing to building upon what was shared and, as I will discuss next, to exploring possibilities.

Emergence: Exploring Through Creative Play

Using the OST methodology, the classroom research established the conditions needed to create a complex learning system. These conditions formed networks of students who interacted by sharing information around a common theme, by building on ideas, and by harnessing creative energy, exploring possibilities as knowledge emerged. These meaningful exchanges support a shift from univocal, teacher-directed discourse to more student-led, dialogic classroom discourse to establish new ways of thinking about mathematics. The data showed evidence of purposeful classroom discourse as students demonstrated their confidence in problem solving and reliance on other students for expertise and assistance. In addition, the students also exhibited playful, energetic dialogue as the sharing, building, exploring patterns emerged.

I identified exploring as students conjecturing, often playfully, about future possibilities, testing ideas to look beyond the familiar, evaluating proposed arguments, applying knowledge, and self-reflecting to see new pathways and mine insight. When exploration emerged as the students developed ideas by proposing new questions and strategies for activities, so did the playful, creative energy. In those sequences where exploration progressed, students also articulated the notion of having fun. This surprising realization overcame previous expressions in student interviews and journals of mathematics as hard work. The shift from doing work to having fun is significant. Students began to experience the work of the mathematics classroom not only as a series of questions to be answered but also as a creative exploration to be enjoyed, probed and interrogated. Challenging the conventional paradigm of classroom work becomes critical, as something other than work becomes productive, notably play and the playful fun of trying something new.

Integrating play in the mathematics classroom may move students to enact their understanding when interacting with others and engaging in imaginative creations (Conklin, 2014) that are at once playful, fun, and innovative. The relaxed atmosphere and sense of play evoked by sitting in a circle and offering self-organization connected these students to the openness of the space, which in turn facilitated an enriched mathematical discourse.

Self-organization also produced unexpected combinations of diverse students who could share, build, and explore a topic in interesting ways through their differences. Diversity, when embraced, is fuel for creative and purposeful play, through which new possibilities emerge. At this critical point, the learning system pays attention and begins to look for convergence, which occurs when what has emerged is then adopted by the system to create a new order, in this case, new mathematical understanding. This pattern of emergence and convergence arose in some circles where students demonstrated sustained engagement in mathematical discourse. For example, the introduction of Ben's Doubling Strategy opened the way for Donnie to explore with

his group members how this strategy might expand their understanding of more patterns in the times tables. Donnie's infusion of energy and enthusiasm for Ben's work caused further instances of sharing among the students and led some to play with additional possibilities in their journals. In Claire's case, her creative energy imparted an alternative perspective on the idea of math work and engaged the group in conversation outside a strictly mathematical realm. Dialogic discourse emerged for these students in the back-and-forth statements of inquiry and clarification heard throughout the exchanges as well as in the beginning of exploring possibilities (e.g. "I want to test something," or "This looks like fun"). Students offered their creative ideas or took up the ideas of others as a fun way to do mathematics and, in so doing, sustained their engagement with the conversations.

Conclusions

Creating Environments That Encourage Meaningful Exchanges

My research focus has been on the mathematics classroom and how complexity thinking might illuminate aspects of student participation and interaction previously invisible to me. I have seen that through the lens of complexity thinking students experience the "work" of the mathematics classroom differently as critical minimum conditions make room for new opportunities. Providing the minimum conditions through OST allowed for increased student interactions, and therefore, more purposeful classroom discourse. This led to three distinct types of meaningful exchanges in the elementary mathematics classroom: sharing (offering, receiving, clarifying), building (elaborating, organizing, reasoning), and exploring (expressing playful mindset, conjecturing, evaluating). As conversations developed, the momentum of the sharing, building and exploring patterns was occasionally interrupted with instances of blocking by students, causing meaningful exchanges to be compromised. Nevertheless, the emphasis on self-organization encouraged students to seek meaningful exchanges in other conversations.

While previous studies of classroom discourse tend to focus on, for example, the teacher's perspective of learner-focused discourse (Chapman, 2009), teacher-to-student interaction (Chapin, O'Connor & Canavan-Anderson, 2003) and, in particular, ways for teachers to direct or "manage" discourse in order to "ensure" student participation and understanding (Kilpatrick & Swafford, 2002), my research highlights the result of student-to-student interactions in the context of the complex learning system. Such opportunity to immerse myself in complexity thinking research has offered new perspectives on teaching mathematics and on mathematics education in general.

Considerations for Classroom Research in Mathematics Education

My view of this research through the lens of complexity thinking meant considering the implications of the findings at each level of emergence, that is, for mathematics education, for classroom discourse analysis, and for research methodologies. Through the course of this research, I recognized that an intensive analysis of classroom discourse reveals insights otherwise lost in the bustle of a busy classroom. The development of the complexity thinking analytic lens for classroom discourse afforded me clearer perceptions through three iterations of the nature of classroom discourse and how students take up various discursive uses to share, build, and explore mathematical meaning together. For me, first as a classroom teacher and now as researcher, I appreciate these insights as they provide me with evidence to help re-imagine teachers' practices and support on-going efforts to effect change with students. This discourse

analysis has encouraged me to undertake future research opportunities with teachers who may find new understandings for their teaching and learning in the student discourse.

Many questions continue to arise for me as I consider the implications of the findings. For example, how to best support students in creating meaningful exchanges to build capacity for increased sharing, building, and exploring, and how to best assist students in the art of hosting a conversation. Could sharing, building, and exploring increase by investing in the development of communication skills for participants specifically? In my study, I did not focus on a teacher's responsibility to orchestrate classroom discourse; rather, I highlighted the simple rules for classroom interaction to nurture more meaningful exchanges and intense conversations for students. Questions remain regarding the teacher and researcher's role in holding the classroom space open so that discourse might unfold fruitfully for students. Throughout this study, efforts were made to empower students and stimulate engagement through freedom of expression and choice generated rich data. I remain open to future possibilities for classroom discourse analysis that is informed by complexity thinking and the minimum conditions to foster emergence in hopes of illuminating meaningful exchanges for students and teachers alike.

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Appendix A

<table>
<tr><th colspan="4">Discourse Lexicon</th></tr>
<tr><th>Sharing</th><th>Building</th><th>Exploring</th><th>Blocking</th></tr>
<tr><td>Initiating an opinion</td><td>Elaborating on ideas</td><td>Expressing playful mindset</td><td rowspan="2">Telling more than listening</td></tr>
<tr><td>Offering an opinion</td><td>Complementing ideas</td><td>Conjecturing about future possibilities</td></tr>
<tr><td>Giving information or an example</td><td>Organizing thinking</td><td>Playing with ideas</td><td rowspan="2">Interrupting</td></tr>
<tr><td>Relating personal experience</td><td>Reasoning in mathematical context</td><td>Testing ideas</td></tr>
<tr><td>Clarifying ideas</td><td>Linking ideas</td><td>Evaluating proposed arguments</td><td rowspan="3">Controlling space</td></tr>
<tr><td>Agreeing</td><td>Re-voicing</td><td>Encouraging others to explore ideas</td></tr>
<tr><td>Encouraging others to share ideas</td><td>Encouraging others to build on ideas</td><td>Applying knowledge</td></tr>
<tr><td>Connecting with others' ideas</td><td>Contextualizing</td><td rowspan="5">Self-reflecting on ideas</td><td rowspan="3">Rejecting ideas</td></tr>
<tr><td>Receiving an idea</td><td>Orienting through broader perspectives</td></tr>
<tr><td>Contributing mathematical routines</td><td>Constructing mathematical concepts</td></tr>
<tr><td>Accepting others' ideas</td><td rowspan="2">Representing through visual mediators</td><td rowspan="2">Criticizing others</td></tr>
<tr><td>Making observations</td></tr>
</table>

Appendix B

Discourse Analysis Table		
Sharing		
Discourse Phase	**What to listen for**	**Example Dialogue**
Sharing: Offering personal perspective, idea or story to others creates personal accountability for learning as students seek out spaces and connections with peers to contribute effectively and pursue personal interests.	Initiating an opinion	I think the patterns are the key things to the times tables
	Offering an opinion	It is easier to use number patterns
	Giving information or an example	Patterns could be used for counting
	Relating personal experience	How about each of us tell a story about something that happened to them when they had to use patterns? …There was this game that I saw on the Internet…
	Clarifying ideas	Ok Donnie, make up something else …
	Agreeing	Patterns could be used for everything. Cool.
	Encouraging others to share ideas	So, in general what could patterns be used for?
	Connecting with others' ideas	Like if you want to count the cars, you can count two at a time … like 2 4 6 8 10 12 and that's like a pattern. Like that.
	Receiving an idea	You see patterns everyday
	Contributing mathematical routines	Patterns … all you need to do is find … You just have to add the number that you want.
	Accepting others' ideas	What are you guys doing right now? We're making up our own questions. That looks really fun.
	Making observations	I use patterns all the time…there was (sic) patterns everywhere you

		look
Building		
Discourse Phase	**What to listen for**	**Example Dialogue**
Building: Elaborating on what others say through generating other ideas, adding on to the ideas, and/or demonstrating support for ideas creates self-directed opportunities to engage further with peers.	Elaborating on ideas	I think that patterns are …times tables
	Complementing ideas	On games there are patterns. Like on video games … I use patterns everyday
	Organizing thinking	…put eight fives down, and then put that bar and what it equals…
	Reasoning in mathematical context	They (patterns) could be used to help you with math … You guys know how many times 8 goes into 57, right? … What is the question? So, they're asking how much she earns in seven hours?
	Linking ideas	Patterning also works with dividing
	Re-voicing	Patterns could be used to help you with math.
	Encouraging others to build on ideas	What's something else that patterns could be used for? Hey Hunter, how about you say something, … like when do you use patterns?
	Contextualizing	What about word problems like what we were doing? ... I think that times tables and patterns mixed together … go … you can put them together in problems.
	Orienting through broader perspectives	We should start with a math word.
	Constructing mathematical concepts	You know what else I do? I count … all the time and I'll be like, "Where are all the ones?" and then I'll do it with the tens … and do it again with hundreds.
	Representing through visual mediators	Put 8 fives down and look at the pattern … put that bar and what is

		equals, 5, 10. Then you put two bars together, equals 20 and then each equals 40 …Works out really cool.
Exploring		
Discourse Phase	**What to listen for**	**Example Dialogue**
Exploring: Playing with ideas in collaboration with peers for enjoyment and to do mathematics in new ways.	Expressing playful mindset	Sometimes you just do it for fun … I know. When you think of it, it could be used for … anything. I never actually thought that we use patterns every day.
	Conjecturing about future possibilities	It's got to be an even number … or it won't work. So how many are we going to have?
	Playing with ideas	We were making up really cool strategies. Mine was pretty long. Then we made up our own questions and you have to figure out the answer and then you would have a game with somebody and you would have to figure them out.
	Testing out ideas	Designs in math …We make up our own questions. Right now we're working on addition strategy … Can we use different strategies? …Yeah, let's try to make up one.
	Evaluating proposed arguments	On that, subtracting, that's really useful. It really comes in handy when you're doing cash… and you have to give back change.
	Encouraging others to explore ideas	Let's find out a different pattern because this is really cool…there is definitely a pattern in nines.
	Applying knowledge	I find that adding and subtracting were the most useful. Like when you go to the store you have to add up your stuff. Like estimating and stuff … and to get back change you have to subtract and

		get the right stuff.
	Self-reflecting on ideas	You can do the same thing for six times eight is forty-eight … but you might be able to start with 6's. Let's try 6's.
Blocking		
Discourse Phase	**What to listen for**	**Example Dialogue**
Blocking: Preventing or inhibiting others from contributing ideas by disrupting the flow of productive discourse; taking over physically and verbally; and/or, undermining a student's credibility.	Telling more than listening	This is your question. Start going right now.
	Interrupting	Go do something else if you don't like it
	Controlling space	Ok, I'm taking over … I've been talking too much
	Rejecting ideas	You don't know … You don't even know how to do it
	Criticizing others	You're not smart.

A Review of *Residential Schools and Indigenous People: From Genocide via Education to the Possibilities for Processes of Truth, Restitution, Reconciliation, and Reclamation* Edited by Stephen James Minton

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Stephen James Minton's (2020) edited collection *Residential Schools and Indigenous People: From Genocide via education to the possibilities for processes of Truth, Restitution, Reconciliation, and Reclamation* could not be a more timely publication for Canadian readers; however, the scope of the collection should resonate with readers across the continents. Since 2015, when the Truth and Reconciliation Commission of Canada (TRC) report was officially presented to Parliament, Canadians, whether willingly or not, have been engaged in the commission's 93 *Calls to Action*. I happened to be attending a national conference in Ottawa, when the launch occurred, staying at a hotel a few blocks from Parliament Hill. The hotel was full of excitement, large screens televising the proceedings a few blocks away, groups of Elders being guided on and off buses to attend special events around the city. One hotel employee confided that he was proud to work at the hotel, saying, "We're in the middle of history, these days." At the time, I thought the country was on the cusp of significant change, so I eagerly read this book. Comprised of nine chapters, by seven authors from various countries with equally shameful histories, Canada's legacy of residential schools is not included.

> In bringing together Indigenous and non-Indigenous authors from Aotearoa/New Zealand, Australia, Greenland, Ireland, Norway, the United Kingdom, and the United States, this book marks an attempt to tell the stories of what happened to Indigenous people as a result of the interring of Indigenous children in residential schools, to say how and why the schools were set up and run, to document the patterns of abuse and neglect, and to examine the legacies that the residential schools systems have had on Indigenous peoples. (p. 1)

Absent from the collection, not because the Canadian history is different, but arguably because "a number of first-hand survivor accounts have already been written by Indigenous people who were interred in residential schools, particularly in Canada" (p. 4), which are listed in in the introduction and bibliography; furthermore, readers "with a specific interest in the Canadian experience is, therefore, referred to these aforementioned sources" (p. 5). The omission was deliberate, and consequently, a broader global perspective of residential schools was developed.

Justifying his role as an editor for such a project, given his own privileges, and naming his affinity for those who are marginalized, bullied, and oppressed, Minton wrote, "I do not believe that it is anyway justifiable to leave the addressing of the endemic problems and manifestations of individual and society disempowerment, and differential privilege, to the disempowered and non-privileged." He aspires to stand with, to ally, in the spirit of Patrick Lewis (2018) whom he quotes: "Ally is not an identity, it is an action" (p. 6).

Before I move on from the Canadian context, Minton deals at some length with issues related to the TRC. Canada is not absolved of any crimes, excused from accountability, or let off the hook. Citing Chrisjohn and Wasacase (2009), Minton provides a critique of the TRC's effects and intentions. "We must be acutely aware that the crimes of residential school systems cannot be reduced to the injuries experiences by surviving individuals—for residential schools systems

were not aimed at *individuals*, but rather at *peoples*" (p. 11). Therefore, the genocide in the title of is an accurate frame for the substance of the content and stories included in the book.

Language and culture were the primary targets *of Education by the State* in all geographies where residential schools were constructed to subjugate peoples. Residential schools were designed to break familial and cultural ties and eradicate Indigenous languages, and were efficient mechanisms for implementing nation state policies in all contexts described. This is the central, organizing thematic thread of the collection. Under the guise of good intentions, most often phrased as acting "for the good of the child," a dangerous premise historically and to this day, residential schools functioned to dismantle families and communities, and create inter-generational alienation and trauma. Destructive policies and practices were taken up with vigour by all state actors. There are two outliers in the collection, the Sami of Norway and the Irish. Previously, I was accustomed to reading about the residential schools of North America, New Zealand and Australia. The focus on the Sami in Chapter 6 "The Colonization of Sapmi" was of particular personal interest because I knew almost nothing about their history, so reading the visceral stories of contemporary Sami survivors was very affecting. Christianity and colonization are either features or factors in each chapter, which is no shock to readers who will likely be drawn to this subject. Initially, I was skeptical about the decision to include Irish colonization, Chapter 8 "Punishing Poverty: The Curious Case of Ireland's Institutionalized Children." With even a smattering of European history, readers will acknowledge that the Irish were colonized by the British. Predictably, and the Irish residential schools were instrumental in enacting all manner of atrocities, similar to the other geographical contexts, highlighting poverty and persecution as the salient features of residential schools everywhere. I realized my own racialized bias in my initial hesitation. I was wrong.

With any edited collection, the issue of voice inevitably arises, and it's true for this book, too. Minton opens with his own introductory chapters, which are traditionally academic in voice and tenor. In terms of structure, Chapter 2 "Some Theoretical Touchstones' provides a conventional theoretical framework, a typology of genocide, and conditions for assessing outcomes of residential school regimes. The chapters that follow expand understanding in powerful ways with generous, grounded and deeply moving accounts of residential school experiences. Six other authors, either in partnership with Minton or others, build a complex picture with tones, approaches, and styles which taken as a whole work well. This scholarship could be described as theorizing for the future. Giving the last word to Tania Ka'al, Rosemary Norman-Hill and Natahnee Nuay Winder was a sound editorial choice. Their voices provided some hope and cultural clarity, a way to the future. In the concluding chapter, "Reflections," the authors ask

> the reader to find their own truths within those stories and move to place that allows for restitution, reconciliation, and reclamation. While the stories are tragic, our storying will not remain in the "the tragic." For to do so disrespects and displaces the thousands of years of 'knowing, being, and doing' that our ancestors passed down through the ages to ensure a healthy future for our peoples. (213)

Recently, I visited a city on the edge of the geographical region of the historical fur trade in Western Canada and was struck by the goods on offer at local pawn shops. Two ceremonial drums sat in the glaring sun of a west-facing window. What level of historical amnesia would the buyer need to exchange money for a sacred drum? What circumstances would lead an individual to pawn a drum? Step back for a moment. The image of the drums in the pawn shop window are

emblematic of the ongoing story of colonization, just as land acknowledgements and framed apologies are gestures of a nation attempting to exonerate blame for egregious injustices and colonial violence, of which residential schools are an integral part. I see this edited collection as a contribution toward the restitution, reconciliation, and reclamation that the authors seek to find.

Reference

Minton, S. J. *(2020).Residential Schools and Indigenous People: From Genocide via Education to the Possibilities for Processes of Truth, Restitution, Reconciliation, and Reclamation.* New York, NY: Routledge/Taylor and Francis Group