In this issue:

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TABLE OF CONTENTS / SOMMAIRE

NOTES FROM THE FIELD / NOTES DU TERRAIN

EDITORIAL

Too dependent on natural resources and boom/bust economic shocks, Canada continues to need investment in a new economy, one fueled by creativity. While creative innovation can be observed in a variety of educational settings that include in and out of classroom learning spaces, these contributions appear to be the exception. But, why?

A creative and critical educational experience depends on the agency of teachers. But, barriers like standardized testing prevent the kinds of interconnections, experimentation, collaborations, risk-taking, and cross disciplinary projects that are needed to develop the habits of mind that lead to creative thinking. In this special issue, authors engage with how educators, as creative pedagogues, can be more explicitly connected to the growth of creativity in a variety of contexts, while considering questions such as:

> Who/what is a creative pedagogue?
>
> How might teachers publicly position themselves as artists and creative contributors within and beyond school contexts?
>
> How might teachers reconceptualize their roles, their sense of agency, and social value?

Through the exploration of these questions and more, four themes emerge in the seven peer reviewed articles and three notes from the field: *Theme 1- Letting go of expectations; 2-Community engagement; 3- 21st Century Learning and 4- Teaching creativity and creatively teaching.*

In addition to the notes and articles that are a regular component of the McGill Journal of Education (MJE), this special issue includes five "Artistic and Creative Inquiry" (ACI) submissions. The ACI's are a response to the increased global interest in arts based educational research and how the arts are included during all phases of research collection, analysis and dissemination. Contributors White, Vincent, Henze, Rajabali and Elshereif offer poetic and narrative explorations that provide us with openings for how we might artfully (re)consider, (re)imagine and be (re)stored in teaching and learning encounters.

THEME 1-LETTING GO OF EXPECTATIONS

The first theme *Letting go of expectations* speaks to the way(s) that the authors discuss how to foster creativity in teaching and learning. As educators we often take confidence from our competence and experience. Letting go calls for not only embracing a change to teaching practice, but a shift in how teachers may see themselves — a reconceptualization of teacher identity. Letting go also speaks to a relinquishing of control and predictability to find comfort in the messiness and contingency of creative collaboration and exploration.

Two articles exemplify this theme, in Ihnatovych's "Learning to surrender: Creative teaching and learning practices", we are reminded that we need to work together to foster personal and collective well-being. In order to surrender to new processes and possibilities and so that personal and professional changes can take place, pre-conceived expectations in formal education contexts must be set aside. Lipset's "How to pay your students to go to school: Student-run record labels and the creative pedagogue" paints a picture of how to turn ideas of what formal schooling looks like upside down. Such a reversal of expectations is by definition a social innovation and is risky by the very fact that it is different, requiring from teachers a certain tolerance against naysayers, and a persistence to embrace positive critique for productive tensions.

THEME 2: COMMUNITY ENGAGEMENT

The theme Community engagement considers how our current era presents educators with interrelated issues calling for urgent individual and community engagement. Pressing questions of disparity, equity, systemic racism, environmental degradation, the plight of migrants, and emerging threats to democratic principles demand creative solutions, which will also come from young people who are creative thinkers. Now, more than ever we must come together!

Three articles fall under this theme. Zhang & Li's "Enacted agency in a cross-border, online biliteracy curriculum making: Creativity and bilingual digital storytelling" considers how netnography, an emerging collaborative methodology designed to study interactions on social media platforms enacts agency among teachers, students, materials, and spaces. "Exploring the creative geographies of work with pre-service Social Studies teachers: Exposing intersections of time and labour in New Brunswick, Canada" by Burkholder & Chase explores creative approaches that can be leveraged to speak to social critique that leads to community action. Finally, ""Creativity within educational sciences in French speaking countries : A literature review" by De Smet, Raileanu & Romero, examines the concept of creativity used in a wide variety of ways, in professional, technological, socio-economical, and

educational settings. The results of these analyses allow us to situate the context of creativity and to identify five fields of knowledge.

THEME 3: 21ST CENTURY LEARNING

The final theme, 21st century learning, offers examples of way(s) researchers and educators are pushing the limits of curriculum, technologies, and pedagogical approaches, in order to re-contextualize materials, knowledge and learning. Creativity and innovation are at the heart of the evolution of education to meet the challenges and opportunities of the 21st century. Schooling is beginning to adapt its structures of learning to re-imagine traditional concepts of classrooms, courses, schedules, and assessment. We are starting to fully appreciate what it means for students to be intrinsically motivated and to explore and learn guided by their interests.

Howard, Ryan & Fogarty investigate arts integrated, project-based learning in the secondary classroom to authentically follow students' own interests. James, Horst, Takeda & Morales offer an example of what 21st century learning with technology and art looks like while mapping the cultural impact of linguistic texts. The Patch is a human computer procedural algorithm, that utilizes several software programs and collaborative writing to exemplify posthuman engagements that challenge us to blur the boundaries of creative representation and collectivity.

In conclusion, we hope that the insights from the author's included in this special issue inspire new ways of thinking about teaching and learning. We encourage you to consider your own resonances with the research of the authors in this special issue and implicate yourself in the evolution of learning ecologies that foster creative environments and learners.

THEME 4: TEACHING CREATIVITY AND CREATIVELY TEACHING

Teaching creativity and creatively teaching can be challenging conceptualizations for both educators and students. A part of the reason for this is exemplified in the literature on creativity. There are over 100 different definitions of creativity in existence, each trying to capture its multi-faceted and transdisciplinary nature. Three Notes from the Field exemplify creativity as times when curiosity, problem-solving, productive risk-taking, divergent thinking and innovation takes place in the learning environment.

In "Come through the door with me," Beleznay reminds the reader that rather than consistent application of curriculum, what matters more is inventive curricular experiences that take into account the lives of the students, the sounds and silences of the classroom, and the living spaces where we can experience creativity in action. In "Harmonizing music and linguistic identity : A/R/Tography with student teachers," Cormier aims to construct the

relationship between music and linguistic identity in education. It is through her rich expereience as a French teacher in a francophone minority secondary school environment that she evokes the possibilities of a/r/tography, as well as the potential risks of this methodology. Ausman & Mandel, for their part, explore the criss-crossing pedagogical lines and ambiguous spaces that unfold when they integrate music and science in junior high classrooms. In their collegial dialogue we can hear the musicality of their inquiry as they seek means by which students can become more comfortable with ambiguity and less dependent on pre-planned structures.

MINDY R. CARTER, PATRICK HOWARD, SEAN WIEBE, AND JÉRÔME ST-AMAND

ÉDITORIAL

Trop dépendant des ressources naturelles et des chocs économiques, sois de croissance ou de récession, le Canada continue d'avoir besoin d'investir dans une nouvelle économie, alimentée plutôt par la créativité. Alors que l'innovation créative peut être observée dans une variété de contextes éducatifs, comprenant des espaces d'apprentissage à l'intérieur ainsi qu'à l'extérieur de la classe, ce genre de contributions créatives semblent être l'exception. Mais pourquoi?

Une expérience éducative créative et critique dépend du niveau d'implication des enseignants. Mais, des barrières telles que les examens standardisés empêchent les types d'interconnexions, d'expérimentation, de collaborations, de prise de risque et de projets interdisciplinaires qui sont nécessaires pour le développement de tendances intellectuelles qui mènent à la pensée créative. Dans ce numéro spécial, les auteurs examineront comment les éducateurs, en tant que pédagogues créatifs, peuvent être nettement plus connectés à la croissance de la créativité dans divers contextes, tout en envisageant des questions telles que:

> Qui est pédagogue créatif? Qu'est-ce qu'un pédagogue créatif?
>
> Comment les enseignants peuvent-ils se positionner publiquement en tant qu'artistes et contributeurs créatifs dans et au-delà des contextes scolaires?
>
> Comment les enseignants pourraient-ils reconceptualiser leurs rôles, leur sens de l'action et leur valeur sociale ?

À travers l'exploration de ces trois questions et plus encore, quatre thèmes émergent dans les sept articles évalués par des pairs et les trois relevés de recherches: *Thème 1: Lâcher-prises de nos attentes; Thème 2: Engagement communautaire; Thème 3: Apprentissage du 21e siècle et 4: Enseigner la créativité et être enseignant créatif.*

En plus des notes et des articles qui font régulièrement partie de la Revue des sciences de l'éducation de McGill, ce numéro spécial comprend cinq soumissions «Artistic and Creative Inquiry» (ACI). L'inclusion des soumissions ACI est en réponse de l'intérêt mondial accru pour la recherche pédagogique fondée sur les arts et à la manière dont les arts sont inclus dans toutes les phases de collecte, d'analyse et de diffusion de recherche. Les contributeurs White, Vincent, Henze, Rajabali et Elshereif offrent des explorations poétiques et narratives qui nous fournissent des ouvertures créatives sur les

façons que nous pourrions (re)considérer, (ré)imaginer et être (re)storé dans nos rencontres d'enseignement et d'apprentissage.

THÈME 1 : LÂCHER-PRISES DE NOS ATTENTES

Le premier thème Lâcher-prises de nos attentes traite de la ou des manières dont les auteurs discutent de comment mieux favoriser la créativité dans l'enseignement et l'apprentissage. En tant qu'éducateurs, nous tirons souvent confiance de nos compétences et de notre expérience. Lâcher prise exige non seulement d'adopter un changement dans la pratique de l'enseignement, mais aussi un changement dans la façon dont les enseignants se perçois — une reconceptualization de l'identité de l'enseignant. Lâcher prise signifie également renoncer au contrôle et à la prévisibilité afin de découvrir du réconfort dans le désordre et la contingence de la collaboration et de l'exploration créatives.

Deux de nos articles illustrent ce thème, dans « Apprendre la reddition : pratiques d'enseignement et d'apprentissage créatifs, » Ihnatovych nous rappelle que nous devons tous travailler ensemble afin de favoriser le bien-être personnel et collectif. Afin de s'ouvrir à de nouveaux processus et possibilités et pour que des changements personnels et professionnels puissent avoir lieu, les attentes préconçues dans les contextes d'éducation formelle doivent être mises de côté. L'article titré « Comment payer vos étudiants pour aller à l'école : les maisons de disques gérées par les étudiants et le pédagogue créatif », conçu par Lipset, illustre comment renverser les préconceptions sur ce à quoi ressemble la scolarisation formelle. Un tel renversement des attentes reste par définition une innovation sociale et risquée par le fait même qu'il est différent, exigeant de la part des enseignants une certaine tolérance envers les opposants et une persistance à adopter une critique positive des tensions productives.

THÈME 2 : ENGAGEMENT COMMUNAUTAIRE

Le thème de L'engagement communautaire examine comment notre époque actuelle présente aux éducateurs des problèmes interdépendants incitant un engagement individuel et communautaire urgent. Les questions pressantes de disparité, d'équité, de racisme systémique, de dégradation de l'environnement, de détresse des migrants et de menaces émergentes contre les principes démocratiques exigent des solutions créatives, qui viendront également de jeunes penseurs créatifs. Maintenant, plus que jamais, nous devons nous unir!

Trois articles abordent ce thème. L'article titré, « Action mise en œuvre dans un curriculum de bilittératie, transfrontalier en ligne: créativité et narration numérique bilingue, » rédigé par Zhang et Li, examine comment la netnographie, une méthodologie collaborative émergente conçue pour étudier les interactions sur les plateformes de médias sociaux agit sur le niveau d'implication actif des enseignants, des étudiants, des matériels et des espaces. L'article conçu par Burkholder et Chase et titré « Une exploration des géographies créatives du travail avec les enseignants d'études sociales préservice: Exposer les intersections du temps et du travail au Nouveau-Brunswick, Canada » explore des approches créatives qui peuvent être utilisées afin d'entamer une conversation sur la critique sociale — un dialogue qui mène souvent à l'action communautaire. Finalement, « Étude de la littérature sur la créativité en sciences de l'éducation dans les pays francophones, » réalisés par De Smet, Raileanu & Romero, examine le concept de créativité utilisée, selon ces derniers, de façon très diversifiée dans le milieu professionnel, technologique, socio-économique, ou encore dans le contexte scolaire. Les résultats de cette recherche on permis de situer le contexte de la créativité et d'identifier des champs de connaissances.

THÈME 3: APPRENTISSAGE DU 21E SIÈCLE

Le dernier thème, l'apprentissage du 21e siècle, offre des exemples de façons dont les experts et les éducateurs repoussent les limites des programmes d'études, des technologies et des approches pédagogiques, afin de recontextualiser les matériels, les connaissances et l'apprentissage. La créativité et l'innovation sont au cœur de l'évolution de l'éducation en cours et demeurent nécessaires afin de relever les défis et les opportunités du 21e siècle. L'institution scolaire commence à adapter ses structures d'apprentissage pour réimaginer les concepts traditionnels de salles de classe, de cours, d'horaires et d'évaluation. Nous commençons à comprendre pleinement ce que signifie pour les étudiants d'être intrinsèquement motivés et d'explorer et d'apprendre guidés par leurs propres intérêts.

Howard, Ryan et Fogarty examinent l'apprentissage par projet intégré aux arts dans les cours du niveau secondaire afin de suivre de manière authentique les intérêts des élèves. James, Horst, Takeda & Morales offrent un exemple de ce à quoi ressemble l'apprentissage du 21e siècle, incluant l'usage de technologie et d'art, tout en traçant l'impact culturel des textes linguistiques. *Le Patch* est un algorithme procédural personne-machine, qui utilise plusieurs logiciels et des écritures collaboratives pour exemplifier les engagements posthumains qui nous mettent au défi de brouiller les frontières entre la représentation créative et la collectivité.

En conclusion, nous espérons que les idées des auteurs incluses dans ce numéro spécial inspireront de nouvelles façons de songer à l'enseignement et l'apprentissage. Nous vous encourageons à considérer vos propres résonances avec les recherches des auteurs de ce numéro spécial et à vous impliquer dans l'évolution des écologies d'apprentissage qui favorisent les environnements et les apprenants créatifs.

THÈME 4: ENSEIGNER LA CRÉATIVITÉ ET ÊTRE ENSEIGNANT CRÉATIF

Enseigner la créativité et enseigner de manière créative peuvent être des conceptualisations difficiles à comprendre à la fois pour les éducateurs et les étudiants. Une des raisons pour cette difficulté est exemplifiée dans la littérature sur la créativité. Il existe plus de 100 définitions différentes de la créativité, chacune essayant de saisir sa nature multidimensionnelle et transdisciplinaire.

Les trois relevés de recherches publiés dans ce numéro présentent la créativité comme provenant des moments où la curiosité, la résolution de problèmes, la prise de risque productive, la pensée divergente et l'innovation ont lieu dans l'environnement d'apprentissage.

Dans « Passons le seuil ensemble, » Beleznay rappelle au lecteur que plutôt que l'application consistent du programme d'études, ce qui est plus important encore, c'est l'intégration d'expériences pédagogiques inventives qui prennent en compte la vie des élèves, les sons et les silences de l'environnement de classe et les espaces de vie où nous pouvons faire l'expérience de la créativité en action. Dans « L'harmonie de la musique et de l'identité linguistique: L'a/r/tographie avec des futurs enseignants, » Cormier vise à construire la relation entre la musique et l'identité linguistique en éducation. C'est par le biais d'une riche expérience à titre d'enseignante de français en milieu minoritaire francophone au niveau secondaire que cette dernière évoque les possibilités de l'a/r/tographie et les risques potentiels de cette méthodologie. Ausman & Mandel, pour leur part, explorent les axes pédagogiques entrecroisés et les espaces ambigus qui se déploient lorsqu'ils intègrent la musique et la science dans les classes du premier cycle du secondaire. Dans leur dialogue collégial, nous pouvons percevoir la musicalité de leur enquête alors qu'ils cherchent des moyens par lesquels les étudiants peuvent devenir plus à l'aise avec l'ambiguïté et moins dépendant des structures préplanifiées.

MINDY R. CARTER, PATRICK HOWARD, SEAN WIEBE ET JÉRÔME ST-AMAND

LEARNING TO SURRENDER: CREATIVE TEACHING AND LEARNING PRACTICES

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ABSTRACT. Independence and critical thinking are crucial for survival in our contemporary world. Learners and new teachers in training should be trusted to discover and develop their own voice in teaching and learning and be encouraged to surrender expectation to produce predetermined outcomes by strictly following scripted curriculum because it is detrimental to learners and teachers alike as it does not foster independence and critical thinking. Through engaging in creative teaching and learning practices that encourage imagination, questioning, observation and reflection, we can see beyond what is perceived as normal and understandable and seek new ways to interpret reality and experience things of everyday life as well as learn to listen to our students and support them in their own discovery.

APPRENDRE LA REDDITION : PRATIQUES D'ENSEIGNEMENT ET D'APPRENTISSAGE CRÉATIFS

RÉSUMÉ. L'indépendance et la pensée critique sont cruciales pour la survie dans notre monde contemporain. Il faut avoir confiance que les apprenants et les nouveaux enseignants en formation découvriront et développeront leur propre voix dans les domaines de l'enseignement et l'apprentissage et qu'ils seront encouragés à abandonner l'attente de produire des résultats prédéterminés en suivant strictement le programme d'études — un programme qui nuit aux apprenants et aux enseignants — car il ne favorise pas l'autonomie et l'esprit critique. En nous engageant dans des pratiques d'enseignement et d'apprentissage créatives qui encouragent l'imagination, le questionnement, l'observation et la réflexion, nous pouvons voir au-delà de ce qui est perçu comme normal et compréhensible. Nous pourrons alors découvrir de nouvelles façons d'interpréter la réalité et de vivre le quotidien ainsi qu'apprendre à écouter nos étudiants et les accompagner dans leurs propres découvertes.

Creative teaching and learning practices introduce effective, constructive ways for teachers to approach their work and acquire new perspectives on learners' capacities and needs. Such practices help teachers to conceive of their work with students as dialogue and not just a transfer of knowledge (Freire, 2008; Greene, 1995; Green, 2008; Pinar, 2004).

Creativity and innovation are worldwide areas of concern. Although students' ability for personal creative expression and unique, one-of-a-kind interpretation is acknowledged as a necessary / crucial skill for social and economic innovation and development to solve global economic, social and environmental issues (Altass & Wiebe, 2017; Bloom & Dole, 2018) and overall well-being (Nussbaum, 2011), our contemporary education in music, even education in general, does not encourage or support the expression of individual creativity and unique, one-of-a-kind interpretation: "Schools can nurture creativity in children, but they can also destroy it, and all too often do" (Nachmanovitch, 1990, p. 116). Creative expression in children involves "a true interaction between individual and the environment" (Bloom & Gullotta, 2001, p. 11) that enables learners to become personally engaged in their own learning processes and develop skills and resilience necessary to adapt to a rapidly changing world (Greene, 1995; Wiebe et al., 2018; Zhao, 2012).

In this paper, I examine my lived experiences as a student and a teacher and define some key turning points in my personal and professional life as a part of my ongoing search for more creative ways of being a teacher. Through the lens of autoethnography and living inquiry, I seek to encourage creative expression and the ability to experience teaching more holistically. To do this, I explore the process of surrender or letting go of preconditioned expectations created by years of formal education. This process of surrender may allow one to unblock their creative forces and develop innovative solutions to improve life.

I understand the process of writing autoethnographically as a process of discovery, a process of learning by doing, a personal process. Carolyn Ellis (2009) writes,

> as an autoethnographer, I am both the author and focus of the story, the one who tells and the one who experiences, the observer and the observed ... I am the person at the intersection of the personal and the cultural, thinking and observing as an ethnographer and writing and describing as a storyteller (p. 13).

Each person is a cultural creation (Denzin, 2013). According to Ashton and Denton (2006), autoethnography is a biographical genre of writing and deep inquiry into our own experiences and those of our students that utilizes all of our senses: "The researcher-writer's interior inquiry and reflection mirror a larger human landscape, blurring the distinctions between the personal and the cultural" (p. 4). Jones et al. (2013) describe autoethnographic research processes as working with our insider knowledge based on life experiences to provide greater insight into, and deeper understanding of, cultural experiences.

Autoethnographic research requires commitment and sustained practice until it becomes a way of being in the world, a living inquiry. Autoethnography as living inquiry requires deep commitment to ongoing inquiry and questioning in a quest for an understanding of our experiences and discovery of new ways of living in our world. According to Meyer (2010), living inquiry is a practice of inquiry in "our everydayness and our immediate participation in daily life" (p. 86). In Meyer's (2006) words, living inquiry is "simply an inquiry into how to live with a quality of awareness that sees newness, truth, and beauty in daily life" (p. 165).

CHILDHOOD MEMORIES

Since my birth, my sister Svetlana, fourteen years my senior, pursued her degree in piano performance at the local music college in Kaliningrad, Russia. I spent hours sitting under the piano listening to her daily practice. I relished the vibrations resonating into my small body. Our brand-new piano produced bright and sparkly tones. Its dark, polished amber surface reflected other furniture in the room. I would study my sister's hands over my head, petite hands, even to me. Her delicate, thin wrists flowed up and down as if breathing with the music. Sometimes my sister sang. I sang with her.

When I started my formal education in piano performance, my sister became my first teacher. During our student-directed lessons, in my childish stubbornness I insisted on my own method of learning, not allowing her to teach me any other way. I learned by imitation and improvisation. This way of knowing was all I was interested in. I asked her to show me a song on the piano and refused to read the notes.

Svetlana kept a diary and described my behaviour during our music lessons:

> Today, Diana did not let me play the song to the end, always taking my hands away from the keyboard and trying to play it herself. I feel like I am getting in the way and should just let her do what she wants (S. Ihnatovych, personal communication, May 15, 1990).

My sister paid close attention to my behaviour during lessons. She never insisted on doing something that did not interest me.

I learned to recognize many sounds, and they became my friends. Note A, a pink princess in a very big dress. Note B, a blue teddy bear. I improvised my own songs based on my favourite stories. I felt motivated to play the piano. I wanted to learn.

When my parents moved to Germany because of my father's work, my sister stayed in Russia. I missed my piano lessons greatly. After returning to Russia from Germany and then moving to Ukraine with my family, I enrolled in arts school in addition to my regular school. I continued to study piano with my

sister and learned solfège, music theory, music history, chamber ensemble, choir, choreography and drawing.

Halfway through my schooling, my sister moved to Lithuania to continue her education in piano performance at Vilnius Conservatory, and I transferred to another teacher. My new teacher served as head of the piano department. When I first met her, I felt intimidated by her big glasses with chunky black frames and the stern look in her eyes. She had a very traditional teaching style. She never asked me for my opinion. I had to learn how to follow her rules. I had to do what she told me to do.

External control and fear of failure replaced my joyful desire to play the piano and satisfaction with the music-making process. After many hours of exhausting, mechanical practice trying to produce the best results, I sustained my first serious injury. Following my teacher's instructions, I put too much stress on my tendons by trying to line up the tips of my curved fingers into an unnaturally straight line on the keyboard. During my recovery process, I questioned the need for countless hours of practice deprived of creative thought. I wondered if my hands and wrists would ever again breathe freely with the music.

During many years of professional piano performance training, my own opinion and unique voice were not encouraged or cultivated. I learned to perform what was explicitly outlined in the curriculum and was only allowed to do what my teachers told me. If I would have dared to disobey them and perform my own interpretation of the music, there would have been serious academic repercussions.

Curriculum was prescribed to me like medicine. I wish I knew then what I know now about medicine; it does not work for everyone. And yet, when medicine does not cure the patient, doctors claim that the patient failed the treatment, when more often it is the treatment that fails the patient.

Gouzouasis and Ryu (2015) observed that many practitioners of traditional piano methods subscribe to teaching music from the printed page during the first lesson and strictly follow a scripted curriculum throughout a child's music education. When I first started teaching, I also managed my teaching by following the course materials laid out by the method books and continued to do what others told me to do, teaching what the curriculum told me to teach. I experienced fear of inadequacy in my teaching because creative interpretation of curriculum and attention to my own way of being in this world were not encouraged or supported during my years of teacher education in music.

SEARCHING FOR VOICE

When I gave birth to my son, I discovered that after a lifetime of education in music I could not sing him a lullaby without first looking at the music and

then memorizing it. One afternoon, on a walk to the library downtown with my two-month-old son, I heard a First Nations mother humming a simple melody to her baby. It sounded beautiful. I stopped to talk with her.

"What are you singing to your baby?", I asked her.

She looked at me, surprised:

"I don't know; I'm just singing."

"I wish I could *just* sing," I said under my breath. That night when I nursed my son to sleep, I attempted to improvise with my voice. I had to make an effort to let myself sing. The very next day I started to sing my son's name during his diaper change. In response, he rewarded me with the sweetest cooing, followed by a big, toothless smile. He had heard my voice and enjoyed what he heard.

This experience significantly influenced my teaching and research, as a renewed sense of inner confidence gave me permission to see rules and regulations differently. I started to explore and seek out my own voice.

The work of Stephen Nachmanovitch's (1990) *Free play: Improvisation in life and art* helped to inform my understanding of creative expression and improvisation. Nachmanovitch wrote that our everyday speech is a case of shared improvisation through continuous choice of words and phrases to effectively communicate with one another and, therefore, we are all improvisers.

I also realized that the learning and teaching process will not always go as planned and that focusing on methodologies, pedagogical theory and the latest research is only part of the knowledge that is useful in my teaching. It is not so much "what you know" but "who you are" that makes the real difference — our personal, social, cultural and psychological histories. Knowing who we are as people and how we live in this world is important; a teacher's ability to take risks and to be surprising, spontaneous and responsive in life will naturally manifest in the classroom:

> In many schools, teaching is expected to follow syllabi that lay out what students will learn, as well as when and how they will learn it. But in a real classroom, whether kindergarten, graduate school, or the school of life, there are live people with personal needs and knowledge. ... You have to teach each person, each class group, and each moment as a particular case that calls out for particular handling. Planning an agenda of learning without knowing who is going to be there, what their strengths and weaknesses are, how they interact, prevents surprises and prevents learning. The teacher's art is to connect, in real time, the living bodies of the students with the living body of the knowledge (Nachmanovitch, 1990, p. 20).

In her work on releasing imagination and awakening curiosity, Greene (1995) encourages educators and learners to seek out, to look "at things as if they

could be otherwise" (p. 16), to break free from the constraints of preconceived curriculum by improvising and imagining new approaches to teaching and learning, being able to listen to their students and support them in their own discovery.

In his "Lingering note," an introduction to Aoki's collected works, Pinar (2004) writes about Aoki's conversation with Bobby Shew, a jazz trumpeter at the University of Alberta in 1981, when Ted Aoki asked the musician two questions: "When does an instrument cease to be an instrument ... and what is it to improvise? What is improvisation?" (p. 62). Aoki then told the musician that if we could understand "how an instrument can cease to be an instrument" (p. 63), we could maybe find a way out of production-oriented instrumentalism in curriculum. Aoki (in Pinar, 2004) reminds us that: "in education, and in curriculum particularly, under the hold of technological rationality, we have become so production oriented that the ends-means paradigm, *a* way to do, has become *the* way to do, indifferent to differences in the lived world of teachers and students. Could improvisation be a way to create spaces to allow differences to show through?" (p. 63).

Sanford Meisner (1987) defined improvisation as the study of impulse when our individuality is exposed and vulnerable. I developed appreciation for uncertainty, pedagogical risk-taking (Howard et al., 2018), interaction, surprise and responsiveness as a lifestyle and paid close attention to the way I live in the world. I had to learn how to balance and live in this new state, to let go of pre-conditioned expectations to control everything that I do, to surrender and trust myself to find my own way in life and in my teaching. Nachmanovitch (1990) described this process of finding balance and stepping out of one's comfort zone in a story about a girl who is learning how to ride a bike without hands. When she can finally do this, a complex array of emotions penetrates her being: fear, delight, pride, disbelief, elation and a desire to do it again and again. Nachmanovitch then compares this task to what classically trained musicians like myself feel when they discover that they are actually capable of playing music without a score.

I gave myself permission to explore and seek out my own voice and my own teaching style. I remembered my first piano lessons with my sister and began to improvise, tell stories, draw and compose with my students during our piano lessons. I remembered that my sister had a story for everything that we were learning together. She told me:

> Look, the piano keyboard is divided in half by the border between the two kingdoms, Treble Clef kingdom and Bass Clef kingdom. Middle C is guarding the border between the two kingdoms. I encourage you to play with the keys that live there and listen to the story that they are telling. Every note is a part the story.

As teachers, we need to remember that just like every note in my sister's story, we all have our own story to tell, and our different personalities have different creative styles: "There is no one idea of creativity that can describe it all" (Nachmanovitch, 1990, p. 95). As Eisner (2002) articulates:

> One lesson the arts teach is that there can be more than one answer to a question and more than one solution to a problem; variability of outcome is okay. So much of current schooling is predicated on the assumption that success in teaching means getting a class to converge on the single correct answer that exists in the curriculum guide, or in the textbook, or in the teacher's head. The aim of teaching is to get everyone to the same destination and, in our culture, at about the same point in time (p. 196).

I started to teach my students music theory through their own music compositions, encouraging them to use their imagination. It demystified the composition process and allowed them to break free from thinking that they were not able to create music themselves. I also gave my students permission to feel free to play the piano and explore the sounds without long hours of practice trying to memorize a piece of music composed by someone else. I understood that improvisational space is a space where imagination is encouraged, and my own and my students' moments of being in the world matter. Greene (1995) reminds us that imagination is our primary means of creating an understanding of what happens in life. Through imagination, questioning, observation and reflection, we can see beyond what is perceived as normal and understandable and seek new ways to interpret reality and experience things in everyday life.

I believe that learners and new teachers in training should be trusted to discover and develop their own voice in teaching and learning and be encouraged to surrender expectation to produce predetermined outcomes by strictly following scripted curriculum: "The teacher must respond to evolving student thinking, which requires constant in-the-moment decision-making and the flexibility to teach without rigid adherence to a predetermined plan" (DeZutter, 2011). It is detrimental to learners and teachers alike as it does not foster the independence and critical thinking that are crucial for survival in our contemporary world.

FINAL THOUGHTS

The experience of surrendering my preconditioned expectations about my teaching created by years of formal education in music influenced my thinking about creativity, teaching and music education. As human beings we have an ability to grow and change. We can choose to look at our teaching practices with more openness and create conditions to allow new experiences in our daily teaching and learning practices. The process of surrendering preconditioned expectations imposed on us by educational and societal norms

allows us to discover who we are as human beings. Through this process, we become more attentive to those around us and also encourage them to learn how to listen to themselves and develop their creative potential to the fullest. We let go of predetermined outcomes that can be very static in nature and don't allow us to grow and explore. Eisner (2002) wrote that learning in the arts requires the willingness to surrender and allow the educational process to unfold as it develops. Eisner cautioned us that outcome-based expectations in education always result in intervention and do not allow learning to unfold naturally. If we pay attention to only what is intended, we may miss the unintended outcomes and growth in our educational experiences.

When I teach, I always remember that every minute of our life is improvised and that "we all have the capacity to create" (Paynter and Aston, 1970, p. 4). As a teacher, I am following Nachmanovitch's (1990) call to surrender in my teaching practice and in life:

> As an improvising musician, I am not in the music business; I am not in creativity business; I am in the "surrender" business. Improvisation is acceptance, in a single breath, of both transience and eternity ... Surrender means cultivating a comfortable attitude toward not-knowing, being nurtured by the mystery of moments that are dependably surprising, ever fresh (p. 21).

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HOW TO PAY YOUR STUDENTS TO GO TO SCHOOL: STUDENT-RUN RECORD LABELS AND THE CREATIVE PEDAGOGUE

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ABSTRACT. The author examines a federally funded internship program he organized while serving as the director of the High School for Recording Arts Los Angeles program. The school paid students to operate their own record label. Under the American Workforce Innovation and Opportunity Act, approved organizations provide paid, for-credit internships to young people who meet the definition of opportunity youth. Through this partnership, students learned real-world skills, gained hands-on experience, and built their resumes. The author experienced a shift in his professional praxis from school leader to creative pedagogue. During the internship, the school experienced increased student attendance and enrolment, suggesting the paid internship resulted in increased opportunities for student learning. The author covers similar opportunities across the United States and Canada.

COMMENT PAYER VOS ÉTUDIANTS POUR ALLER À L'ÉCOLE : LES MAISONS DE DISQUES GÉRÉES PAR LES ÉTUDIANTS ET LE PÉDAGOGUE CRÉATIF

RÉSUMÉ. L'auteur examine un programme de stages financé par le gouvernement fédéral qu'il a organisé alors qu'il était directeur du High School for Recording Arts de Los Angeles. L'école a payé des étudiants afin qu'ils opèrent leur propre maison de disques. En vertu du American Workforce Innovation and Opportunity Act, les organisations approuvées offrent des stages rémunérés et crédités aux jeunes qui répondent à la définition d'opportunité jeunesse. Grâce à ce partenariat, les étudiants ont acquis des compétences concrètes, acquis une expérience pratique et ont développé leur curriculum vitae. L'auteur a connu un changement dans sa pratique professionnelle; il est passé de chef d'établissement à pédagogue créatif. Durant le stage, l'école a connu une augmentation de l'assiduité et des inscriptions des étudiants, ce qui suggère que le stage rémunéré a entraîné une augmentation des opportunités d'apprentissage des étudiants. Dans ce manuscrit, l'auteur aborde des opportunités similaires à celui si dessus à travers les États-Unis et le Canada.

During the 2018–19 academic year, I served as the acting executive director at the High School for Recording Arts Los Angeles (HSRA LA) pilot program, a credit-granting high school program founded by the same educators who started the first High School for Recording Arts in St. Paul, Minnesota, in 1998. High School for Recording Arts (HSRA) was started by Twin Cities rap artist David "TC" Ellis out of his downtown recording studio as a response to young people in his community seeking a culturally sustaining educational alternative (Seidel, 2011). As a result of its origins in Hip-Hop culture, the school has been affectionately dubbed "Hip-Hop High." The school's mission is to serve opportunity youth — young people between the ages of 16 and 24 who are out of work and school (Belfield et al., 2012, p. 5). Public charter schools began in the US in response to the inflexibility of the non-charter public sector. They allow qualified applicant schools to operate with certain derogations and autonomies otherwise not afforded to traditional public schools to foster growth, development, and innovation not achieved in the public sector (Nathan, 1996).

During the 2018–19 school year, my co-founders, founding team, and I partnered with the YouthBuild Charter School of California (YCSC) to operate this credit-granting high school program. We were lucky to find a partner in YCSC who allowed us to identify our own staff and run our own program in Downtown Los Angeles. YCSC holds a special designation as a public charter school allowed to operate multiple sites across California. Each site operates in partnership with a workforce and vocational training organization. We provided the vocational training to YouthBuild's high school certification, which allowed HSRA LA to bring our expertise in the recording arts to LA's opportunity youth. Through this partnership, we were able to provide a workforce and vocational training program with a full-stack high school diploma.

We also partnered with the American Jobs Corps. Through a piece of federal legislation called the Workforce Innovation and Opportunity Act (WIOA), the Jobs Corps enabled us to hire our students as interns and pay them to run their own record label. The WIOA fund distributes federal funds to organizations at the municipal level. These organizations, identified by the state, are responsible for identifying providers of youth internship opportunities in professional fields. We offered our students vocational training in the recording arts by providing them with the infrastructure and competencies to run their own record label. This paper examines the mechanisms in place to pay young people to go to school and run their own record label, and the effects of this student-run enterprise on student engagement and those operating the school, which produced a turn towards what could be called the role of a "creative pedagogue."

Furthermore, this paper contributes to the literature on opportunity youth (Belfield et al., 2012) and the WIOA program (United States Department of Labor, 2019). Opportunity youth are the target audience of the WIOA program and, though this population has received plenty of research on its defining characteristics and required wraparound services, less research has been done on the practical applications of the WIOA program in support of deeper learning in the creative industries (Belfield et al., 2012; Hossain, 2015; Moore, 2016). Under President Obama, the WIOA recognized the important roles of education and work in the lives of those young people on the receiving end of some of America's most oppressive systems (Hossain, 2015). As a result, the WIOA purposefully makes provisions for opportunity youth to attend school and receive credit for paid vocational training. As our program unfolded its unique student-run record label internship program, I began complicating my approach to school leadership towards the role of a creative pedagogue.

The definition of a creative pedagogue was formed because of the work covered in this paper. In reflecting upon the work of teaching artists, this term stems from definitions of a teaching artist but with a particular emphasis on 21st-century skills and competencies that include elements of a school curriculum as well as innovative, non-traditional, artistic paths to teaching and learning. The concept of a creative pedagogue most directly stems from that of the teaching artist who, according to Eric Booth (2009), "[i]s an artist who chooses to include artfully educating others, beyond teaching the technique of the art form, as an active part of a career" (p. 3, Chapter 1). Booth also identifies teaching artists as virtuosic artists unto themselves (p. 7, Chapter 1). Adding to this understanding of what constitutes a creative pedagogue, Booth names collaboration with classroom teachers as supportive of the goals of teaching artists broadly (p. 9, Chapter 1). Considering the notion that Hip-Hop–based educators bring a social justice lens with them into educational contexts (Akom, 2009), and as Baldwin (1962) says, that "the precise role of the artist … is to make the world a more human dwelling place," the creative pedagogue is also someone who engages in their practice in order to disrupt and dismantle systemic forms of violence such as racism, sexism, classism, ableism, and the like (p. 1).

Given the increase in demand from today's young people for stable jobs in the creative industries (Campbell, 2020), a creative pedagogue must also be explicitly dedicated to cultivating competencies relevant to careers as creative professionals. Based on these characteristics of a creative pedagogue, classroom teachers, teaching artists, and community members can all be considered creative pedagogues depending on their ability to educate young people through art-based, social justice–oriented, collaborative learning opportunities that develop professional skills in creative industries. The characteristics of

creative pedagogues just described position them in distinct opposition to neoliberal aspects of today's society that emphasize laissez-faire economic policies, individual competition over collaboration, and the perpetuation of systems that concentrate wealth in the hands of the few (Cairns, 2013; Orlowski, 2011).

CONTEXT

The re-engagement of opportunity youth into high school, i.e., the work of the High School for Recording Arts, differs from traditional education for a number of reasons. First, opportunity youth are often low-income and racialized (Belfield et al., 2012, p. 8). Opportunity youth are also subjected to houselessness at increased rates, have children at younger ages, and often have to earn money to contribute to their households (Belfield et al., 2012). Schools serving opportunity youth often develop wraparound service offerings in response to student needs that include support with housing, childcare, food, clothes, toiletries, securing official documents (e.g., identification cards and birth certificates), mental health services, and paid work (Moore, 2016). YCSC and HSRA both have a defined mission to serve this population, and each is well-versed in the needs of opportunity youth. Having found that our young people tend to skip school in favour of money-earning opportunities, the possibility of paying them for vocational training during school hours through the WIOA program seemed invaluable. Though this paper covers a US-based school, information that shows potential for such programs in Canada is provided in the Discussion section.

Research shows that experience is the best form of certification one can attain in a creative industry like the recording arts, and that increasingly, young people seek careers in creative industries (Campbell, 2013). Even so, the creative industries lack the same kinds of scaffolding and institutional recognition provided to other, more standardized vocational training paths like those of a pipefitter, electrician, or ironworker (Campbell, 2020). Knowing the precarity of work in creative industries like the recording arts, we considered the skills of teamwork and collaboration as crucial for our young people to begin imagining themselves as professionals working together, rather than as lone actors seeking success. Instead of uplifting the traditional notion of artists as solitary creatives (Baldwin, 1962), we connected artistry to teamwork by defining roles and building goals collectively to combat damaging notions of competitive individualism espoused by America's approach to the acquisition of wealth (Orlowski, 2011).

Two goals of the internship program included increasing attendance / enrolment in the school and providing young people with real-world paid internships in the recording industry. Fundamentally, the HSRA LA team aimed to develop students' sense of responsibility to community and to forego

the competitive individualism that both traps (by isolating) and defeats agency, and we encouraged purpose in social justice and artistic initiatives. To do so, we felt the need to instruct students in how to navigate existing "systems" while also working to subvert them. As a result, we had to conscientiously toe the line between developing enough competence in survival skills while preserving enough sense of agency and community to work for change. These skills included fostering forms of cultural capital germane to students' lived experiences that Tara Yosso (2005) identifies as "aspirational, navigational, social, linguistic, familial, and resistant" to combat racism, sexism, misogyny, classism, homophobia, transphobia, islamophobia, xenophobia, linguicism, and more (p. 69). By doing so, we were able to identify skills and competencies to strengthen within our students, as opposed to adhering to conceptions of business skills that did not align with our students' lived experiences. In this way, our approach to the student-run record label fell within what Ginwright et al. (2007) refer to as a "critical civics praxis" that acknowledges structural constraints in young people's lives, but also views young people "as active participants in changing debilitative neighbourhood conditions" (p. 694).

Attendance at a public school like ours may be viewed as within the paradigm of a neoliberal system of public education designed to produce the next generation of wage labourers (Parsons, 1964; Tyack & Cuban, 1995). HSRA, designed with the express purpose of serving out-of-school youth, uses a personal learning plan for each student, allows students to design their own project-based learning opportunities, and, through these student-centred approaches to education, empowers students to take ownership of their learning experiences, thus breaking down the aforementioned paradigm in the process (Seidel, 2011). At HSRA LA, we also dedicated our school community to zero suspensions or expulsions and committed to transformative justice as a form of conflict resolution that excluded the police and criminal (in)justice system from our school at all costs. In these ways, our community valued the active resistance of neoliberal mechanisms of schooling that have led to the hyper-disciplining of Black and Brown students, the school-to-prison pipeline, the adultification of young Black women, and the ghettoization of schools serving predominantly Black, Brown, and Indigenous students (Anyon, 1997; Darling-Hammond, 2000; Love, 2019; Morris, 2016).

METHODS: SECONDARY DATA ANALYSIS

The research in this paper draws on secondary data on attendance, enrolment, the number of students officially hired into the internship program, and ethnography. I have limited the use of my ethnographic journal to excerpts that do not make students or staff identifiable. Because the data are anonymous, publicly available, and cannot be linked to the individuals who provided them, research ethics board review was not required. From this data

set, I draw preliminary findings on potential impacts of the student-run record label on the school's ability to serve students. Taken together, the findings support programs that pay young people to attend school, provide more opportunities for paid work in school, and pair paid professional experience in the creative industries with for-credit education. I also examine the turn from school leader into the role of a creative pedagogue.

CONNECTING HIP-HOP BASED EDUCATION, OPPORTUNITY YOUTH, AND WIOA

I position this paper within the literature on arts in education since the findings contribute to ongoing advocacy for the arts as essential to a well-rounded education (Booth, 2009; Gardner, n.d.; Gee, 2004; Seidel, 2013). Research in the US shows that, of all mentions of the arts in schools in the media, roughly half position the arts as subject to removal due to budget cuts or as working in opposition to improving standardized test scores (Gould, 2005; Tamer, 2009). Often, the arts only receive support in schools when the medium of artistry falls within classical artforms such as ballet, theatre, orchestral music, painting and sculpture (Gaztambide-Fernández, 2013). The student-run record label highlighted here, however, falls within the bounds of Hip-Hop–Based Education (HHBE), a field that covers the broad interactions between Hip-Hop culture and education (Petchauer, 2009). To date, HSRA has been identified as one of very few high schools in the US to centralize Hip-Hop culture as the overarching school culture (Seidel, 2011). In so doing, HSRA makes Hip-Hop, a culture regularly identified and stigmatized for its proximity to Black culture, into an asset, a symbol of inclusion, and a reminder of the need to maintain a focus on social justice in education (Seidel, 2011). Due to the stigmas surrounding Hip-Hop culture and the necessity for HHBE to be rooted in social justice (Akom, 2009; Alim & Paris, 2017; Emdin & Lee, 2013; Hill & Petchauer, 2013; Ibrahim, 2004; Ladson-Billings, 2017; Love, 2015; Rodriguez, 2009; Wong & Pena, 2017), this paper also incorporates the ways high schools can incorporate student-run record labels via HHBE for the re-engagement of out-of-school youth in social justice-oriented ways.

MOBILIZING THE WIOA PROGRAM FOR OPPORTUNITY YOUTH

Our small program enrolled nine students before the start of the first year. We held three full-time staff positions that included me; a full-time, certified teacher; and a studio production and recording facilitator. The number of actively enrolled students grew over the course of the year and peaked during Trimester 3. Every student enrolled in our program over the year fit the category of opportunity youth. Only one of our students considered herself White, while the rest identified as Black or Latinx. Of the 43 total students in

our program, 18 had been court-involved upon enrolment. Of the young women, 50% were mothers under the age of 24. Total enrolment by the end of each trimester grew from 21 active students at the end of Trimester 1 to 28 by the end of Trimester 3. Figure 1 displays demographic data of total annual enrolment and shows the level of need among our student population.

It took the majority of the year for us to discover how to make the internship program possible for our students. As a result, we could not set a start date for the program until the first day of Trimester 3. This delay meant that we did not inform our students of the opportunity until shortly before the beginning of Trimester 3, which left little time to prepare, hire students, and begin the internship before the year was over. More detail covering the importance of these challenges can be found in the Findings section.

Through the WIOA, certain schools qualify to receive WIOA status, which YCSC did. Research was done on the legislation to find out more about the WIOA program, which showed that it was designed to increase the chances for opportunity youth to win gainful employment and earn a high school diploma. Given our mission of serving opportunity youth in Los Angeles, a location we chose both for the devastating number of opportunity youth in the city and for its proximity to a robust recording arts industry, the combination of vocational training in the recording arts and the education needs of LA aligned well with each other. The WIOA legislation allowed our school to enrol and serve youth up to the age of 24 (Hossain, 2015), something traditional schools in California are not allowed to do (Escudero, 2019). WIOA legislation also made it possible for opportunity youth to be paid for vocational training and gain school credit for those experiences (United States Department of Labor: Employment and Training Administration, 2019). Our partnership with YCSC, designated as having WIOA status, made this internship program possible.
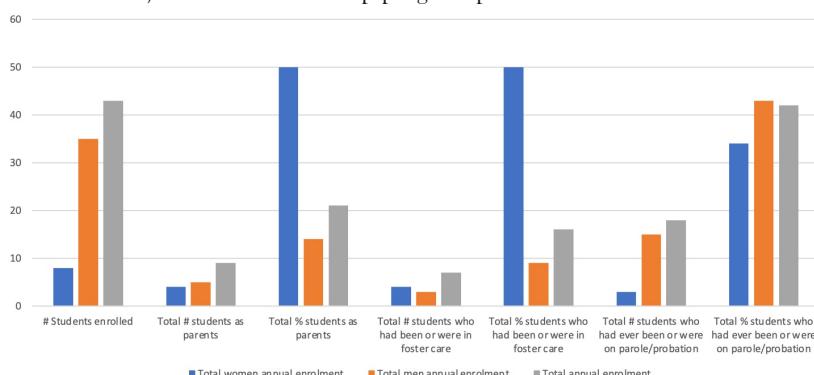
FIGURE 1. *Demographic enrolment data for HSRA LA for academic year 2018–19*

FIGURE NOTES. Figure 1 represents demographic data indicative of some of the challenges faced by our student population. Data on gender non-conforming students were not publicly available.

As the definition of a creative pedagogue requires community involvement and partnerships, how we established our WIOA program matters to the ways in which we turned from education professionals to creative pedagogues throughout the experience of building this program. In LA, one organization receives all federal funds for the city's WIOA program. That organization provides funds to WorkSource centres around the state, which then distribute them to local programs. We connected our school with a local WorkSource centre, a division of America's Jobs Corps, which then designated our school as a work site. The WorkSource centre acted as our accounting department, processing our interns' timesheets and application paperwork and distributing the interns' paychecks. It made 22 positions available to our site, pending submission of required documentation for each intern. At the beginning of Trimester 3, we had 24 students actively enrolled in our school, three of whom were independent study students and thus ineligible for the program. The remaining 21 students were eligible. Each intern would get paid minimum wage in LA ($13.25 USD per hour) for a maximum of 100 hours on campus. Interns were offered an additional 20 hours by our WorkSource centre partner to attend programming on how to manage their finances. The state of California, the federal government, the Jobs Corps, and clients of our student-run record label all became partners to the school in our efforts to provide this unique learning opportunity to our students, thus fulfilling the community partnerships component within the role of a creative pedagogue.

The marriage of work and schooling serves to reinforce neoliberal notions of education as a vehicle for professional attainment (Anyon, 1997; Cairns, 2013; Orlowski, 2011). Therefore, building this program could have undermined our efforts to educate students through a social justice lens as creative pedagogues. Public schools have time and time again been accused of funneling Black, Brown, and Indigenous students from working class backgrounds into working class jobs while reserving the most valuable opportunities for those who come from middle / upper-class backgrounds, who are usually White (Lipman, 2004). By engaging in the WIOA program at our site, we risked replicating this damaging cycle. However, as a school rooted in personalized, project-based learning through the recording arts and the only such school to do so in LA at the time of this program, we offered our young people a unique and rare opportunity. By focusing the mechanisms of the student-run record label on a team-based operational structure wherein success could only be found through cooperation between students and staff, we actively worked to combat neoliberal notions of schooling that value individual achievement over collective striving, grades over personal well-being, and pre-determined curricula over student interests. As well, by virtue of offering this opportunity

to students whom the education system had largely forgotten, the program worked to combat students' experiences with schooling that had offered them only the most remedial forms of education. In our view, the skills they were learning could be applied to the recording arts and many other aspects of their lives. Our commitment to social justice as a school meant we engaged in the work of social justice as a through line to our work, establishing social justice as a pillar of our work as creative pedagogues.

THE INTERNSHIP EXPERIENCE

This section describes the internship experience and discusses its relevance to the component parts of the work of a creative pedagogue. Our staff and students collectively identified five main goals for the internship:

1. to provide learning in core content areas,

2. to promote the music they had made over the course of the year,

3. to learn the practical skills of running a record label,

4. to meet the basic expectations of most professional jobs, like timeliness and product outcomes,

5. and to promote the school to the community and engage the community in the school.

To establish high expectations for our interns, we interviewed each student for four kinds of internship positions. These four positions are in Table 1.

TABLE 1. *The four available internship positions*

Media database management intern - Mine and gather contacts for radio and news media; enter contacts into management system - Develop list of influencers and individuals who could help promote interns' work	Media promotions intern - Design artwork, flyers, social media messages, and album covers for promotion of various creative products - Manage social media accounts, develop relevant hashtags, make a post schedule, target influencers, document daily work of record label
Student publicist intern - Draft press releases and outreach emails; work with team to finalize and distribute to contacts gathered by the media database management intern	Music producer / Beatmaker intern - Make music for radio ads, videos, songs, social media posts, and customers

During interviews, we asked our students several questions to determine their primary area of interest for the internship. To break down the notion that careers consist of only one area of expertise or practice, we made it clear that on such a small team they would be gaining experience in each position and walking away with content for their resumes from the positions in which they were most active. We interviewed every student, regardless of whether their

paperwork had been accepted by the WorkSource centre, to establish the understanding that all would be eligible provided their applications were complete and submitted in a timely fashion.

Before the internship began, we set clear expectations for our interns. First, students needed to turn in all required documents. Unfortunately, this proved to be a barrier to entry in and of itself since the list of required documents was long and inclusive. An entry from July 1, 2019, in my ethnographic journal states: "The youth must present a W4, I9, birth cert, signed copy of a social security card, proof of residence (18+), work permit (under 18), signed library card, school ID, job application, selective services registration (18+), and copy of a parent's photo ID (under 18)" (M. Lipset, personal communication, July 1, 2019). For some students facing barriers such as houselessness and criminalization, presenting documentation proved challenging. Still, identifying factors that may have prevented our students from getting hired elsewhere, such as a criminal record or undocumented status, were not obstacles. In this way, we were able to provide paid internships to young people whose opportunities for work had already been greatly reduced by the criminalization system and international borders, neoliberal structures that serve to separate, isolate, and segregate people based on difference. Since a number of our students were unable to produce the required documents, we hired only 15 students for the available 22 positions, which meant we filled 68% of the positions and hired 54% of our total classroom-based students.

Second, our students would only get paid for the hours they worked and had to document their own timesheets. By establishing work hours for students, we introduced an employer-employee dynamic, which conformed to neoliberal notions of power and hierarchy within professional fields. However, we gave students control over almost every other creative aspect of the work wherever possible to promote autonomy and dialogical decision-making.

Once the internship began, students set out to promote their first collectively written and produced album. Songs on this album covered topics ranging from false narratives surrounding Christopher Columbus, the displacement of Latinx communities for the construction of the Los Angeles Dodgers' stadium, and our school's theme song, to other topics that sought to critically deconstruct academic topics in artistic and social justice-oriented ways. During the internship, students gathered over 1,200 media contacts; wrote press releases for three separate artistic products; designed album covers for each; wrote and recorded a promotional song; shot and edited a video for that song; wrote, recorded, produced, and disseminated radio ads for each product; promoted music videos for their first and second singles; and gave the keynote performance at the world-renowned Deeper Learning Education Conference in 2019. By the end of the internship, our students were invited for a studio interview and performance at the legendary BeatJunkies radio station to promote their work.

Throughout the process, our teachers credited students for much of the work they did on behalf of the record label. Students received English credit for the written work they produced in their professional emails and press releases. Students received math credit through an algebra project focusing on creating graphable functions of the amount of money each major music-streaming platform pays its artists per play. Students also received economics credit for analyzing the monetary and non-monetary incentives available to them as artists.

During the internship, a record label executive at HSRA, St. Paul, Minnesota, remotely co-facilitated our interns in collaboration with one of our local instructors, schooling the students formally in the daily tasks of the industry. Students worked back and forth between the recording studio and the pre-production room where we hosted the internship, engaging with our studio facilitators to apply the knowledge they had learned in the recording arts during creative parts of the internship. As a teaching team, we nurtured our students' abilities to thrive in the world as creative professionals, converting us as educators into creative pedagogues through partnerships among ourselves and our students in addition to partnerships with community-based organizations like those mentioned earlier. Through the artful instruction of creative practices and processes, we stepped into the role of teaching artists, fulfilling that portion of the role of a creative pedagogue.

Some unavoidable challenges made it difficult to establish consistency and momentum at the beginning of the internship. We name these here for those considering starting similar programs. The WorkSource centre initially had assured us our site could begin logging our interns' hours by the start of the second week of Trimester 3. Unfortunately, they took an extra 1.5 months to process our students' paperwork, delaying the students' first paychecks an extra 45 days and leaving only one month to log and process their hours. Although we began the internship in the second week of Trimester 3 and planned to backdate student timesheets to match hours worked, the absence of a timely paycheck was a serious disincentive to our students. Nevertheless, visits from the WorkSource centre's site manager helped maintain the sense that the internship was real, and hours ultimately would be compensated.

FINDINGS

Despite these challenges, certain outcomes suggest possibilities for future schools to benefit from similar programming and the repositioning of adults in the school from teaching artists, teachers, and administrators to creative pedagogues. Such outcomes include evidence that students gained an improved sense of financial management, earned more academic credit over the course of the trimester, and were more drawn to enrolling in and attending school itself. For example, a review of my own ethnographic journal

indicates that, for many of our students, this job was the first time they had ever received an official paycheck or opened a bank account. In my July 1, 2019, reflection, I wrote, "Many asked questions about how to cash a check, how to open a bank account, and when paychecks would arrive next" (M. Lipset, personal communication, July 1, 2019).

As school leader, my responsibilities shifted from those of an administrator to those of a creative pedagogue, a much more dynamic role. My duties as an administrator primarily included coaching our core content instructor, coaching our studio facilitators, insuring collaboration between our core content instructor and studio facilitators, tracking metrics like enrolment and attendance, guiding school culture, engaging in regular transformative justice practices, promoting our school to the community, tracking overall student progress, building strong relationships with families, managing our many social service offerings (such as free clothing/toiletries and housing support), inviting guests to the school, and maintaining mission-orientation. Through the internship, however, I became involved more directly in student learning by building partnerships between the studio, the classroom, and our flagship school in Minnesota. As activities from the internship spilled over into the rest of the school day, I became involved in supporting our team in navigating how to adjust their teaching practices to remain rooted in social justice, the instruction of careers in the creative industries, and to do so through partnerships with relevant organizations.

Though data do not point to clear causation with regard to enrolment and attendance in response to the internship, findings suggest a positive correlation may exist. Of the new students who enrolled in Trimester 3, each had been referred by a parole / probation officer, social worker, community organizer, or friend who was already familiar with our program. Figure 2 shows enrolment and attendance numbers over the course of the year.
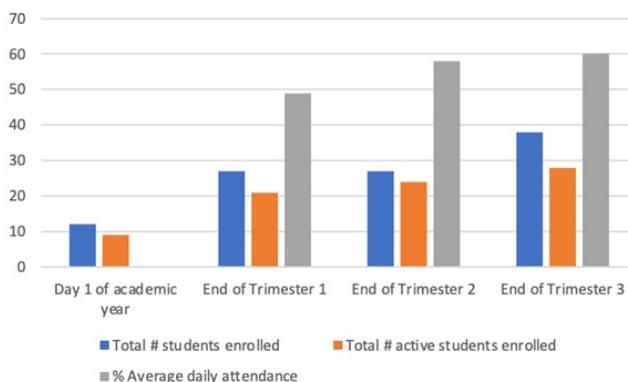
FIGURE 2. *Enrolment and average daily attendance by trimester at HSRA LA for academic year 2018–19*

Figure Notes. Figure 2 shows the difference between growth in enrolment over the course of the school year in three areas: 1) Total students enrolled, which is the total number of students enrolled, both active and inactive. 2) Inactive students enrolled refers to the students who left after enrolling or were unable to return. 3) Average daily attendance represents the percentage of active students who actually showed up on any given day out of total enrolled. Among re-engagement schools, national trends for average daily attendance range from 50%–60% (Moore, 2016).

The same social workers and youth workers from the community brought new students to our program and mentioned our internship offerings as a hook when touring our school with their youth during Trimester 3. This trend suggests they saw the internship program as a powerful opportunity to engage their youth and underscores the importance of a creative pedagogue as connecting the school to the community. Through presentations of our internship program and school offerings to administrators at the Department of Child Foster Services, Parole and Probation Offices of Los Angeles, and the Gang Reduction Youth Development Task Force of Los Angeles, we were able to attract more students by building relationships throughout the community in line with the work of creative pedagogues. My journal entry from April 21, 2019, reads:

> I presented to [a community organization] a few weeks ago … they have since been sending us students. Still, the best way for students to get in the door is by word-of-mouth and thus far, that has been our biggest asset in terms of recruitment. (M. Lipset, personal communication, April 21, 2019)

Each service referred a number of students to our program throughout the year with Trimester 3 showing the largest increase in our total enrolment of 11 new students. Perhaps the most important indicator of impact from the time of the internship, however, was an increase in the number of hours students spent on campus overall, which resulted in increased time each student spent in academics. By the end of Trimester 3, all but two of our interns earned more credits during Trimester 3 than in the first two trimesters.

DISCUSSION

One of our biggest concerns when starting this internship program lay in its reinforcement of neoliberal justifications for education (i.e., that learning should be done in service of securing a job or financial stability). Such concerns are warranted, and we as a staff agreed that learning should be revered as the worthy endeavour we expect from young people generally. Nevertheless, our students' strained financial circumstances played a role in preventing them from accessing opportunities to learn. If students' circumstances are such that they are having trouble accessing education without increased financial security, especially because of systemic forms of violence such as racism or classism, combining paid work and education only makes sense. We felt our students in particular deserved access to the funds

provided by the WIOA program. Furthermore, although the income generated for our students through this program meant a tremendous amount for them, students could only earn $1,590 pre-tax. We did not compensate their education to the degree that their schooling on the whole could have been seen as valuable only as paid work. I believe the outcomes of our student-run record label show that the opportunity to gain professional experience in creative industries in conjunction with education increased our students' general academic engagement as evidenced by changes in student attendance, credit accrual, and enrolment during Trimester 3.

As creative pedagogues consider similar programming, they should heed lessons learned here through partnering with state-based bureaucratic systems like America's Job Corps, which took extra time to process student applications. For example, since consistent timing and the start-date of an internship program may impact how students perceive the internship within their broader schooling experience, ample planning time should be allowed for the successful launch and consistent execution of important human resource processes like issuing paychecks, processing applications, and gathering the appropriate application materials. How organized the internship provider / school appear(s) to the students may impact how seriously students take the opportunity, an area deserving of further research.

Neoliberal understandings of power, privilege, wealth, and individualism have historically served wealthier, White individuals and their organizations to the detriment of the working class and students of colour. Yosso (2005) argues the value systems that accompany these mechanisms take precedence in traditional school settings but should be replaced with the kinds of cultural capital germane to students from communities on the receiving end of systemic forms of violence. This internship program, in its entirety, represented a counter-hegemonic approach to education in the creative industries. With our students, we actively worked to combat neoliberal tropes of individualism by cultivating a shared vision for the workplace, empowering students to own their collective work and to imagine how they might use their new skillsets in the future. Our work fell within the lines of what Campbell (2013) found to be true of similar, non-credit granting, arts-based work programs: "Economic development can be understood not only as individual interpersonal work, but part of a broader social justice mandate of self-determination and economic self-realization, in particular for marginalized youth" (p. 174). Findings suggest this internship increased student re-engagement by bringing more out-of-school youth back into a high school setting that operated with an ethos of social justice-oriented, anti-oppressive educational practices. We were confident in our ability to do so since our education program had already been designed to instruct for critical consciousness and in opposition to the kinds of education programs that had left our students disaffected and pushed

out in the first place. Schools that have not produced an anti-oppressive curriculum and school culture should not work to re-engage students at all, much less through an internship program like the one described here. Doing so would subject them to the same damaging cycles that already pushed them from school.

The student-run record label internship program stood in stark contrast to the historically exploitative relationship held between record label companies and artists, which, in Hip-Hop especially, often sees artists of colour creating work that garners more money for White record label executives than for the artists themselves (Rose, 2008). In the case of our student-run record label, all proceeds went to the students, who were also the artists and who also had creative control over their work. In this way, the student-run record label reversed the historically exploitative relationship between Hip-Hop artists and their record labels by placing control over every aspect of the artistic and industrial processes in the hands of the students. By placing students at the centre of both the creative and entrepreneurial processes, we were able to support students in developing their entrepreneurial skills by harnessing their artistic talents. Rather than making art for art's sake, our students had to consider art for the sake of the whole label's wellbeing (i.e., their peers). We pushed students to think about such components of Hip-Hop culture as improvisation and creativity as tools to be used for the promotion and dissemination of their art and their social justice initiatives / statements.

With some work, such a program may be possible at many schools. If the school is not in LA but within the US, further exploration of the specifics of the WIOA program in a given location may be required. Starting something like this program outside of the US means first determining whether students can be paid while attending school and receiving credit. If a local government does not allow such an opportunity, hopefully this paper encourages decision-makers to pursue changes in legislation that would allow such an opportunity, at least for those students who historically have been underserved by the education system.

The existence of systems supporting paid, for-credit internship programs on school campuses in both the US and Canada adds evidence to the important work of creative pedagogues. In Canada, for example, where education policy exists on a provincial level, the following programs support student internships: The PATHS program in Manitoba focuses on providing opportunities for young people to pursue careers in the automotive industry for pay and high-school credit (Council of Ministers of Education, 2015, p. 45). The Apprenticeship Credits and Saskatchewan Youth Apprenticeship for Recognized Trades provides credit for career training and paid work in Saskatchewan (Council of Ministers of Education, 2015, p. 35). The Ontario Youth Apprenticeship Program (OYAP) is available only to full-time 11th and

12th graders ages 16 and up who are interested in skilled trades (Council of Ministers of Education, 2015, p. 57). The Youth Apprenticeship Program in Newfoundland and Labrador is designed to grant high school and post-secondary credit to students interested in pursuing a trade in their last year of high school (Council of Ministers of Education, 2015, p. 75).

Although each program identifies increasing secondary school completion as a core goal, the aforementioned programs have only focused on the trades. None provides opportunities for paid, for-credit career exploration on campus that might increase attendance and reduce barriers to entry for students who have trouble attending school as a result of having to find paid work. Furthermore, very few career paths supported through the programs align with the creative industries despite rapid growth in interest in careers in the creative industries (Campbell, 2020, p. 2). However, each such program has posted notable increases in high school completion for students involved (Council of Ministers of Education, 2015). Though none of these programs focuses on underserved youth, they do provide credit to young people for work off-campus and confirm that students in Canada can receive credit for paid work. It may be possible, therefore, for young people to participate in something similar to what has been described here in certain Canadian provinces. For example, skilled trades in Ontario include titles like "special events coordinator" and "entertainment industry power technician," roles that, when put together, could provide creative pedagogues with incredibly rich learning opportunities, for example, to engage young people in planning and producing their own music festival (OYAP, 2019). The OYAP also includes "hairstylist" as a supported position, which would allow for creative pedagogues to come together in support of a student-run, on-campus youth barber / beauty shop.

Our program was possible because of a unique confluence of partnerships that may be difficult to develop elsewhere. For schools interested in doing so, partnering with an organization specializing in a vocation that students find engaging and that matches the mission of the school seems crucial. Grantmakers interested in funding a program may also serve as the accounting department for a school's newly hired interns, or a school could partner with an additional organization, something akin to our local WorkSource centre, to play the same role. Whether or not paid on-campus and for-credit internships exist in each location, the opportunity for school staff to shift towards the role of a creative pedagogue always does. The arts, education, social justice, and community partnerships can still align to produce powerfully engaging learning opportunities for young people and present new and exciting opportunities for students to prepare themselves for life beyond high school.

SUMMARY

Findings suggest the pairing of paid internship programs for academic credit produced powerful learning incentives for opportunity youth. Students came to school more regularly, were drawn to our school for such an offering, and earned more academic credit during the internship than in previous trimesters. Students developed their ability to design and develop their own professional spaces, particularly in creative industries, learning practical life skills along the way. Furthermore, as school leader I felt an identified shift in my role towards that of a creative pedagogue, which facilitated deeper learning opportunities for students. If a school serves young people whose access to education is hindered by the necessity to find paid work, educators and policy makers should consider developing paid internship experiences that also offer opportunities to earn credit on campus.

The arts should be central to student learning, especially at the re-engagement level, where addressing basic student needs of safety and care commonly supported by the arts exist alongside developmental needs like increased self-esteem and self-knowledge. These needs can be supported by successful professional work, especially in the creative industries given the therapeutic nature of the arts.

Further research on the impacts of paid internships for opportunity youth could shed light on a number of important approaches to increasing the re-engagement of out-of-school youth. For example, the internship as occurring over the course of 10 weeks, with the first and last hour of each day as paid hours, seemed to increase student engagement over the course of a trimester. While internships have been documented in the field of construction, other such trades as the creative industries deserve the same opportunity for research. Until the greater mechanisms of society change to level the playing field for low-income and youth of colour, policy makers and change agents should work to incorporate paid internships into their academic programs with the combined goal of empowering young people to advocate for the world they want to live in. Given increased interest by students in creative professions, educators and policy makers should consider paid internships in creative industries central opportunities for learning important life skills within an ecosystem of learning. Instead of cutting the arts from schools and marginalizing work in the creative industries, the arts and careers in the creative industries deserve more structural support within systems of education to set today's youth up for success in fields of their choosing.

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ENACTED AGENCY IN A CROSS-BORDER, ONLINE BILITERACY CURRICULUM MAKING: CREATIVITY AND BILINGUAL DIGITAL STORYTELLING

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ABSTRACT. This research investigated potentials of bilingual digital story making to engage the creativity of 13 Canadian and Chinese biliteracy learners aged 11–15. Findings in this paper draw on six focal participants and their digital story creation. Informed by asset-oriented multiliteracies, new media literacies, and new materialism, this research adopted a netnography methodology to explore the communal and sociomaterial practices embedded in the intra-actions of human, matter, and virtual spaces of Seesaw and Skype. Drawing on data from six focal students, findings relate how intra-actions among researchers, teachers, students, matters, and spaces shaped participants' creative acts. This research adds to the knowledge of developing and applying material-informed pedagogies which attend to the enacted agency among teachers, students, materials, and spaces.

ACTION MISE EN OEUVRE DANS UN CURRICULUM DE BILITTÉRATIE, TRANSFRONTALIER EN LIGNE : CRÉATIVITÉ ET NARRATION NUMÉRIQUE BILINGUE

RÉSUMÉ. Cette recherche a examiné les potentiels de la création d'histoires numériques bilingues pour engager la créativité de 13 apprenants bilingues canadiens et chinois âgés de 11 à 15 ans. Les conclusions de cet article sont soutenues par six participants principaux et leur création d'histoires numériques. Informée par les multilittératies axées sur les actifs, les nouvelles connaissances médiatiques et le nouveau matérialisme, cette recherche a adopté une méthodologie de netnographie afin d'explorer les pratiques communautaires et sociomatérielles intégrées dans les intra-actions des espaces humains, matériels et virtuels de Seesaw et Skype. En s'appuyant sur les données de six étudiants cibles, les résultats décrivent comment les intra-actions entre les chercheurs, les enseignants, les étudiants, les matières et les espaces ont façonné les actes créatifs des participants. Cette recherche s'ajoute à la connaissance du développement et de l'application de pédagogies fondées sur le matériel qui soutiennent l'action mise en œuvre parmi les enseignants, les étudiants, les matériaux et les espaces.

Social Sciences and Humanities Research Council's[1] (SSHRC, 2018) *The next generation of emerging global challenges* identified 16 interrelated future global challenges. Many of the challenges emerge from technological innovations and request the "greatest need of attention from social science and humanities

researchers" (p. I). UNESCO's (2017) working document of "E2030: Education and Skills for the 21st Century" accentuates the multiple facets of lifelong learning to nurture responsible and competent individuals through 21st century skill development, global citizenship education, digital literacy, and sustainable development education. Academic literature also calls for ethical, transformative literacy pedagogies to nurture younger generations with the skills and competences to come up with creative solutions to the pressing challenges in the 21st century (e.g., Mirra et al., 2018). This SSHRC-funded study explores a cross-border, online biliteracy curriculum. It is a timely response to Canada's two major future challenge areas: namely, using emerging technologies to benefit Canadians, and generating knowledge for Canada to thrive in the globalized world.

Emergent literature on bilingual education in Canada has discussed the use of transformative multiliteracies pedagogies to leverage bilingual learners' assets of meaning-making in different languages, modes, and technologies (e.g., Cummins et al., 2015). However, there is a scarcity of online, cross-border biliteracy programs in Canada that harness biliteracy learners' assets for creative meaning-making in both English and their heritage language of Mandarin. Collaborating with Mandarin and English language teachers and students, the research team actualized a cross-border, online biliteracy curriculum that connected six Canadian biliteracy learners (i.e., learners in Canada who speak the heritage language of Mandarin but are more fluent in English) and seven Chinese biliteracy learners (i.e., learners in China who are fluent in Mandarin but learning English as a foreign language). The participants were 11–15 years old. Our study built social networking spaces through Seesaw and Skype for these learners to develop biliteracy and new media literacies skills.

The cross-border, online biliteracy curriculum making recruited joint engagement between academics, Mandarin and English teachers, and biliteracy learners from Canada and China. Existent literature on actualizing emergent curriculum in various early childhood education contexts accentuates students as agentive protagonists of curriculum making (e.g., Tal, 2014; Thomas, 2008; Verwys, 2007). Studies also show the Reggio Emilia model of early childhood education as aptly representing the emergent curricular paradigm (Barnett & Halls, 2008; Boyd & Bath, 2017; Fantozzi et al., 2013; Hesterman, 2011; Heydon & Wang, 2006; Mills, 2013; Murris, 2016; Stegelin, 2003). However, few studies on the emergent curriculum attend to the agency of materials in digital story creation, and the impacts of human-matter intra-actions on creative meaning-making. To respond to this gap, the paper asked:

1. What are teachers', students', and matter's roles as creative entities to enact the emergent cross-border, online biliteracy curriculum?

2. What are the implications of cross-border, online biliteracy projects for new pathways of creative meaning-making?

THEORETICAL FRAMEWORK

The study was undergirded by asset-oriented multiliteracies and new media literacies. Acknowledging the sociomaterial turn in literacy research (e.g., Kuby & Rowsell, 2017; Smythe et al., 2017; Toohey et al., 2015), we applied critical re-reading of these theoretical lenses in this material-informed study.

Asset-oriented multiliteracies and our critical re-reading

One theoretical underpinning of this biliteracy project was *multiliteracies* (The New London Group, 1996). *Multiliteracies* proposes an expanded notion of literacy shaped by rapid social, cultural, and technological changes. Multiliteracies pedagogy responds to the growing cultural and linguistic multiplicity and diversity that is intensified by globalization activities such as immigration, multiculturalism, and global integration (Cope & Kalantzis, 2000; Kalantzis & Cope, 2008). Expanding the dimensions of literacy and literacy education, multiliteracies attempts to provide "holistic" (Cope & Kalantzis, 2009, p. 167) literacy pedagogies to engage language differences, multiple sign systems, diverse communication channels, and various domains of literacy practices (e.g., those at home, in school, and across various disciplines).

Our cross-border, online biliteracy project was in line with the multiliteracies pedagogies that celebrate "the many ways that people write, speak, or read themselves into the world" (Moje & Luke, 2009, p. 434). We also designed our project to capitalize on biliteracy learners' *funds of knowledge* (González et al., 2005) — that is, to develop their creative ways of representation based on their funds of knowledge in both English and Mandarin, the associated cultures, and multiple semiotic resources. However, we were also aware of the constraints of the multiliteracies lens in framing human and non-human agency in creative meaning-making. Leander and Boldt (2012) critiqued that multiliteracies overemphasize human agency in utilizing multilingual and multimodal materials as resources. Portraying materials only as resources casts aside the agency of non-human animals and matter. In this project, we attended to enacted agency that is continuously produced through the intra-actions between meaning makers and materials (Kuby et al., 2017); we interrogated the binary in human and/or nonhuman agency and define agency as "an enactment *between* humans and nonhumans" (p. 357). Enacted agency is produced in the entanglement of meaning makers and materials, similar to the case of turtles crawling on the beach. Without the assemblage of animal agency, sand and rock on the beach, and the force of friction, turtles could not even move at the speed of turtles.

Barad's (2007) agential realism accentuates the inextricable ties between reality and language, matter and meaning. As Barad contended, "the 'distinct agencies' are only distinct in a relational, not an absolute, sense, that is, *agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements*" (p. 33). Instead of individual objects with inherent "boundaries and properties," Barad's relational ontology foregrounds *phenomena* as the primary ontological unit and perceives phenomena as the "ontological inseparability of intra-acting 'agencies'" (p. 333). Likewise, creative meaning-making practices do not center around human agency but involve co-production processes of all participating human and non-human entities. Without the force that is enacted by multiple materials and media in their intra-actions with humans, creative meaning productions would not be possible. Creative meaning-making takes place because matter and humans are in mutual relationality and influence one another. The removal of human from the ontological centre of meaning-making welcomes ethical responsiveness to and reciprocal relationship-building with non-human animals, matter, and spaces (Murris, 2016).

In this paper, we explore teachers', students', and matter's roles as creative entities to enact the cross-border, online biliteracy curriculum and look at how enacted agency emerged in the entanglement and assemblage of meaning makers and materials. Our focus in the material-informed research was on the agential performativity of humans, materials, and the virtual and physical contexts as well as the transformative potentials of their relational encounters in creating new forms of meaning.

New media literacies and our critical re-reading

Under the *new media literacies* framework, Jenkins (2009) highlighted the focus shift from "individual expression" to "community involvement" in meaning-making via new media and technologies (p. xiii). Jenkins argued that youth are actively involved in participatory cultures and develop their new literacies skills through online participation and collaboration. Likewise, our cross-border, online biliteracy project created collaborative virtual spaces through Seesaw (an educational app for student-driven digital portfolios) and Skype for both synchronous and asynchronous intra-actions. We intended to provide strong support and mentorship for Canadian and Chinese biliteracy learners, share new creative forms, engage divergent perspectives of their global peers, and facilitate collaborative problem-solving to develop creative digital stories.

In the process of enacting the cross-border, online biliteracy curriculum, we started to see new media literacies' constraining interpretative power because it over-rationalizes biliteracy learners' participation and collaboration in the online community. Informed by the emerging literacy studies on new materialism and posthumanism (e.g., Justice, 2016; Kuby & Rowsell, 2017; Kuby et al., 2019; Leander & Boldt, 2012), our gazes turned to focus on how

humans, diverse forms of matter, and physical and virtual spaces worked relationally to bring the digital stories to life. We also looked at whether enhancing biliteracy learners' connections with humans, materials, and spaces across linguistic, cultural, and geographical boundaries could facilitate their creative meaning-making in two languages and multiple modes and media.

PROJECT DESIGN

The research objectives were achieved through the strengths of *a netnography methodology* that is suitable for investigating cross-border, online biliteracy curricula. Netnography is an emerging methodology designed to study interactions on social media platforms (Kozinets, 2010a). Netnography helped the research team explore the communal and sociomaterial practices that are embedded in the intra-actions of human, matter, and virtual spaces. We used netnography to examine online aspects of biliteracy learners' cross-border interchanges and portfolios containing their meaning-making artifacts. The purpose of using this method was to show "how knowledge creation and learning occur through a reflective 'virtual re-experiencing' discourse among the members of innovative online communities" (Kozinets, 2010a, p. 2).

The project spanned from February 13 to June 6, 2019 on Seesaw, a social network site, and through synchronous interactions on Skype. In this paper, we draw on the following netnography data sources to shed light on the emergent nature of the cross-border, online biliteracy curriculum and biliteracy learners' creative meaning-making: 1) students' shared digital storytelling portfolios and online interactions on Seesaw; 2) transcribed video data of synchronous interactions on Skype; and 3) interviews with students either on Skype or onsite about their perspectives of the impacts on the cross-border, online biliteracy learning experience.

Participants were 11–15 years old and included six Canadian and seven Chinese biliteracy learners. In this paper, we draw on data about six focal participants and their digital story creation (see Table 1 for the focal participant profile).

Amelia attended an international school in China and was fluent in both English and Mandarin. All the five focal participants from Canada came from immigrant families with Chinese descent. They lived in two cities in Eastern Canada and did not know one another before the project. An offline face-to-face meeting was arranged by the research team for Aaron and Adam because Aaron asked for help with stop motion animation making.

TABLE 1. *Focal Participant Profile*

Pseudonyms	Age	Country of Origin	Self-Identified Mother Tongue
Amelia	11	China	Mandarin
Chloe	13	Canada	English /French
Jenny	14	Canada	Mandarin
Aaron	11	Canada	English
Adam	15	Canada	Mandarin
Kenna	13	Canada	Mandarin

Our data analysis focused on "content" (e.g., students' meaning-making with creative tools that were documented on the educational app Seesaw) and "context" (e.g., the features of Seesaw and Skype that enabled social networking opportunities with an authentic global audience) (Kozinets, 2010b, p. 4). Data analysis started when the cross-border, biliteracy curriculum began to unfold based on the continuous intra-actions between researchers, English and Mandarin teachers, biliteracy learners, and more-than-human entities. Instead of deductively reducing data to abstract codes and categories based on theoretical lenses, we remained open to emerging themes throughout data collection. We allowed the emergent data to lead us to the next stage of bilingual digital story making. For example, students played a major role in deciding topics that they were interested in exploring for their digital storytelling when they shared initial ideas on Seesaw and posted their storyboards. The relational encounters of the research team, language teachers, students in China and Canada, materials, and spaces continuously transformed the enactment of the cross-border, online biliteracy curriculum about what to learn, how, and when. We adopted a reflexive, iterative approach to data analysis that focused on "visiting and revisiting the data and connecting them with emerging insights, progressively leading to refined focus and understanding" (Srivastava & Hopwood, 2009, p. 77). The iteration of data analysis attended to the evolving intra-actions between the research team, Mandarin and English teachers, biliteracy students, and other non-human entities (e.g., gadgets, apps, LEGO, cardboards, and physical and virtual spaces).

FINDINGS ILLUSTRATED THROUGH BILITERACY LEARNERS' CREATIVE DIGITAL STORY-MAKING

In this section, we present the findings through examples of six focal biliteracy learners' creative digital storytelling. The examples will exhibit the emergent nature of their creative meaning-making and shed light on how the agentic

assemblages of diverse elements (researchers, teachers, students, matter, and spaces) were "constantly intra-acting, never stable, never the same" (Lather & St. Pierre, 2013, p. 630) to shape biliteracy learners' creative acts. The study has generated new knowledge on how a research team, language teachers, and biliteracy learners can collaboratively develop and enact a cross-border, online curriculum to espouse biliteracy and new media literacies skills.

The focal participants commented on the affordances of emergent curriculum decision making that embraced students' agency. As Aaron from Canada said, by allowing students to shoot and write about something that they like, students "would like to keep writing it or keep working on it." Wiebe and Caseley Smith (2016) contended that preparing students for prescribed curriculum outcomes constrains creativity in teaching. Accentuating teachers' artistic creation and agency, they argued that explicit instruction does not "help students achieve the necessary literacies for today's digital world" (p. 1167). Prior to and throughout data collection, graduate research assistants and language teachers conferred and negotiated the differences between logocentric literacy teaching and material-informed literacy education approaches. Biliteracy learners therefore did not learn a discrete set of predicable language patterns; instead, they received substantial peer and teacher support for their individual biliteracy learning purposes. Neither the research team nor the participants could predict what they would have created at the beginning of the project. Their experimentation with traditional and digital technologies transformed their practices in digital story making. In the post-research interviews, all six focal students commended the enhanced creativity in their meaning-making both in Mandarin and English.

Both interview data and data on Skype synchronous intra-actions show that the focal participants reported enhanced engagement in the bilingual digital story creation because meaning-making was "profoundly relational" (Howard et al., 2018, p. 857). The learners' ongoing storytelling unfolded the potential of such a cross-border, biliteracy project to enable biliteracy learners' continuous development in their posthuman ethico-onto-epistemology; that is, the ethical knowing / becoming / doing of literacies through virtual connections among learners who are geographically separated. As Newfield and Bozalek (2019) argued, literacy cannot be taught autonomously, unrelated to time, space, and matter. Students' online intra-actions and the post-interview data demonstrate their desire to be connected globally while learning new technologies for meaning-making. In the last Skype meetings, groups of participants shared their self-reflection about their story creation experience and offered suggestions and feedback to their peers' digital stories. Through self-reflection, comments, and suggestions, participants exhibited their critical viewing skills, including their critical thoughts about peers' modal choices, reasons for alternative modal choices, connections to personal strengths and interests, perceptions of audience engagement with the artifacts,

and challenges encountered when creating the digital story. In the post-research interview, Adam from Canada reported how cross-border collaboration helped shape his creativity in the digital storytelling:

> A lot of the peers in China would give a lot of suggestions that I haven't considered before, and I think that really helps with my creativity and in the future, I could look a concept in broader ways.

As the interview data show, all the focal biliteracy learners discussed how intra-actions through reflection and feedback provision nurtured their sense of community building and awareness of a global audience.

Storyboarding in visual texts was a powerful approach that encouraged biliteracy learners to experiment with digital materials while they polished plot design ideas. Constantly intra-acting with materials, Adobe Illustrator, and teachers and peers from both Canada and China, Adam used Seesaw to document how his storyline evolved from his first-version storyboard to his second-version storyboard, bilingual scripts, and animation making through Adobe Illustrator.
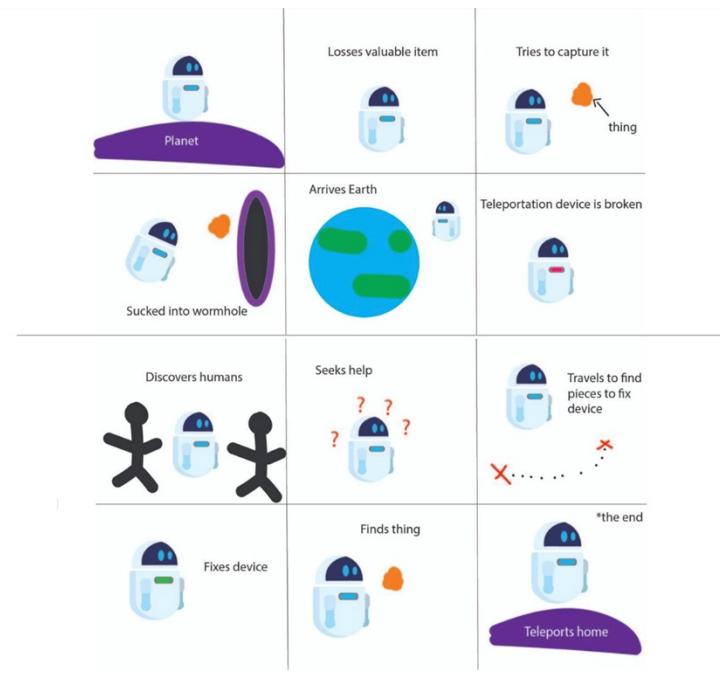
FIGURE 1. *Adam's First-Version Storyboard*

FIGURE 2. *Adam's Second-Version Storyboard*

Figure 1 and Figure 2 show the evolvement of Adam's storyline. His entanglement with the apps, the plot, and his own life and drawing experience helped develop his understanding of the affordances and constraints of the apps. He also attributed the storyline development to the relationality with and constructive feedback from his global peers and language teachers (see Figure 3 for his final story).
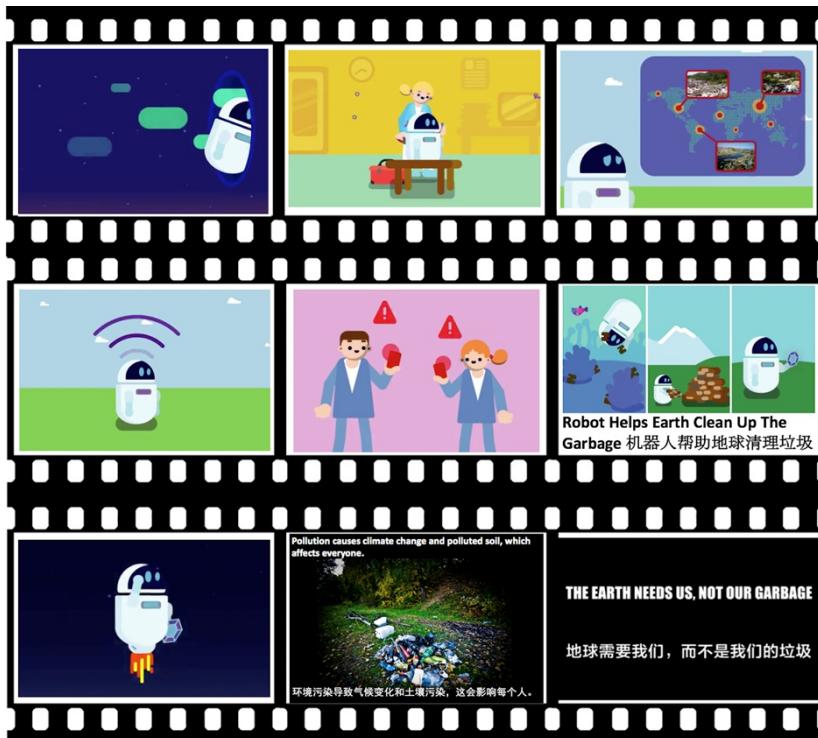
FIGURE 3. *Screenshots of Major Scenes of Adam's Final Digital Story*

Similar to Wiebe and Caseley Smith's (2016) findings, biliteracy learners also showed sustained engagement in revising their bilingual scripts. Amelia, Kenna, and Chloe named themselves the Cat Lords and their "collaborative play-creating" emerged through online sharing and discussion (Carter et al., 2011, p. 20). The collaborative meaning-making also enabled divergent perspectives and new ways of constructing meaning to emerge (see Figure 4).

The Cat Lords' (Figure 4) new knowledge about coordinating sketching, line art, and coloring with Flipaclip and collaborating with global peers was "always emerging and evolving" (Carter et al., 2011, p. 19). Chloe commented on the force of divergent thinking in shaping her experience in the project:

> I think there was really strong support because there were, like... everyone was really open to, like, open to all types of ideas. I guess it just made us feel more accepted because even though we maybe have [...] really different ideas from other people, like um... our teachers and [...] our friends and my... and my classmates are still, like, supporting us during the making of our project.

Unique bodily intra-actions and communicative relationships were enacted by the virtual spaces in Seesaw and Skype and effected impacts upon participants' creative storytelling.
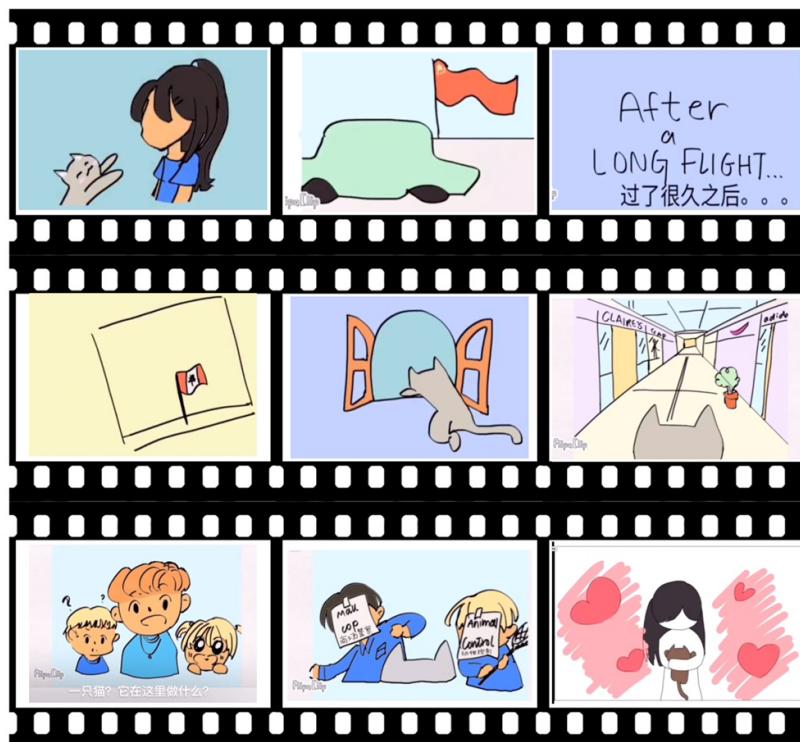
FIGURE 4. *Screenshots of Major Scenes of The Cat Lords' Final Digital Story*

Online intra-actions and interview data show that creative biliteracy meaning-making emerged while humans and matter worked relationally to bring their digital stories to life. In the post-research interviews, the focal participants shared their appreciation of the opportunities to tap into the "synaesthetic potentials" in their "transformative, creative actions" with multimodal materials and artifacts (Kress, 1997, p. 27). The focal participants' digital stories exhibit the creative affordances of orchestrating multiple ways of meaning-making compared to mono-mode texts. Jenny's Chinese shadow puppet movie exemplifies the force of ensembled modes that helped reproduce the artistic features of the original Chinese classic poem "Sunny Sand and Autumn Thoughts" (see Figure 5).

We observed how Jenny experimented with the materials to make sure the crow flies, the horse gallops, the sun goes down behind the hill, and the people walk on the bridge in the shadow puppet movie. In the edited movie, the traditional Chinese zither music plays as the background music, intertwined with the crow growling, scattered kids' giggling, river gurgling, and Jenny's oral interpretation of the Chinese classic poem in Mandarin. Jenny

FIGURE 5. *Screenshots of Major Scenes of Jenny's Final Digital Story*

also moved the cut-out figures and the light source to create various effects indicating dawn, bright daylight, and sunset. The sensory entanglement of human and more-than-human entities in her digital story reconfigures the world that is conveyed by the well-known Chinese classic poem and enables the original gloomy and desolate loneliness to emerge.

Wiebe and Caseley Smith (2016) argued that abstract text-only representations could become concrete and "visible through the materiality of film" (p. 1172). Likewise, Chloe commented on how drawing and animation brought the Cat Lords' co-created bilingual scripts to life and how their subjectivities breathed life into the creation:

> I think the animation that we did kind of expresses, like, ourselves, because we kind of put our personalities in the drawings, like, the way we draw is [...] related to us in some way but as, like, the kind of artist. I think that the way that everyone draws is, like, what type of person they are. For example, if you're [...] a really sad person or anything like that, then you will only draw with [...] a lot of black scribbles and whatever. If you're a really lively person, then you will probably draw a bunch of rainbows everywhere. So I think that's the way of expressing ourselves in another way than texting.

Throughout the research, researchers and language teachers also attended to how learners' material-discursive intra-actions shaped the flow of the online biliteracy curriculum. Biliteracy learners' creativity shone through their intra-actions with materials. Figure 6 contains snapshots of Aaron's LEGO stop-motion animation.

When asked whether the project enhanced his creativity in his digital storytelling, Aaron's answer was brief: "Yes... Like using LEGO to shoot the movie". It was Aaron's first-time creating LEGO stop-motion animation.

FIGURE 6. *Screenshots of Major Scenes of Aaron's Final Digital Story*

Similar to Wiebe and Caseley Smith's (2016) argument that "an artist's way of thinking and being are the ways curriculum work lives in the relational, messy world" (p. 1169), the process of Aaron's creation of LEGO stop-motion animation was messy and (dis)continuous. Aaron's Scene One footage looked jumpy. After viewing it, Adam helped Aaron to shoot and edit stop-motion footages in a peer-support, face-to-face meeting including Adam, Aaron, and language teachers. Adam and Aaron set up backgrounds for individual scenes, and Aaron took pictures until there were sufficient stop-motion pictures for a specific scene. When Aaron started editing the movie, Adam gave suggestions to Aaron regarding the length of footages, transition of scenes, and how to avoid jumpy footage. During this meeting, LEGOs, cardboards, the camera, and movie-editing apps entangled with Aaron and Adam and impacted their verbal discussions and bodily intra-actions.

Despite their tight school schedule, all six focal participants persisted in creating the digital stories after school. When asked why, Adam said, "This is something that I am very interested in, but normally parents would not allow me to do in outside-of-school life". Moje and Luke (2009) argued that literacy-and-identities research should move beyond "simple admiration for or celebration of the many ways that people write, speak, or read themselves into

the world" (p. 434). They recommended further research that links identity and learning in multiple domains. Findings of the six focal participants' digital story creation relate that this cross-border, online biliteracy curriculum engaged biliteracy learners in a spectrum of literacies through capitalizing on learners' funds of knowledge, namely, their peripheral linguistic, cultural, and semiotic knowledge. The findings also show how biliteracy learners' relationality with matter and humans helped bring their subjectivities to presence.

CONCLUSION AND SIGNIFICANCE

In this study, biliteracy learners' relational knowing / becoming / doing literacies left material traces in the virtual spaces and learners' situated worlds, such as the transformed worlds around them, the enhanced relationality with global peers and traditional / digital materials, and their transformed practices in meaning-making. In turn, the cross-border, biliteracy research prompted the researchers and language teachers to engage ethical meaning-making via multimodality, relation-building, and interdisciplinary exploration. This research offers a counter-narrative to the neoliberal application of new media and digital literacies in certain schooling systems; for example, the inclusion of digital tasks in standardized curriculum and assessment (e.g., PISA testing), which might result in "normalizing, controlling what officially counts as digital creativity, critique, and innovation" (Garcia et al., 2018, p. 75).

The sociomaterial turn in literacy education and research has potential to help reconfigure new ways of representation and ways of learning and teaching literacies (Kuby et al., 2017). Though illuminated by multiliteracies in our prior and current projects (e.g., Zhang, 2015; Zhang & Heydon, 2014; Zhang et al., 2020), we are in line with the current critiques of multiliteracies as an advocacy for transformative and inclusive pedagogies (e.g., Jacobs, 2014; Leander & Boldt, 2012; Rowsell & Burgess, 2017). Our findings refer to the importance of literacy researchers' and educators' reconfiguration of the concept of design: the artifacts and digital stories presented in the paper reveal biliteracy learners' "spontaneous, random, and unexpected" creative meaning-making (Jacobs, 2014, p. 272). Multiliteracies pedagogy portrays both teachers and learners as agentive in meaning-making (e.g., Kalantzis & Cope, 2010; The New London Group, 1996). The findings refer to the possibilities offered by material-informed pedagogies which attend to the enacted agency that emerged between teachers, students, materials, and spaces — specifically the enacted agency of materials and cross-border virtual spaces in shaping creative literacy practices. These findings also allude to the shifting nature of 21st century biliteracy learners' meaning-making which is more variegated than the original call for multiliteracies back in 1996, as Rowell and Burgess (2017) exemplified. In the research process, graduate research assistants and language teachers appraised opportunities to learn with and from biliteracy learners

about their creative intra-actions with traditional and digital materials. In contrast to top-down professional training that is mono-mode and print-based (Cloonan, 2010), meaningful professional learning is needed through which literacy educators, learners, and matter intra-act to create meaning. To nurture 21st century meaning-makers as "collaborative," "innovative," and "creative risk-takers" (Kalantzis & Cope, 2012, p. 7), literacy educators need opportunities to engage in experiential professional learning likewise.

One key challenge we encountered in analyzing data in material-informed research was researchers' tendency to "interpret our observation [of meaning-makers'] behaviour [and] hasten to introduce a representational system to stand in for embodied materialities" (Hackett & Somerville, 2017, p. 377). It required researchers' constant awareness to decenter the human in the various data sources that unfold creative meanings. Meaningful intra-actions with various traditional and digital materials and the cross-border virtual spaces enabled students' sustained engagement in creative meaning-making beyond classroom settings. Educators need sensibilities to attend to how young meaning-makers are, as Hackett and Somerville (2017) state, "coordinating their actions" among more-than-human, and equally important, how the more-than-human entities are "coordinating the actions" (p. 386) of the humans — therefore, to consider the "role of bodies, objects, and places" in ethical, creative meaning-making processes (p. 387). Future research on cross-border biliteracy education should also create spaces and incorporate elements that facilitate learners' instantaneous feedback to one another, either online or offline.

NOTES

1.   Social Sciences and Humanities Research Council of Canada (SSHRC) is a Canadian federal research-funding agency that supports research and training in the humanities and social sciences.

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EXPLORING THE CREATIVE GEOGRAPHIES OF WORK WITH PRE-SERVICE SOCIAL STUDIES TEACHERS: EXPOSING INTERSECTIONS OF TIME AND LABOUR IN NEW BRUNSWICK, CANADA

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ABSTRACT. What creative approaches might be harnessed to encourage social critique and action in pre-service Geography teacher education? By reflecting on an assignment in Casey's Introduction to Teaching Geography class where pre-service teachers (including Allen) visually mapped a worker's labour for a day on unceded and unsurrendered Wolastoqiyik territory (Fredericton, New Brunswick), we ask: What can we learn about work, labour, space, capitalism, and intersectionality by visually mapping a worker's day and analyzing their labour? We argue that by confronting the apolitical teaching of Geography education through the example of the Mapping Labour assignment, we might attempt to disrupt the ways that European Canadian settler geographies permeate the existing curriculum and work to disrupt neoliberal assumptions about schooling, creativity, and work.

UNE EXPLORATION DES GÉOGRAPHIES CRÉATIVES DU TRAVAIL AVEC LES ENSEIGNANTS D'ÉTUDES SOCIALES PRÉ-SERVICE : EXPOSER LES INTERSECTIONS DU TEMPS ET DU TRAVAIL AU NOUVEAU-BRUNSWICK, CANADA

RÉSUMÉ. Quelles approches créatives pourraient être exploitées pour encourager la critique sociale et l'action dans la formation initiale des enseignants de géographie ? En réfléchissant à un devoir du cours d'introduction à l'enseignement de la géographie de Casey, les enseignants en formation (y compris Allen) ont visuellement représenté le travail d'un ouvrier pendant une journée sur le territoire Wolastoqiyik non cédé et non abdiqué (Fredericton, Nouveau-Brunswick). En examinant ce sujet, nous nous demandons : que pouvons-nous découvrir de plus sur l'ouvrage, le travail, l'espace, le capitalisme et l'intersectionnalité en traçant visuellement la journée d'un travailleur et en analysant son travail? Nous soutenons qu'en confrontant l'enseignement apolitique de l'éducation en géographie à travers l'exemple de la mission Mapping Labor, nous pourrions tenter de déstabiliser la façon dont les géographies des colons européens canadiens imprègnent le programme d'études existant et cherchent à perturber les hypothèses néolibérales sur l'école, la créativité et le travail.

Engaging in the labour of teaching has always been political and draws on creative capacities. Among the purposes of designing meaningful and critical

assignments for pre-service teachers is the desire to create opportunities for learning, and for pre-service teachers to imagine incorporating similar practices in their own teaching. Given the unlimited range of creative pedagogies that professors of pre-service teachers have, garnering learners' intrinsic desire to learn for the sake of learning, as well as fostering an awareness of potential agency towards teaching for and about social justice issues through creative inquiry, provides the didactic purpose of pedagogy. Challenging pre-service teachers to critically reflect upon their sense of agency and their role in systems reproduction is an essential and necessary task. By positioning the professor as a co-learner in a social justice and agency dialectic, co-learning has the potential to flourish from the ground-up (Choudry & Kapoor, 2010; Freire, 2018). In this kind of a classroom, the teacher-student paradigm is modified from being a traditional top-down experience to an engaged exploration of social justice issues where teaching is positioned as a kind of activist practice within a local context — addressing inequities in both schools and society. Together, we wonder, how might pre-service teachers engage deeply and creatively with pressing political issues in the Geography classroom (racism, inequality, labour conditions, late-period capitalism, settler colonialism) in the context of New Brunswick, Canada, and how might this engagement be assessed?

In this article, we reflect on an example of co-learning creative pedagogical approaches by developing multiple interconnections between artmaking (positioning an assignment as art-production) coupled with critical inquiry into the geographies of work in New Brunswick. In this article, we describe an assignment where a class of pre-service teachers, enrolled in a Bachelor of Education degree program with a concentration in social studies, learned about the inexorable intersections of time and work with real-world experiences. Through this assignment, Burkholder sought to politicize the ways in which work — including the work of teaching — is seen and unseen with an eye toward promoting teacher agency and engaging in teaching for social justice. The example herein shows how a pair of pre-service teachers (Allen and his collaborator) reconceptualized their role as prospective teachers in terms of the political potential of engaging students with social justice issues by examining how work and time intersect by mapping a worker's day. Creative pedagogies such as narrative map-making, cellphilm production (cellphone + filmmaking, see MacEntee et al., 2019), and researching the ways that labour and time intersect through work all require a reflection upon the synthesis of work, time, and the alienating and exploitative nature of labour in today's late-period, neoliberal, commercialist, and capitalist society. We see our work together as an example of collaboration, of creating solidarities, and of examining as well as addressing inequalities within labour and in teacher education, in response to the neoliberal political status quo.

SITUATING OUR INQUIRY IN RELATION TO THE COURSE

The Introduction to Geography in Education course was intended for secondary pre-service Social Studies teachers to begin to think about the practice of teaching geography: inclusive of ideas about place, space, time, geography, humans, and the Anthropocene – the present geological era where human behavior has irreparably shaped the physical environment (Lewis & Maslin, 2015). The goal of the course was to encourage students to become reflective and inquisitive geography educators, by critically investigating Social Studies & Geography curricula, Grades 6–12. We reflected and extended upon existing curricular concepts and engaged in multiple ways of knowing and experiencing along the way. The course focused on exploring geography within and beyond maps (i.e., exploring and representing space, time, humans, art, actions, and the environment) while conceptualizing them as inherently political projects. In choosing the course textbook, Katherine McKittrick & Clyde Woods' *Black Geographies and the Politics of Place,* Casey sought to disrupt the ways that European settler geographies have been foregrounded in the teaching of Social Studies and Geography in the context of New Brunswick. The erasure of Black peoples' and Indigenous peoples' histories and geographies from New Brunswick Social Studies and Geography curricula encourages the state project of anti-Indigeneity and anti-Black racism (Adjei, 2018; Maynard, 2017). Throughout the course, Burkholder worked to disrupt the apolitical teaching of geography and the erasure of Wolastoqiyik, Mi'kmaq, Passamaquoddy, Abenaki, Penobscot, and Black Atlantic Canadians' histories and geographies with creative pedagogies. Through the reflection and production of stories, images, and videos, we worked to capture the ways that political and dystopic geographies exist in Atlantic Canada, especially around environmental injustices related to resource extraction and fracking, racial injustices in the name of progress (e.g., gentrification and dispossession in Nova Scotia from Africville to the present), and reproductive injustices through barriers to access to reproductive health services for trans, non-binary people, and cisgender women.

Regular course practice consisted of field trips, such as exploring liminal spaces along back alleyways, and exploring the local high school's "hill" where illicit activities were said to take place. We also watched films: Thom Anderson's (2004) visual essay *Los Angeles Plays Itself*, that shows the ways the city of Los Angeles has been depicted visually within Hollywood cinema, and Lisa Jodoin's (2014) short *Tracing Blood*, which explored her identity as an Indigenous woman responding to the "Are you native?" question. We began by thinking deeply about space within our local context. How is space constructed? What about time? How do humans interact in spaces and with time? How are these experienced in relation to racial, ethnic, sexual, gendered and (dis)abled identities? How are space and time constructed in schools and society? What can we learn if we think about these space and time in political

terms? How are cities, territories, rural areas, and nations constructed in film / media? How are people that occupy these spaces constructed in relation to the spaces? What makes a Maritimer a Maritimer? Or a New Brunswicker a New Brunswicker? What do these constructions tell us about racial, ethnic, sexual, gendered and (dis)abled identities? These guided questions served to creatively anchor our inquiry into local geographies and the ways in which spaces and places shape our behaviors and actions.

Together, in this article, we reflect on an assignment where pre-service teachers were asked to map a worker's labour for a day. The purpose of the assignment was for pre-service to explore the extent to which labour separates and connects people in the city and province in ways that are largely invisible, and intersected by issues of gender, class, race, ability, and sexuality (Crenshaw, 1989). The assessment was adapted from an assignment developed by Dr. Shannon Walsh at the School of Creative Media (City University Hong Kong) in Winter, 2015 and refocuses the assignment toward the geographical particularities of New Brunswick in Spring 2019. The questions that have driven this inquiry are influenced by our experiences as professor (Casey) and as former pre-service, now in-service teacher (Allen):

1. How might looking at work and labour encourage pre-service teachers to creatively engage with social critique and action?

2. What can we learn about work, labour, space, capitalism, and intersectionality (Crenshaw, 1989) by mapping a worker's day?

3. How might visual inquiry, as a creative pedagogical practice, encourage pre-service teachers to think about and perhaps even take political action?

POSITIONING OURSELVES IN THE STUDY

Positioning ourselves in relation to the study is necessary to situate our understandings, as feminist and post-colonial theorists have long argued about, and the politics of speaking for [and about] others (Alcoff, 2009). Alcoff argues that a researcher must contend with the social spaces where both the research and the discursive acts within the research are taking place.

Following Foucault (1975/1995), I will call 'rituals of speaking' the discursive practices of speaking or writing that involve not only the text or utterance, but its position within a social space which includes the persons involved in, acting upon, and/or affected by the words. We focus on two elements within these rituals: the positionality or location of the speaker and the discursive context (p. 121).

This work is especially important in locating us spatially and geographically as two people who have directly benefitted from the state project of European Canadian settler colonialism.

We write together as a professor of an Introduction to Geography in Education course (Casey) and as a former student of the course (Allen). Though she has been teaching in postsecondary institutions for the last five years, Casey has recently begun to really think about what she is doing in her work as a teacher educator in terms of systemic reproduction and furthering oppression. She had previously thought that her work with pre-service teachers to see and expose inequalities in schools and societies was making a difference in her local educational contexts. Over time, she has become a little disillusioned with this work. Looking around her, Casey has noticed that the world is on fire, both literally (Kyle, 2019) and in relation to the erosion of people's rights and freedoms (O'Donnell, 2019). To what extent does her work in teacher education replicates the oppressive systems and structures that she, as a white middle class cis femme, has benefited from? Throughout the Introduction to Teaching Geography class, she focused the class inquiry on the issues that she was most concerned with living ethically in the Anthropocene, confronting anti-Black racism and anti-Indigeneity, petrocapitalism, institutional geographies of patriarchy, exploring liminal spaces and noticing slow violence, such as the environmental catastrophes that build up slowly over time and hardly make the news (Nixon, 2011). These themes arose throughout the course, and she endeavored to bring them through the course assessments.

As a recent graduate of a Bachelor of Education degree program and former graduate student in political science, Allen is particularly interested in how educators develop critical consciousness in the process of thinking dialectically (Freire, 2013; 2018). Educators face the challenge of bridging the gap between theory and praxis on a daily basis: some educators are conscious of their reflective action and critical theorizing, while others reject them criticality. Following the "Freirian" message of immersing the educator with the learner as a co-learner in a dialectical process toward conscientization is part of the critical and necessary elements in education. The extent to which educators are problematizing the status quo, as well as challenging historical and cultural realities, generates a same-order-of-magnitude space where learners (and educators) begin to experience praxis in itself (Freire, 2013). Allen is troubled by the deeply ingrained bureaucratic systems that support our society's neoliberal and capitalist structure, especially in systems like public education. Drawing from Marx's economic and political philosophy, the critical philosophy and social theory works of the Frankfurt School's political philosophers (Horkheimer, Adorno, Marcuse, etc.), and Hannah Arendt's breadth of work drawn from the ancients on the human condition, the inherent crises of capitalism in our late-modern world (f) call for immanent attention and action. The importance of educating learners within a critical consciousness dialectic helps combat the inevitable process of alienating students' experience of knowledge as a commodity. "School makes alienation

preparatory to life, thus depriving education of reality and work of creativity" (Illich, 1971, p. 47). Allen is interested in exploring how teachers adopt, accept, and embrace critical consciousness (in teacher education) and implement it in their own classes. He is similarly interested in an exploration of how critical consciousness is lost, whether by the nature of their work and profession or as a process in an alienating, bureaucratic, and technocratic environment.

We bring our experiences, and frustration with the neoliberal status quo to our inquiry here.

POLYVOCALITY: A METHOD FOR CO-WRITING

We have negotiated ethical tensions within our collaboration as we have moved from the positions as professor and student to our ongoing collaboration as co-writers (Sultana, 2007). Through an examination of multicultural women's writing, Nayak Kishori (2009) has argued that polyvocality, or the use of many voices writing together, is a "pluralist and transgressive" (p. 46) feminist writing practice. We employ a polyvocal approach in the writing of this article to address the power imbalances within the research, particularly when reflecting on the work that Allen had previously submitted for assessment. Kathleen Pithouse-Morgan et al. (2015) describe the "critical introspection and shared vulnerability" (p. 163) that can be drawn out in the polyvocal process. We see our polyvocal collaboration as an extension of critical geographical practice: creating space in writing together in order to get at the tensions of mapping work and labour. It is our intention to shift our creative pedagogies toward writing collaboratively and disseminating our thoughts in academic spaces by employing a polyvocal approach to writing this article (Pithouse-Morgan et al., 2017).

THEORIZING OUR INQUIRY

The conceptual framework for our inquiry draws upon intersectionality — the ways in which social categories (e.g., race, class, gender) are experienced relationally, rather than independent of one another (Crenshaw, 1989; 1991), which we have seen through our examination of the political nature of work and space and movement. Our practice of working together to look back on the assignment engages with theories of critical civic engagement (Buckingham, 2009; Buckingham & Willet, 2013; Fox et al., 2010; Gordon, 2008; Harris, 2012). Adding criticality to an understanding of citizenship is integral to this study as much of the citizenship literature's canon. For example, Marshall, 1977 and Turner, 1990 present theories of citizenship without careful attention to intersectional issues, but these notions have clear implications for citizens that cannot be mapped within dominant, hegemonic majorities. We also frame our inquiry through an examination of labour and

time in relation to Marxism (Carver & Harris, 2019; Marx & Engels, 1978). Drawing on the work of Schratz and Walker (1995), de Lange (2012) takes a "research as social change approach" and argue that working "deeper and not wider" in communities may encourage both project sustainability and social action (p. 324). Casey takes a similar approach in her teaching: drawing on the tenets of participatory visual research methodologies, she works with learners, as co-researchers, to investigate society deeply. By employing participatory approaches and working with pre-service teachers to look deeply at inequality and oppression to identify changes that they would like to see in their own communities, Casey has endeavored to put social action at the fore of this assignment and in our writing together. We see this inquiry as critical within the creative practice of teaching and learning.

Critical thinking is a tool for self-determination and civic engagement (Freire, 2018; Giroux, 2017). Critical pedagogy provides students with the opportunity to learn from a position of agency. In this view, teachers should strive to establish safe classroom environments where students are given the opportunity to raise problems and to question the dynamics of power and authority; students are provided with more control over the conditions of their learning based on these classroom relations (Giroux, 2017). In order to help avoid the perpetual replication of the capitalist and neoliberal status quo in education, critical pedagogues should aim to inherently reject the systems of educational rationalization that are oriented around market capitalism, instrumentalized knowledge, and technocratic "culture industry" over creativity, imagination, and critical thinking (Adorno, 1998). Assignments that highlight the intersections of work and labour, such as engaging students with workers in a community, fosters a dialectic of critical consciousness among students, pedagogues, and the local communities of work.

Bridging the gap between theory and praxis is one of the aims of critical pedagogy. The didactics of critical pedagogy by teachers with students is, arguably, one of the most important aims of teaching. One way to teach critical theory is by having students work with teachers on finding and establishing educational contexts to address social issues by means of critical studies and analysis (Rogers, 2017). One such method of engaging students in critical studies is through creative and participatory media making — including documentary filmmaking and cellphilming. Film as text-making allows for a critical context for engaging in real-world explorations of topics to teach for and about equity and social justice. Simultaneously, the teacher becomes an active participant in the co-learning process. Without ever explicitly outlining critical pedagogy to students, teachers have the opportunity to create authentic learning in the pursuit of students' agency through participatory filmmaking.

Learning alongside students highlights the intricacies of power and agency dynamics, relationships of authority, and developing a consciousness of

freedom in the pursuit of social justice and equity, is the dialectical purpose of what Freire (2018) calls "an instrument for critical discovery" — or the pedagogy of the oppressed (p. 48). In an era of the besiegement of public and higher education by conservative and neoliberal forces (Giroux, 2017), educators have the potential to form part of the frontline to hold off market-driven changes to education. If the purpose of education is a "purpose of freedom" (Giroux, p. 154), then critical pedagogy must be connected to social justice and equity.

RESISTING APOLITICAL APPROACHES TO GEOGRAPHY EDUCATION: CENTERING JUSTICE AND SPACE

The assignment

The guidelines of the Geography assignment we reflect upon was to get pre-service teachers to create a Story Map containing up to 10 data points which locate the movements of a worker in the span of one working day. Pre-service teachers were also tasked with creating a cumulative analysis of their inquiry in the form of a narrative cellphilm (cellphone + film production, see MacEntee et al., 2019). The purpose of the assignment was to understand the extent to which labour separates and connects people in a city in ways that are largely invisible. Pre-service teachers were expected to seek out someone whom they feel holds the city together through their work and follow that person throughout their working day. In the process, the pre-service teachers created a topological map of data points with supporting photos and descriptors. The assignment's purpose was also to demonstrate the interconnected relationship between workers and the city's environment. Furthermore, the assignment aimed to synthesize the intersections of where work happens, and who benefits from the work. Casey aimed to challenge pre-service teachers' sensibilities about how the assignment might politicize work, and make visible the economic implications of work (how the work minimizes labour concerns). Some questions she wished to encourage pre-service teachers to consider included: how is work conducted on unceded / unsurrendered territories? How does work intersects with settler colonialism, land, appropriation of traditional territories, and dispossession? Ultimately, the assignment sought to challenge future Social Studies teachers to consider how they might use a similar assignment with their own students.

The assignment description read:

> Cleaners, dishwashers, taxi drivers, cooks, childcare workers, domestic builders, plumbers, sanitation workers, construction workers, bankers, bartenders, and sex workers make the city. In this group assignment (2–5 students), students must find someone who they think holds the city together through their work, and follow that person, creating a map and visual story of who and what depends on their work. The result is that each student's topological map will be placed in relation to other students' maps, ultimately

producing one large class map showing the complex and interconnected relations between people in the city.

Students were guided to choose a worker to follow for the day, and to map their labour's coordinates using a software program called StoryMaps. StoryMaps is a software program that encourages the integration of storytelling and visuals with coordinates on a map. Providing at least 10 data points and at least 10 photographs or visuals, pre-service teachers were asked to create a story that explained the worker's workday journey and the ways that their labour contributed to the city or Province. What follows is a reflection on an example of a StoryMap involving one pair of pre-service teachers (Allen and his Collaborator) and their analyses while completing the assignment.

Mapping intersections of time and labour through the example of a delivery truck driver's work

Allen and his collaborator chose to document the working day of a delivery truck driver in the Fredericton and Oromocto, New Brunswick region. For the sake of anonymity, the driver and his company will not be named. We include below excerpts from the assignment that followed a delivery truck driver through a day's work.
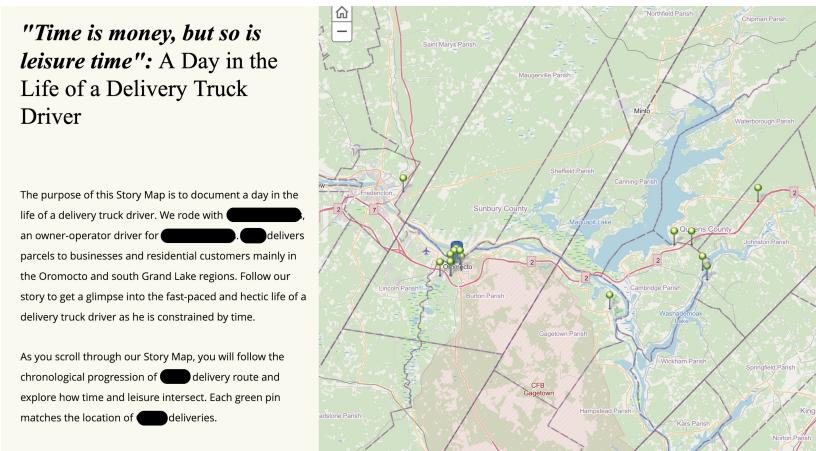
FIGURE 1. *Overview of Story Map*

The purpose of this Story Map is to document a day in the life of a delivery truck driver. We rode with Bob, an owner-operator driver for ACME Delivery[1]. Bob delivers parcels to businesses and residential customers mainly in the Oromocto and South Grand Lake regions. Follow our story to get a glimpse into the fast-paced and hectic life of a delivery truck driver as he is constrained by time. As you scroll through our Story Map, you will follow the chronological progression of Bob's delivery route and explore how time and leisure intersect. Each green pin matches the location of Bob's deliveries.

The delivery truck driver starts his day at a cargo and sorting depot on Fredericton's Northside at 5:45 am. The driver is not paid for the 1 to 1.5 hours it takes him to collect, verify, and sort his deliveries into sequential order, which will in turn save him time. The driver explained to use that he is only paid during the time that he is making deliveries. He is compensated for the number of packages delivered which is also factored by the distance he needs to drive to make the delivery. Therefore, in his work, time is money. He is also not paid for taking breaks, lunch, or stops along the way that are not delivery related. The conception of free time versus unpaid labour was a recurring theme in our ride with Bob. Since the worker is not paid for lunches or breaks, he is forced to work swiftly and accurately, so as to not waste time. The result is often distracted driving, where he is forced to eat while driving or to check his parcel scanning device while on-the-go.

Trust. ACME drivers are trusted with delivering sensitive, private, and secure packages. Bob said he regularly delivers up to $250,000 worth of pharmaceutical drugs each day. Company drivers are bonded and must pass a criminal record check before employment.

Wasting Time. If Bob does not load and organize his truck properly, and if a logical route is not planned ahead of time, Bob risks "wasting time." Bob packs the back of his truck so that he can grab home deliveries from his cab, and larger packages from the rear cargo door. All boxes rotate clockwise so that they are in order. He reorganizes his cargo around his noon lunch break at Sobeys in Oromocto. After leaving Base Gagetown, Bob stops next to deliver parcels to Oromocto's main grocery store and drugs to the pharmacy:

Pharmacy / Privacy. Bob is trusted to deliver expensive pharmaceuticals (narcotics, opioids, etc.). Pharmacists trust that Bob will deliver the pharmaceuticals on time, as well as adhere to their customers' privacy.

Goodfood Delivery. Goodfood and *HelloFresh* parcels / boxes are delivered each Wednesday and Friday, making for larger loads and more stops in residential areas (most are in Oromocto). These deliveries are quick, as he does not need to ring the doorbell – packages like these can be left at the front door. Bob takes a photo of the delivery, which helps account for the delivery in case of lost packages.

Post-Modern "Good foods"? Bob delivers Goodfood and Hello Fresh food preparation parcels, which he has seen a steady rise in delivery. Bob expressed his skepticism about why people feel they need / want boxes of kit food delivered to their homes. He was aware of the massive promotion of such products, and how there is an erosion of valued time for meal preparation with families.

Drop & Go! Bob doesn't mind residential stops, as he can leave parcels at the front door: no "wasted time" waiting for someone to answer the door. He takes a photo on the ACME wireless device as proof.

Checking ACME Wireless Device. Bob uses a Panasonic wireless device that scans and uploads / downloads parcel information, as well as takes photos of parcels delivered.

"It's Only Wrong If You Get Caught". The pressure that Bob faces in the run of a day is apparent in this photo. Bob feels the need to basically text and drive — Loomis sends updates and alerts several times a day, which are time-sensitive. Bob is aware of the risk of illegal texting and driving and stated that he has to watch out for police.

Residential Deliveries. Most of Bob's residential deliveries were Goodfood packages or Walmart parcels. His residential deliveries depend on the contracts that ACME has with big business.

"Walmart Shit". Bob calls these packages "Walmart Shit", as he is incredulous of all the Walmart products / parcels that he delivers. Some people order Walmart food and Walmart goods all the time, which raises questions about profitability of delivery costs and carbon footprint. However, Walmart does offer free shipping, which helps for those who cannot drive to Walmart (this raises other questions about the need for people to have cars).

Liminal Spaces. Behind most commercial businesses are delivery areas which the public rarely see. Bob's big-business / commercial delivery stops are spent mostly in liminal spaces — the areas behind buildings and businesses which the public seldom see. These areas are dirty, dusty, and rusty.

Lunch at Sobeys Parking Lot. Gary usually stops for lunch (time-permitting) around the time he done delivering at Canadian Tire and/or Sobeys (he says this is usually between 10:30-11:00). If he's ahead of time / schedule, he tries to squeeze in a 5k-10k run on the trails in Oromocto; if he's short on time, he eats while driving.

Pressed for time. Bob is not paid for lunches or breaks, so he needs to make his own time by either working fast to get ahead of the clock to allow for breaks or leisure, or risks making the day longer for himself. This forces Bob to multitask (while driving), which can include eating on-the-go. He usually condenses his morning so that he has time to spare in the afternoons to go the gym (if he doesn't get a chance to run in the mornings). He changes between running gear in the back of his truck.

FIGURE 2. *Bob delivering a firearm to a Canadian Tire store*

Rural Delivery. For the first stop past Oromocto after lunch, Gary stops in the Village of Gagetown to make a delivery (Goodfood). After taking the Trans-Canada highway out of Oromocto, Bob leaves the highway to deliver one parcel of Goodfood to a household.

FIGURE 3. *Bob delivering one of many Goodfood parcels*

Carbon footprint. Think of the carbon footprint that one box of Goodfood costs the planet. Bob reached highway speeds and cruised at the most efficient

speed possible for about 15 minutes before leaving the highway at the Village of Gagetown exit. He then drove for about 20 minutes to make the delivery, then back to the highway. All that driving and burned hydrocarbons for just one parcel: there's no such thing as "free shipping" when it comes to the planet.

FIGURE 4. *Looking back into Bob's truck*

Convenience Store Delivery. Bob is always concerned that the owner of a convenience store will be around when he makes deliveries. Bob has been shouted at for parking his truck near the store, as the owner says that he will block customers. The store has the monopoly on convenience products and gas in the town, as it is the only store in a considerable radius. There is a loading / freight area, but Bob cannot use it, as it's full of junk. Instead, I helped Bob deliver packages into the crowded convenience store.

Handle with Care. Bob is tasked with delivering valuable and time-sensitive parcels to pharmacies, but I did not expect that he would have to deliver sensitive cryotoxic packages. Small town businesses, like pharmacies, rely on delivery truck drivers' promptness for their products. Bob is conscious of time, as well as the expectations his customers and the company have of him.

Nursing Home Delivery. The nursing home residents love it when Bob stops by. Bob describes how he has been a regular (and punctual) visitor, getting to know some of the nursing home residents; he said that "it makes his day" when some of the elderly residents greet him.

The Final Destination (Not a Pun). After joking that the Nursing Home was in the middle of nowhere, Bob points out that the nursing home is new and of (seemingly) acceptable standards. The nursing home, like the pharmacies, rely

on Bob being prompt when delivering pharmaceuticals. In many ways, Bob is bound by time. I asked if this was Bob's final stop. He didn't get my morbid pun and told me that we were headed to our last stop of the day in Coles Island — another 25km east on the Trans-Canada.

Irving Small Package Delivery. The final stop before heading back towards Fredericton. Bob delivers one parcel to the Irving station near Coles Island, his maximal distance stop.

Time is money. Fuel expense is paid by ACME drivers (owner-operators). The longer it takes to drive somewhere and to deliver, the longer the driver's day is. They are paid by packages delivered and kilometers driven. Despite the financial gain of having further deliveries, the cost is time.

DISCUSSION

Theoretical notions of time

The notion of free time, saving and wasting time, as well as being pressed for time, were recurring themes in the driver's day and in the nature of work. Foucault (1975/1995) outlines the use of timetables as a form of discipline on human activity and work — timetables inherited from monastic communities, Protestant militaries, and the Industrial Revolution. The ensuing adoption of time as a form of control upon workers realized an extension of the wage-earning class partitioning of time on nearly all facets of life. Foucault mentions that the detailed partitioning of time, quality of time, and useful time are forms of discipline and control on "docile bodies" (p. 150). "Time measured and paid must also be a time without impurities or defects; a time of good quality, throughout which the body is constantly applied to its exercise" (Foucault, p. 151). We witnessed the continuation of wage-earning partitioning of time when riding with the delivery driver; the time working, resting, eating, etc. was inexorably and creatively linked with the underpinnings of modern capitalism.

Weber opposed the Marxist concept of dialectical materialism and traces the rise of capitalism to the Protestant work ethic. In *Protestant Ethic and the "Spirit" of Capitalism*, Weber (1905/2002) contends that the development of the "capitalist spirit" (e.g., work ethic) with development of rationalism as an ethos, "labor in the service of a rational structuring of the provision of the material needs of humanity has always been one of the guiding purposes of [the Protestants'] life's work" (Weber, 2002, p. 26). Weber utilizes the lifestyle of Benjamin Franklin as to make an example of an overly righteous lifestyle and philosophical model that contradicts more recent economic models, where higher wages incentivize workers to work harder and more efficiently (Solow, 1979; Akerlof, 2002). The Protestant / Calvinist / puritan asceticism towards "work as the end and purpose of life commanded by God" (Weber,

p. 107). is exemplified in the reflections / maxims in Franklin's famous autobiography: where he espouses "time is money", where "wasting time" is one of the most serious of all sins, and where "work hard in your calling" equals fruitful labour and meaningful life (Weber, p. 106–107). Franklin is used as a metaphor to represent the Protestant ethic and ethos of modern capitalism: that the explicit moral attitudes towards economic activity and work, the rationalized approach to living, and the ascetic of Protestantism are what led to the formation of the "capitalist spirit" and economically rational conduct of life (p. 27).

Discursus in political theory

The resounding observation of the delivery truck driver was his relationship between his work, time, and fastidiousness of his actions contrasted by what he was doing, i.e., delivering commercial goods to consumers. The power of profit is strong; profit is the driving force of capitalism (Shaikh, 2004). Thanks to the myth that the accumulation of goods makes one happy, consumers propel the capitalist system of goods and services. The delivery truck driver is merely a cog in a much larger system of free market capitalism. Marcuse (1991), writing in the aftermath of Totalitarian regimes and the Holocaust, theorizes that the freedom of enterprise is not a blessing, but a symptom of the technological processes of mechanization and standardization that has released "individual energy into a yet uncharted freedom beyond necessity" and that "advanced industrial civilization imposes its economic and political requirements for defense and expansion on labor time and free time, on the material and intellectual culture" (p. 2–3). Marcuse's indictment of modern industrial capitalism is a grim warning of the underpinnings of technology and consumerism as extensions of what contributes to the waning of critical and reflective thought — the resulting "one-dimensional" human outlook on life. Similarly, Horkheimer and Adorno of the Frankfurt School of thought, point out that the "coercive nature of society alienated from itself" is the symptom of technological rationales of the post-war "culture industry" (Horkheimer & Adorno, 2002, p. 121). The dual achievements of standardization and mass production have been achieved at the cost of the logic of work and social systems. The resulting culture monopolies are the objective social tendencies is the hidden subjective purposes of the most powerful sectors of industry: steel, petroleum, electricity, and chemicals (p. 122).

Today we see the pervasive power of petrocapitalism, transnational corporations, and a rise in fascist, populist, governments as part of an inescapable process of hubris — where humans increase their power over things of this world, which, in turn, furthers and perpetuates world alienation (Arendt, 1958/1998, p. 252). Arendt spent much time exploring the results of world alienation over self-alienation, which she describes as the "hallmark of

the modern age" (p. 254). We have witnessed the results of the "banality of evil" personified by the "rational man / cog in a machine" bureaucratic actions of Adolf Eichmann during the Holocaust. Eichmann, as portrayed by Arendt's coverage of his trial in Jerusalem, was "neither perverted nor sadistic" as a Nazi war criminal, but "terrifyingly normal" (Arendt, 1963/1994, p. 276). Eichmann is the exemplar of the rational person — the bureaucratic cog — who took great pride in his work to the detriment of others. As witnessed throughout the modern age, we encounter the exploitation of marginalized people, expropriation of workers' labour, and obscene accumulation of wealth in the vast minority of the population. Cynically, we have been discussing the way that as educators of pre-service teachers (Casey) and of young people in school systems (Allen), we are working to strengthen the status quo by educating future workers. Optimistically, we think that engaging in creative pedagogies can help to enlighten students to the reality of our shared experience; we orient ourselves towards the knowledge of our experience, as well as developing critical consciousness for its own sake. But is criticality enough, even when harnessed through creative pedagogies? On this point, Casey (hardening cynic) and Allen (critical optimist) are split.

CONCLUDING THOUGHTS AND LINGERING QUESTIONS

As we look back on Allen and his collaborator's engagement with the work and leisure assignment, we see the potential for the assignment to encourage pre-service teachers to creatively engage with social critique and action. In reflecting deeply on the assignment, Casey wondered, what might this examination of work and leisure minimize? We were engaging in work on unceded Wolastoqiyik territory, though intersections of colonialism, land theft and dispossession did not come through explicitly in the pre-service teacher assignments. This left Casey wondering: how might a future iteration of this assignment focus more directly on interrupting settler colonialism, and the intersections of colonialism, land theft and dispossession?

Casey also notes that not all pre-service teachers were comfortable engaging deeply, creatively or critically in this assignment. Some groups, those not invited to continue to think and write about their assignments and experiences, merely fulfilled the assignment guidelines (follow and document a worker's journey) without applying any analysis to this work. Casey sees a danger in this kind of creativity — engaging creatively in a 'fun' assignment without applying a political analysis, without thinking deeply about structural racism and space, without engaging with ideas of schools and subjects (Geography, Social Studies) as static, apolitical constructions. This tendency to want to deliver a neutral curriculum neutrally is, of course, impossible, but this desire for neutrality remains a dominant assumption about what teachers should and should not do.

Despite the example of some of the pre-service teachers' apolitical creative works, we still see the opportunity in encouraging pre-service teachers to examine their positions, agency, and social value (Wiebe & Smith, 2016) both within and beyond classrooms through this kind of inquiry. Casey has been grappling with the balance between creative pedagogies and her role as a teacher educator. Throughout the course, she mentioned that she was wresting with the notion of educating pre-service teachers who were destined into the workforce, who would then replicate the status-quo. The assignment was designed to foster intrinsic learning about the intersections of work and time, of the political nature of movement and space, and to politicize the nature of assessments within the Geography classroom by encouraging learners to think deeply about agency and social value. What does it mean that many of the learners in the classroom were resistant to this kind of overt politicization? What does it mean that Allen was receptive to the idea and so continued to think through these ideas through this written collaboration?

Through our collaboration, by looking back on an assignment to map work in New Brunswick, we have argued that Geography must be taught with an explicit political orientation to disrupt the notion that place and space are apolitical concepts. We sought to center the ways that dispossession, migration, disruption, and control of space and place highlights the ways that whiteness and settler colonialism seep into Geography curricula in the context of New Brunswick. A politically and creatively oriented Geography classroom offers space address some of the most pressing concerns facing us collectively—climate change, racism, anti-Indigeneity, gender-based violence, among others. This version of Geography teaching presents learners with opportunities to research and unsettle the status quo, to notice the things we often take for granted—including the ways that work operates within our local contexts and seeks to center the communities who have been historically dispossessed. This kind of creative Geography teaching even offers the potential to disrupt anthropocentric worldviews (Davis & Todd, 2017). To suggest that there is one way of experiencing space, centers settler colonial ideals about place, naming, and disregards the myriad ways that especially Indigenous and Black folks experience discrimination across spaces and structures. A nuanced and political Geography curriculum must engage creatively, yes, but more importantly, it must focus on the ways in which space, place and location are experienced relationally and are open in different ways to different kinds of people.

NOTES

1. We have provided a pseudonym for the driver and his company to protect his anonymity.

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ÉTUDE DE LA LITTÉRATURE SUR LA CRÉATIVITÉ EN SCIENCES DE L'ÉDUCATION DANS LES PAYS FRANCOPHONES

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RÉSUMÉ. Le terme « créativité » est utilisé de façon très diversifiée dans le milieu professionnel, technologique, socio-économique ou encore dans le contexte scolaire. Dans une perspective exploratoire, une révision de la littérature scientifique francophone en sciences de l'éducation a permis d'identifier les champs de connaissances qui mobilisent ce concept. L'étude menée a porté sur une analyse descriptive ainsi qu'une analyse de contenu catégorielle. Les résultats de celles-ci nous ont permis de situer le contexte de la créativité et d'identifier cinq champs de connaissances : 1) enseignement et développement personnel, 2) résolution de problèmes et pensée informatique, 3) approche artistique, 4) formations et/ou programmes éducatifs, et 5) facteurs de développement de la créativité.

CREATIVITY WITHIN EDUCATIONAL SCIENCES IN FRENCH SPEAKING COUNTRIES: A LITERATURE REVIEW

ABSTRACT. The term "creativity" is used in a wide variety of ways in professional, technological, socio-economical and educational contexts. In this paper, an exploratory literature review of the French-language scientific literature in educational sciences was conducted, revealing the fields of knowledge that mobilize the creativity concept. Both a descriptive and a categorical content analysis were employed. The results of these analyses allowed us to situate the context of creativity and to identify five fields of knowledge: 1) teaching and personal development, 2) problem solving and computational thinking, 3) artistic approach, 4) training and/or educational programs, and 5) creativity development factors.

La créativité est considérée comme une compétence transversale clé dans plusieurs référentiels publiés par des organismes internationaux, dont l'UNESCO, l'OCDE et l'Union Européenne. La revue de littérature menée par Voogt et Roblin (2012) analyse plusieurs de ces référentiels qui ont pour objectif de promouvoir les compétences qui doivent être enseignées dans les écoles au 21e siècle. Parmi celles-ci, nous relevons la collaboration, la pensée critique, ainsi que les compétences liées aux technologies de l'information et des communications (TIC). Dans la majorité de ces référentiels, la créativité en tant que « capacité à réaliser une production qui soit à la fois nouvelle et adaptée au contexte dans lequel elle se manifeste » (Lubart et coll., 2010, p. 10) est mentionnée comme une compétence essentielle du 21e siècle.

De plus, les prochains tests du Programme international pour le suivi des acquis des élèves (PISA) 2021 envisagent d'intégrer une épreuve sur l'évaluation de la pensée créative, ce qui témoigne de l'importance de la créativité dans le monde de l'éducation (OCDE, 2017). La Commission Européenne (2018) soutient de son côté l'initiative de l'OCDE

> sur la manière d'enseigner, d'apprendre et d'évaluer la pensée créative et critique. Cette attention portée à la pensée créative et critique devrait s'étendre à tous les niveaux d'éducation et de formation, dans la perspective de l'ajout d'une dimension artistique au domaine des sciences, des technologies, de l'ingénierie et des mathématiques (p. 5).

Comme l'évoquent Besançon et coll. (2005), le monde du travail ne demande plus seulement que les employé·e·s du futur soient créatif.ve.s (générer des idées créatives), mais qu'ils soient aussi innovant·e·s (les mettre en œuvre) pour faire face aux nouveaux défis que pose la transformation numérique d'un monde globalisé et interconnecté en évolution rapide (Commission Européenne, 2018).

Au-delà de la problématique du développement de la créativité pour l'adaptation au contexte actuel, il faut également considérer le besoin de développer une éducation centrée sur la créativité. Altass et Wiebe (2017) mettent de l'avant cet aspect dans leur analyse des « nouvelles méthodes d'apprentissage dont les Canadien.ne.s auront besoin, en particulier dans l'enseignement supérieur, pour réussir dans la société et sur le marché du travail de demain » (p. 56). Selon les auteurs, un des facteurs les plus importants consiste en le constat que l'économie axée sur le savoir et dominée par la production et la gestion de l'information (*a knowledge-based economy*) se confond de plus en plus avec celle plutôt axée sur la créativité et conduite par des idées (*a creative-based economy*). Il ressort de ces travaux que les approches pédagogiques traditionnelles présentent des limites pour préparer les apprenant·e·s à faire face aux défis à long terme auxquels nous sommes confrontés et à la faiblesse de productivité des employé·e·s (Commission Européenne, 2018) dans l'économie actuelle basée sur le savoir.

Malgré cette importance de la créativité, des auteurs comme Dirani (2016) observent également une certaine résistance à la créativité en milieu scolaire en France. Dans son étude sur le statut du développement et des effets à long terme de la créativité, Dirani a remarqué que cette compétence occupait une place restreinte dans le système éducatif français des premier et second degrés et qu'elle était associée essentiellement aux disciplines artistiques ou liée au développement personnel de l'enfant. Elle conclut que « les travaux explorant la créativité en tant que compétence en lien avec l'analyse de l'institution scolaire sont rares et majoritairement anglo-saxons » (p. 2). Comeau (2004), de son côté, montre que l'émergence de l'intérêt pour la créativité se développe particulièrement dans la société étatsunienne des années 1980 qui l'intègre dans ses programmes scolaires.

Ainsi, en dépit du potentiel de la créativité mis en valeur dans divers milieux étudiés depuis des décennies par des chercheurs — de Guilford (1950) à Stenberg et Lubart (1999) — la créativité reste très peu exploitée dans le milieu scolaire. Une des raisons avancées par Besançon et coll. (2011) serait que la créativité a pendant longtemps été associée à l'inspiration divine, avant qu'Alfred Binet ne s'y intéresse au début du 20e siècle pour éclairer le processus créatif individuel. Capron Puozzo (2016) estime que les obstacles à la mise en œuvre de la créativité en milieu scolaire s'expliquent non seulement par des représentations parfois erronées de celle-ci, mais aussi par une appréhension des tests psychométriques de la créativité individuelle qui ont pu faire craindre une stigmatisation des élèves. En outre, certains travaux considèrent que l'aménagement traditionnel des salles de classe ne favorise pas la créativité (Furman, 1998; Torrance, 1968), ou encore, ils estiment que les enseignant·e·s manquent d'originalité et d'adaptation (Plucker et Beghetto, 2003).

CONTEXTE DE RECHERCHE

Sur le plan méthodologique, Snyder (2019) met de l'avant qu'une étude de littérature est une excellente approche pour synthétiser des avancées et des résultats dans une discipline de méta-niveau. Selon lui, mais aussi selon Wong et coll. (2013), la recherche semi-systématique ou l'approche de revue narrative (*semi-systematic or narrative review approach*) sont intéressantes lorsqu'un sujet a été travaillé par des chercheurs venant de différentes disciplines, mais peut constituer un frein à une revue systématique complète. Cela justifie notre choix d'identifier et de synthétiser toutes les études potentiellement pertinentes au regard de la créativité dans divers degrés scolaires : primaire, secondaire, universitaire, ainsi que dans d'autres dispositifs extra-scolaires. Nous souhaitons ainsi faire un état des lieux du degré d'avancement de la recherche sur la créativité dans les études scientifiques francophones en sciences de l'éducation.

Cet article s'appuie sur une recherche semi-systématique composée de deux volets : 1) une étude sur les connaissances mobilisées, et 2) une étude sur les définitions, les théories et les modèles sous-jacents dans des revues au regard de la créativité. Le présent document est composé uniquement du premier volet.

QUESTIONS DE RECHERCHE

Comme nous l'avons signalé supra, Comeau (2004) et Dirani (2016) ont avancé que la créativité apparaît comme indispensable dans le monde anglo-saxon, mais que cette compétence est relativement méconnue et moins développée dans le monde francophone. Au vu de ce constat, nous menons une étude exploratoire sur sa présence dans la littérature scientifique

francophone en sciences de l'éducation. En premier lieu, nous analysons le contexte théorique (matières et niveaux d'enseignement) ainsi que les connaissances mobilisées. Dans la mesure où nous conduisons une étude exploratoire dans un domaine de recherche en voie de développement, nous ne formulerons aucune hypothèse, pour nous pencher uniquement sur deux questions de recherche (Kothari, 2004), à savoir :

1. Quelles matières et quels niveaux d'enseignement sont traités par les articles sur la créativité?

2. Quels sont les champs de connaissances mobilisés dans des revues francophones en sciences de l'éducation au regard de cette notion?

Nous avons constitué le corpus des revues étudiées en nous appuyant sur la liste des revues nationales et internationales établies par le Haut Conseil de l'évaluation de la recherche et de l'enseignement supérieur (HCERES, 2017) du champ des sciences de l'éducation et de la formation tel qu'il est constitué en France. Ce périmètre est certes discutable, mais il a l'avantage d'être partagé et de contribuer à la clarification intentionnelle et scientifique d'un champ de recherche. Cette liste est un outil de travail français, mais la présence des chercheur.ses étranger·e·s garantit son regard international.

MÉTHODOLOGIE

Collecte de données

Bases de données consultées. Nous avons consulté les portails de publication électroniques Google Scholar, OpenEdition, Érudit, Archive ouverte HAL, Sésamath et Cairn.info. Lorsque les revues scrutées avaient leur propre site, comme la revue *Recherches en Éducation* (www.recherches-en-education.net), nous avons mené nos recherches dans cette sélection de base de données ou sur le site de l'université en charge de la revue scientifique, comme l'Institut de recherche sur l'enseignement des mathématiques (IREM) de Grenoble (https://irem.univ-grenoble-alpes.fr).

Sélection des revues. Sur un total de 81 revues francophones, nous en avons supprimé huit qui traitaient des interventions sociales ou bien de l'histoire des sciences humaines. Nous en avons donc conservé 73 qui correspondaient à nos deux principaux critères de recherche : 1) elles ont pour objet l'enseignement, l'éducation et la formation dans le contexte scolaire primaire, secondaire, universitaire et extra-scolaire; et 2) elles sont accessibles en ligne et libres d'accès. Parmi ces 73 revues, nous avons exclu une revue qui n'était pas publiée en libre accès (*Chemins de Formation*), une qui ne présentait les articles que sous format papier (*Enjeux : Revue de Formation de Continuée et de Didactique du Français*) et trois qui n'étaient que partiellement disponibles en ligne, comme *Éducation comparée* (AFEC) ou *Savoirs et Formation, Recherches et*

Pratiques (SFRP). La revue *Les C@hiers Pédagogiques* a également été supprimée, car les articles trouvés étaient présentés sous la forme d'interviews. Finalement, nous avons restreint notre sélection à 67 revues francophones (voir Annexe A).

Le classement de l'HCERES fait distinction entre les revues de recherche et les revues d'interface, ces dernières étant considérées davantage comme des revues de vulgarisation. Parmi les 81 revues, 19 sont des revues d'interface. Dans notre sélection de 67 revues, 14 sont des revues d'interface.

Sélection d'articles à inclure dans la recherche. Tous les articles publiés entre 1995 et 2019 ont été examinés selon le nombre d'occurrences du mot-clé « créativité », ce qui nous a permis de faire un classement des articles eux-mêmes. Un test aléatoire a montré que les articles qui utilisaient moins de cinq occurrences traitaient la créativité comme élément périphérique dans le corps de l'article. Nous avons donc pris la décision de les exclure. Afin de prendre en compte le champ lexical associé de la créativité, nous avons aussi comptabilisé le nombre d'occurrences des adjectifs « créatif » et « créative ».

Ces critères ont permis d'établir une liste de 1468 articles, dont 1351 ne comportaient pas plus de cinq fois le mot « créativité ». En d'autres termes, 1351 articles sur un total de 1468 ont été exclus, ce qui nous amène à 117 articles pouvant répondre à nos critères.

Compte tenu de la quantité d'articles (N = 117), nous avons fait le choix d'en restreindre le nombre pour faciliter l'étude. Après une première sélection aléatoire, 48 articles ont été sélectionnés (soit 41 % du total) et analysés par les chercheuses impliquées dans cette étude, de manière individuelle afin de pouvoir confronter leur analyse.

Ce corpus, ci-après dénommé « corpus de sélection », a donné lieu à un dernier traitement, défini cette fois par des critères précis. Chaque article devait non seulement traiter de la sphère éducative, scolaire ou extra-scolaire, mais traiter également de la créativité en tant qu'objet central.

En cas de doute pour ce dernier critère, nous nous sommes assurées que l'article proposait soit une définition de la créativité, soit une opérationnalisation de la compétence dans le contexte de recherche. L'opérationnalisation sert, selon Lavarde (2008), à construire un modèle d'analyse basé sur des hypothèses et des questions de recherche. Cette opérationnalisation est effectuée sur la base de construction de concepts, ainsi que sur le choix des dimensions et des indicateurs. Ainsi, nous n'avons pas retenu un texte de Chainé (2012a) intitulé « Créativité et création en éducation » de la revue *Éducation et Francophonie*, dans la mesure où il ne s'agissait pas d'un article, mais de l'introduction du numéro. Cependant, nous avons gardé un seul article qui provenait d'une revue d'interface.

La sélection définitive, ci-après dénommée « corpus d'analyse », a été mise au point d'un commun accord entre les chercheuses. Il en résulte que 32 articles sur 48 ont été retenus. La liste complète est visible dans l'Annexe B.
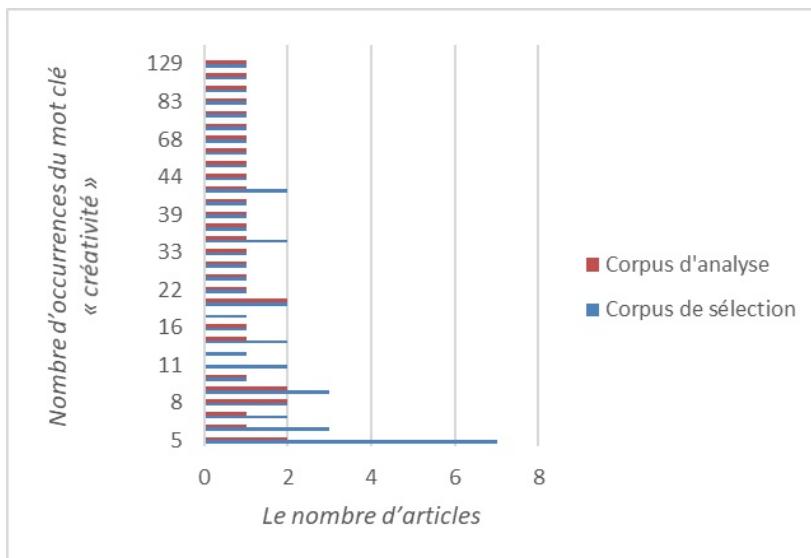
FIGURE 1. *Nombre d'occurrences du mot « créativité » dans les deux corpus*

Comme l'illustre la Figure 1, le principal facteur explicatif d'exclusion des articles est le fait d'avoir un nombre réduit d'occurrences du mot clé. Autrement dit, l'utilisation du mot « créativité » ne garantissait pas le traitement de la créativité comme objet d'étude dans les articles, mais servait à caractériser d'autres situations d'apprentissage. Dans le corpus de sélection, la moyenne des occurrences du mot « créativité » est de 30 (DS = 31), alors que dans le corpus d'analyse cette moyenne augmente à 40 occurrences (DS = 34).

Objet de recherche

Afin de développer une étude exploratoire sur la créativité comme objet de recherche, nous avons adopté une recherche systématique et une approche méthodologique mixte combinant une analyse descriptive et une analyse de contenu. Dans l'analyse descriptive, nous avons effectué un rapport d'investigation sur les dispositifs ou matières d'enseignement et les niveaux d'enseignement sur lequel porte la recherche. Ensuite, nous nous sommes focalisées sur l'analyse de contenu afin d'étudier les champs de connaissances de l'ensemble des articles sélectionnés. Pour analyser les données statistiques, nous avons utilisé SPSS 25 et NVivo 12.

Présentation d'analyse descriptive. L'analyse descriptive doit permettre de répondre à la première question de recherche. Capron Puozzo (2016) souligne que « le

découpage d'un plan d'études, qui cloisonne souvent la créativité hors des disciplines ou la réserve aux seules disciplines artistiques, fait que cette dernière peut apparaître comme complètement détachée des objectifs disciplinaires » (p. 6). Afin de vérifier cette observation, nous avons listé les disciplines telles qu'elles ont été nommées par les auteurs dans leurs articles.

Notre deuxième catégorisation est le niveau d'enseignement dans lequel les auteurs ont réalisé leur recherche. Nous avons explicité les niveaux comme extra-scolaire, enseignement primaire, secondaire et universitaire.

Présentation d'analyse de contenu. Afin de répondre à la deuxième question de recherche, nous avons effectué une analyse de contenu catégorielle, soit une analyse de contenu thématique qui s'inscrivait dans une démarche qualitative (Dany, 2016). D'après cet auteur, « il s'agit d'une technique qui vise le traitement systématique et objectivé de messages / communications afin d'en dégager le sens et de produire des inférences sur les conditions qui conduisent à la production de ces significations » (p. 92). Selon Mayring (2000), deux grandes orientations permettent d'établir des catégories, soit à l'aide d'une méthode inductive, soit au travers d'une démarche déductive. Nous avons suivi la méthode inductive telle que décrite par Mayring dans notre recherche, dont l'objectif était de formuler les critères de sélection basés sur nos questions de recherche. Sur la base de critères retenus, les catégories se sont progressivement créées. Cette construction spiralaire a formé une boucle de rétroaction qui nous a permis de vérifier la pertinence des critères de sélection et des catégories définies en lien avec les questions de recherche.

RÉSULTATS

Analyse descriptive

Nous présenterons les résultats des articles sélectionnés en lien avec les matières d'enseignement et d'autres dispositifs, ainsi que le niveau des enseignements dans la prochaine section.

Matières, dispositifs et niveaux d'enseignement. Afin de vérifier l'impact de la procédure de sélection effectuée dans la revue de littérature, nous avons élaboré deux tableaux avec le corpus de sélection et le corpus d'analyse illustrant les différentes matières d'enseignement et dispositifs. Tous les tableaux sont présentés en ordre croissant selon la première colonne.

TABLEAU 1. *Matières d'enseignement et autres dispositifs*

Matières d'enseignement et autres dispositifs	Corpus de sélection	Corpus d'analyse	Corpus de sélection (%)	Corpus d'analyse (%)
Culture générale	1	0	2,08	0,00
Entrepreneuriat	1	0	2,08	0,00
Danse	1	1	2,08	3,13
Éducation Physique et Sportive	1	1	2,08	3,13
Ingénierie	2	1	4,17	3,13
Sans Objet	2	1	4,17	3,13
Sciences	2	1	4,17	3,13
Mathématiques	2	2	4,17	6,25
Musique	2	2	4,17	6,25
Technologie	2	2	4,17	6,25
Travaux Pratiques Encadrés	2	2	4,17	6,25
Langues	9	2	18,75	6,25
Théâtre	3	3	6,25	9,38
Arts Plastiques	4	3	8,33	9,38
Développement personnel	14	11	29,17	34,38
TOTAL	48	32	100,00	100,00

Nous constatons qu'une majorité d'articles mobilisent des connaissances autour de la créativité dans des recherches qui portent principalement sur le développement personnel ou sur les matières dites artistiques ou littéraires, notamment la danse, la musique, les arts plastiques ou bien encore les langues. Néanmoins, lors de notre sélection définitive (32 articles), nous remarquons une baisse importante des recherches portant sur les langues étrangères. Cette baisse est due à l'accent mis plutôt sur la didactique des langues et non pas sur la créativité ou sur l'enseignement créatif des langues.

Nous avons ensuite procédé à la même analyse en lien avec les niveaux de ces enseignements.

TABLEAU 2. *Niveaux d'enseignement*

Niveaux d'enseignement	Corpus de sélection	Corpus d'analyse	Corpus de sélection (%)	Corpus d'analyse (%)
Enseignement primaire	2	1	4,17	3,13
Enseignement extra-scolaire	2	2	4,17	6,25
Enseignement secondaire	6	5	12,50	15,63
Enseignement primaire et secondaire	7	7	14,58	21,88
Autres	13	5	27,08	15,63
Enseignement supérieur	18	12	37,50	37,50
TOTAL	48	32	100,00	100,00

Le Tableau 2 permet d'observer un nombre non négligeable d'articles qui étudient la créativité dans le milieu scolaire primaire et secondaire. Dans les instances où ces niveaux étaient absents et où les articles mentionnaient la vie scolaire au sein des établissements, nous avons choisi la catégorie « Autres ». Nous avons gardé ces articles, car ils correspondaient à notre critère de recherche principal : l'étude de la créativité en milieu scolaire. Dans la catégorie extra-scolaire, il s'agit d'ateliers de théâtre au sein des établissements scolaires.

Nous observons dans le corpus de sélection que la plupart portent sur la créativité dans l'enseignement supérieur ou universitaire (37,5 %). Dans le corpus d'analyse, le plus grand nombre d'articles enlevé se situe dans la catégorie « Autres ». Ce n'est donc pas surprenant que dans le corpus d'analyse, le mélange « Enseignement primaire et secondaire » (souvent la période scolaire obligatoire) prenne la deuxième place. Cela montre qu'il y a plus d'articles qui traitent de la créativité en milieu scolaire secondaire que primaire. De plus, nous remarquons l'absence de recherche en maternelle.

Analyse de contenu

Nous présentons l'analyse du contenu en fonction des champs des connaissances que nous avons identifiés et présentés supra.

Champ de connaissances (1). La créativité : enseignement et développement personnel. Cette première catégorie (voir Tableau 3) est nommée « La créativité : enseignement et développement personnel ». Chacun des sept articles présente un positionnement spécifique de la créativité.

TABLEAU 3. *La créativité : enseignement et développement personnel*

Auteur(s)	Présentation de l'article
Comeau (1995)	Une étude qui utilise la créativité comme élément principal du développement et de l'expression personnelle.
Barbot (2008)	Un article qui parle de la créativité dans le processus de développement identitaire des adolescent·e·s en tant que connecteur entre le statut identitaire et l'expression personnelle.
Meuret et Lambert (2011)	Une étude qui analyse la créativité à travers l'opposition de deux modèles politiques en éducation, celui de Dewey et celui de Durkheim dans la pratique enseignante dans l'enseignement secondaire.
Besançon et coll. (2011)	Une recherche des tests cognitifs pour évaluer la créativité de Binet à nos jours.
Zérillo (2012)	Un article pour appréhender la genèse de la créativité du point de vue de Winnicott.
Dirani (2016)	Une étude de la créativité au sein de divers espaces à visée socio-éducative en France.
Capron Puozzo (2016)	Une étude qui met en évidence la complexité de la créativité en tant que levier des apprentissages ayant plusieurs modèles et définitions.

Comeau (1995) aborde l'introduction du mot « créativité » en milieu scolaire et constate que l'attention des enseignant·e·s porte principalement sur une créativité naturelle et l'exclusion de toute intervention éducative pour permettre le développement personnel des apprenant·e·s, plutôt que sur l'intégration de la créativité comme partie intégrale des différentes matières d'enseignement. Barbot (2008), de son côté, s'appuie sur le cadre théorique de Marcia (1966) et étudie la causalité entre la construction identitaire de l'adolescent·e et la démarche créative comme expression de soi.

Meuret et Lambert (2011) étudient les buts et les conditions de l'enseignement selon des professeur·e·s du secondaire en France. Les auteurs étudient la prégnance de deux modèles politiques de l'éducation, celui de Dewey et celui de Durkheim, dans lesquels la créativité est un élément distinctif. Autrement dit, le modèle durkheimien place « la science comme connaissance des lois et comme respect des règles », alors que l'orientation deweyenne place « la science comme expérimentation et valorise la créativité et de la curiosité » (Meuret, 2009, p. 5). Ainsi, selon cet auteur, les enseignants suivant une position deweyenne développeraient davantage « de capacités d'imagination et de créativité » (p. 9).

Nous retrouvons une approche psychométrique chez Besançon et coll. (2011), qui analysent l'évolution de l'évaluation de la créativité dans les tests cognitifs de Binet à nos jours et introduisent un outil dont le but est d'évaluer les différents processus de la créativité nommé « Évaluation du potentiel créatif » (EPoC). Le diagnostic aide à déterminer un profil créatif pour pouvoir guider les apprenant·e·s à développer la créativité de manière appropriée. Une autre approche est élaborée par Zérillo (2012), qui essaie de comprendre l'origine de la créativité en se focalisant sur le travail de Freud et surtout sur celui de Winnicott.

Dirani (2016), pour sa part, constate que la créativité n'occupe pas une place primordiale dans les divers espaces éducatifs en France. Elle réalise cette observation à partir d'une analyse des enjeux socio-économiques de la créativité. Enfin, Capron Puozzo (2016) souligne les différentes facettes de la créativité qui nécessitent une approche adaptée afin de prendre en compte sa complexité. Elle met en lumière plusieurs définitions et modèles en contexte d'apprentissage.

Capron Puozzo (2017) décrit le défi auquel nous sommes confrontées : la créativité ne se résume guère en quelques mots.

Champ de connaissances (2). La créativité : résolution de problèmes et pensée informatique. Nous traitons à présent les études sur la créativité qui ont été développées autour de la résolution de problèmes et de la pensée informatique. Cette dernière est définie par Wing (2006) comme étant une approche pour résoudre des problèmes, pour concevoir des systèmes et pour comprendre le comportement humain.

La deuxième catégorie (Tableau 4) « La créativité : résolution de problèmes et pensée informatique », fait le lien entre résolution de problèmes ou pensée informatique et créativité.

TABLEAU 4. *La créativité : résolution de problèmes et pensée informatique*

Auteur(s)	Présentation de l'article
Ouellet (2012)	Une réflexion sur un cours basé sur une expérience de résolution de problèmes par la créativité.
Bélanger et coll. (2014)	Une étude du raisonnement créatif des élèves à travers des productions mathématiques.
Couvrechef (2019)	Une étude ayant pour but de vérifier si l'approche créative Scratch est compatible avec l'apprentissage et l'enseignement des mathématiques.

Ouellet (2012) souligne l'importance d'une démarche pédagogique créative et analyse l'expérience vécue dans le cours de « Résolution de problèmes et créativité » enseigné aux futurs enseignant·e·s en adaptation scolaire. Elle constate qu'une démarche créative demande de l'enseignant·e et de l'étudiant·e une autre posture afin de prendre en compte les caractéristiques de la créativité, telles que l'ouverture au changement, la flexibilité ou la tolérance à l'ambiguïté.

Bélanger et coll. (2014) remarquent que, dans des programmes d'études au Québec, la créativité est considérée comme une composante essentielle de la pensée mathématique. Les auteurs étudient des productions mathématiques afin d'interpréter la créativité « à partir des contraintes liées aux problèmes, aux relations logico-mathématiques mises en jeu par les élèves » (p. 52) et aux connaissances personnelles de l'élève.

Couvrechef (2019) examine deux approches pédagogiques pour enseigner la pensée informatique : l'approche algorithmique, au sein de la discipline de l'informatique, et l'approche créative en utilisant le logiciel de programmation visuelle Scratch. Dans le contexte pédagogique, il suit Tchounikine (2017) sur le fait que l'approche créative est pluridisciplinaire, et déplore le manque de cadre éducatif permettant de mettre en place davantage d'approches créatives dans l'enseignement scientifique.

Ce champ de connaissances s'intéresse à la place essentielle de la créativité en mathématiques. De plus, les approches techno-créatives utilisées en sciences demandent non seulement une gestion de cadrage de la part des milieux scolaires, mais aussi une posture adaptée de la part de l'apprenant·e et de l'enseignant·e. Ces derniers doivent pouvoir faire preuve d'adaptabilité afin d'intégrer une approche pédagogique créative.

Champ de connaissances (3). La créativité : approche artistique. Comme l'illustre le Tableau 5, le troisième champ de connaissances concerne la créativité artistique. Dans cette section, les auteurs distinguent créativité (compétence) et création (processus).

Le but de l'article de Chaîné (2012b) est d'observer le processus de création des élèves en art dramatique, les effets sur leur savoir artistique et leur manière de s'approprier ce savoir. De plus, leur étude s'interroge sur la formation des futurs enseignant·e·s dans l'enseignement supérieur. Elle conclut « qu'un projet inspirant dans un esprit de réelle collaboration et d'accompagnement éveille les esprits et les cœurs dans la traversée du processus de création » (p. 79) et met l'accent sur l'engagement des étudiant·e·s dans un tel projet. Il semblerait que l'approche par projet favorise la cohésion du groupe et la créativité collective au service de la création collaborative.

TABLEAU 5. *La créativité : approche artistique*

Auteur(s)	Présentation de l'article
Chaîné (2012b)	L'observation d'un processus de création collectif d'une pièce de théâtre à l'école et de son impact sur l'appropriation des savoirs artistiques.
de la Durantaye (2012)	Une réflexion philosophique et théorique sur l'enseignement de la créativité artistique.
Duval (2012)	Une étude qui vise à concilier la double dimension identitaire des futurs enseignant·e·s de danse en milieu scolaire, celle d'artiste et de pédagogue à la fois.
Marceau (2012)	Un article qui met en avant l'importance pour un·e enseignant·e stagiaire artiste / pédagogue de comprendre l'acte même d'enseigner au sein d'une démarche créative.
Thibault (2012)	Une étude qui cherche à analyser le rôle des artistes dans l'éducation des adolescent·e·s.
Caron (2018)	Une étude faite auprès des étudiant·e·s de français langue étrangère qui analyse l'influence et le lien entre la pratique théâtrale d'improvisation et l'apprentissage du français.
Sérusclat-Natale et Adam-Maillet (2018)	Une étude faite auprès des étudiant·e·s de français langue étrangère qui analyse l'influence et le lien entre une pratique artistique et le co-apprentissage linguistique à travers l'éducation interculturelle.

De la Durantaye (2012) s'interroge sur l'enseignement de la créativité artistique. Il analyse deux conceptions particulièrement connues de la littérature scientifique, soit la classique et la psychologique. Il évoque également une troisième conception alternative, la psycho-phénoménologique, selon laquelle le processus créatif est présenté « comme une succession ordonnée (selon une certaine progression) et récursive (qui se répète souvent plusieurs fois avant la conclusion) de plusieurs phases qui ont lieu dans le temps et dans l'espace » (p. 13).

Duval (2012) étudie au Québec la tension identitaire artiste / enseignant·e et constate que deux stratégies identitaires sont mobilisées : 1) devenir enseignant·e créatif.ve de danse en conciliant les postures artistiques et pédagogiques, et 2) agir uniquement en tant qu'enseignant·e (pédagogue), ce qui signifie encourager les attitudes et les apprentissages artistiques chez les élèves. En d'autres termes, dans la construction identitaire, les apprenant·e·s

sont invité·e·s à déployer la création et la créativité afin de trouver une réponse à cette tension identitaire qui existe entre artiste et enseignant·e. Duval appelle « création » l'action de créer pour autrui, mais il ne fait pas de distinction entre « création » et « créativité », ces deux termes étant utilisés de façon interchangeable. Selon lui, la cohésion identitaire pourrait être acquise lorsque « les composantes artistiques et pédagogiques sont jumelées harmonieusement dans le travail d'enseignement de la danse en milieu scolaire » (p. 66).

Marceau (2012) s'interroge sur l'importance pour le professeur stagiaire artiste / pédagogue de comprendre les phases et les mouvements de la dynamique de création en jeu dans son enseignement. Elle s'appuie sur le modèle de création de Gosselin (1993) qui comporte trois situations d'apprentissage : l'ouverture, l'action productive et la séparation. Selon cet auteur, une bonne compréhension de ces phases aidera le professeur stagiaire à mieux guider l'élève et à mieux comprendre sa propre pratique enseignante.

Thibault (2012) étudie l'enseignement extra-scolaire en Ontario et identifie trois rôles développés et basés sur le modèle de créativité de Csikszentmihalyi (1999) dans lequel les artistes jouent le conteur, le formateur et le passeur. Le but de son étude est de comprendre comment les artistes travaillent et gèrent la création et la créativité.

Caron (2018) examine dans sa recherche le lien entre une démarche créative, une expérience théâtrale d'improvisation, et l'apprentissage du français par des étudiant·e·s en français langue étrangère. Dans une recherche similaire, Sérusclat-Natale et Adam-Maillet (2018) étudient non seulement l'influence d'une pratique artistique sur l'appropriation de la langue, mais aussi « la question de la collaboration interinstitutionnelle consistant à faire entrer physiquement dans les classes des artistes, la dynamique et la méthodologie d'une telle co-construction » (p. 2).

Nous concluons que ce champ de connaissances souligne principalement la gestion de la tension identitaire entre l'artiste et l'enseignant·e et les stratégies à déployer pour apaiser cette tension.

Champ de connaissances (4). La créativité : formations et/ou programmes éducatifs. Le quatrième champ de connaissances (voir Tableau 6) est principalement consacré à l'évaluation de la place de la créativité dans les approches, programmes et formations scolaires.

Yérémian (2002) s'intéresse au rôle des Travaux personnels encadrés (TPE), après une réforme du lycée en 2001, comme possible moteur de créativité. Dans cette étude, les élèves ont utilisé leurs perceptions afin de réaliser ce nouveau projet. La recherche informationnelle a motivé les élèves, mais beaucoup ont été déroutés par une trop grande autonomie. Même si les TPE offrent en théorie un espace de travail pour exprimer la créativité, les résultats ont montré que cela ne suffisait pas.

TABLEAU 6. *La créativité : formations et/ou programmes éducatifs*

Auteur(s)	Présentation de l'article
Yérémian (2002)	Une étude qui utilise la pédagogie active à travers les Travaux personnels encadrés (TPE) comme possible élément déclencheur de créativité.
Comeau (2004)	Une étude qui vise à analyser l'évolution des perceptions de la créativité en composition musicale.
Hernandez (2016)	Une étude qui vise à analyser le rôle de la créativité en tant que compétence socio-éducative et en tant que pilier pour l'insertion professionnelle des jeunes.
Delarue-Breton (2017)	Une étude qui analyse le processus de textualisation dans le travail scientifique d'écriture de mémoire professionnel en Master MEEF (master professionnel de formation pour les enseignant·e·s du primaire et secondaire).
Schneider et coll. (2018)	État-de-l'art sur la science citoyenne et l'apprentissage à travers des projets européens et numériques en science citoyenne (*citizen science*).

Comeau (2004) s'interroge sur la place de la créativité dans les programmes d'enseignement des arts au Québec et constate l'évolution d'une création personnelle vers un développement de compétences créatives.

Hernandez (2016) examine le rôle des compétences sociales dans les programmes d'insertion professionnelle. Parmi les compétences sociales, la créativité apparaît comme l'une des compétences sociales qui, en théorie, peuvent augmenter les chances d'insertion professionnelle des jeunes. Un ensemble de huit programmes a été analysé pour comprendre le rôle éventuel de la totalité de ces compétences.

Delarue-Breton (2017) étudie la créativité selon Winnicott, c'est-à-dire en tant que la capacité de chaque étudiant·e à produire, à s'adapter ou à créer l'activité scripturale et scientifique du mémoire du Master MEEF. Dans leur état-de-l'art sur la science citoyenne et des projets numériques, Schneider et coll. (2018) recherchent la créativité comme une composante importante dans la science citoyenne autant que la motivation et l'apprentissage. Ils définissent cette science citoyenne comme une forme de science participative dans laquelle se forme un partenariat entre chercheur.se et grand public pour collecter et analyser des données (Cohn, 2008; Haklay, 2013; Silvertown, 2009). Leurs observations ont montré qu'il y a effectivement un cercle vertueux entre l'apprentissage des participant·e·s, les aspects motivationnels et les contributions personnelles créatives.

Ce champ de connaissances nous montre la diversité des études menées autour de la créativité, soit comme compétence clé, soit comme une compétence parmi les autres.

Champ de connaissances (5). La créativité : facteurs de développement. Le dernier champ de connaissances (voir Tableau 7) vise à identifier les facteurs de développement de la créativité.

Buchs et coll. (2008) présentent une synthèse sur le conflit sociocognitif et les conditions qui les influencent dans des discussions et des solutions créatives et collectives. Les auteurs s'interrogent notamment sur l'influence de la divergence, l'influence sociale et le climat motivationnel sur le conflit en classe. Ce climat motivationnel est un élément essentiel en classe, où l'apprenant·e se trouve dans un contexte d'apprentissage pour qu'il ou elle puisse bénéficier d'un exercice de confrontation de points de vue, mais seulement si la capacité de l'élève n'est pas remise en question.

Verzat (2009), pour sa part, étudie l'influence et l'impact du jeu sur le travail par projet et sur le fonctionnement en équipe. C'est le seul article dans le Tableau 7 qui aborde l'identification de la créativité en tant que moyen. Dans cette étude le jeu est jugé comme une finalité de la créativité.

Mailles-Viard Metz et coll. (2011) s'intéressent à la possibilité d'individualiser un projet par le biais du numérique en utilisant des cartes mentales ou un portfolio, qui serait un indicateur de créativité.

Leuba et coll. (2012) visent à repenser l'enseignement des activités créatrices et manuelles en s'appuyant sur le modèle théorique de Didier et Leuba (2011). Ce modèle prend en compte trois temporalités distinctes, mais interconnectées : la conception de l'objet, les phases de réalisation ainsi que la socialisation, et implique deux démarches : celle de l'auteur et celle du concepteur. Dans un dernier temps, l'article étudie comment l'enseignant·e stagiaire peut s'approprier ce modèle à travers un dispositif *Learning Study* (un cycle de recherche-formation qui a pour but d'analyser les processus d'enseignement et d'apprentissage, l'organisation et l'activité, ainsi que la pratique effective en classe).

Ce même modèle est l'objet d'une autre étude de Didier (2016). Dans cette étude, l'auteur invite les enseignant·e·s stagiaires à réaliser une activité de conception dans laquelle l'élève résout une tâche complexe. Les résultats montrent effectivement une amélioration de la pratique enseignante du stagiaire et un impact positif sur la construction des savoirs chez l'apprenant·e.

L'étude de Mili (2012) s'intéresse aux facteurs importants dans les pratiques efficaces et créatives dans l'enseignement musical. Elle s'interroge plus particulièrement sur la fonction des contraintes et de la corrélation éventuelle avec la créativité dans des activités créatrices en classe, comme l'improvisation et la composition.

TABLEAU 7. *La créativité : facteurs de développement*

Auteur(s)	Présentation de l'article
Buchs et coll. (2008)	Une étude de littérature qui réfléchit sur l'impact de la divergence sur les discussions et sur les solutions créatives au sein d'un groupe.
Verzat (2009)	Une étude qui analyse le développement des idées créatives pendant une initiation au projet par le jeu.
Mailles-Viard Metz et coll. (2011)	Une étude qui analyse l'individualisation dans la démarche de conception de projet en tant qu'indicateur de créativité.
Leuba et coll. (2012)	Une étude qui vise l'intégration du dispositif *Learning Study* par des enseignant·e·s stagiaires à travers des activités créatrices basées sur le modèle théorique de Didier et Leuba (2011).
Mili (2012)	Un article qui s'interroge sur le rôle des contraintes dans les apprentissages, notamment sur la boucle harmonique dans l'enseignement musical.
Jelen et Necker (2013)	Un article qui vise à analyser le lien entre créativité et habitude dans l'Éducation physique et sportive (EPS).
Didier (2016)	Cette étude vise à repenser l'enseignement des activités créatrices et manuelles en s'appuyant sur le modèle théorique de Didier et Leuba (2011), dans lequel l'enseignant·e stagiaire est invité·e à mettre l'élève en posture de concepteur, « celui ou celle qui conçoit un objet à fonction d'utilité répondant à un usage ou à un besoin » (p. 182) et à résoudre des tâches complexes.
Fürst (2016)	Une étude empirique qui recherche le lien entre créativité, personnalité, intelligence et apprentissage.
Dionne et coll. (2017)	Une étude qui utilise un référentiel quadridimensionnel afin d'analyser l'impact que l'intégration des arts dans les sciences et technologies a sur l'engagement des élèves. Les quatre dimensions sont : 1) le concept de médiation de Vygotsky (1986), 2) la pédagogie de la joie de Snyders (1986), 3) l'approche par interrogation pour stimuler l'engagement et l'affectivité cognitive (Friedricks et coll., 2004), et 4) la multimodalité.
Longuet (2018)	Une étude qui recherche le rôle du processus collectif de création dans le développement d'une posture créative chez les enseignant·e·s stagiaires.

Jelen et Necker (2013) s'interrogent sur l'influence mutuelle entre créativité et habitude. Ils montrent que l'environnement social et l'engagement professionnel sont des facteurs qui contribuent à la création d'une identité professionnelle créative et à rendre les pratiques créatives routinières dans les enseignements. Ils concluent que ces actions émanent des interactions sociales, des divers contextes et des caractéristiques individuelles et collectives.

Fürst (2016) conduit une étude empirique sur les liens entre créativité, personnalité, intelligence et apprentissage auprès d'étudiant·e·s. Les résultats permettent d'affirmer que 1) l'intelligence et la personnalité sont des prédicteurs de créativité, et 2) les dimensions de divergence et de convergence sont primordiales pour les démarches créatives.

Dionne et coll. (2017) étudient l'impact des artefacts culturels et des arts médiatiques en éducation scientifique et technologique au Canada et au Brésil. Les pratiques d'enseignement sont analysées selon un référentiel qui utilise le concept de médiation de Vygotsky (1986), la pédagogie de la joie de Snyders (1986), l'engagement des élèves et l'usage de représentations multimodales. Les auteurs mettent en relief deux pratiques principales : « celles qui intègrent la créativité et les arts comme tâche d'apprentissage, et celles qui utilisent des artéfacts culturels telles la science-fiction et la musique, comme outils d'enseignement » (p. 20).

Longuet (2018) constate que les trois qualités d'un environnement de conception numérique sont : la créativité, le dialogisme et la multimodalité. Il en est arrivé à cette conclusion après avoir invité les enseignant·e·s stagiaires à se lancer dans une conversation réflexive en utilisant les fonctionnalités de la plateforme Moodle.

À la suite de l'analyse de contenu réalisée au cours de cette étude, nous observons que la créativité joue un rôle important dans le développement de nouvelles compétences des enseignant·e·s, ainsi que des apprenant·e·s à travers des activités ludiques, qu'elle soit liée à la personnalité, aux habitudes ou à la pensée divergente.

DISCUSSION ET CONCLUSION

Cet état-de-l'art nous a permis d'identifier le contexte théorique et les connaissances mobilisées autour de la créativité dans notre sélection d'articles scientifiques francophones en sciences de l'éducation et de la formation. Nous avons pu constater que : 1) la plupart des articles qui traitent de la créativité se situent dans le domaine du développement personnel, suivi par celui des disciplines artistiques, et 2) la plupart des études sont réalisées dans l'enseignement supérieur. Nous avons de même établi cinq champs de connaissances : 1) enseignement et développement personnel; 2) résolution de

problèmes et pensée informatique; 3) approche artistique; 4) formations et/ou programmes, ainsi que 5) facteurs de développement.

À partir des articles étudiés, nous observons que la créativité dans le contexte scolaire fait référence à l'expression personnelle d'un individu et au développement de ses capacités à reproduire ou à créer dans différentes matières. Par ailleurs, la faculté des individus (artistes, pédagogues, élèves) à adapter leur comportement et à harmoniser certaines tensions identitaires semble être un des éléments prépondérants de la créativité. Cependant, le terme « créativité », souvent synonyme d'innovation, est inconsidérément employé de toutes les façons possibles. La diversité des études scientifiques établies autour de cette compétence montre l'incapacité à s'accorder sur son essence.

Nous avons constitué le corpus des revues étudiées en nous appuyant sur la liste des revues nationales et internationales établies par le HCERES. Cela dit, nous n'avons pas consulté d'autres ouvrages ni d'autres domaines de recherches, nous nous sommes uniquement focalisées sur l'éducation liée au contexte scolaire au sens large. Cependant, la créativité est une compétence pluridisciplinaire qui ne se limite pas uniquement aux sciences de l'éducation. De ce fait, notre analyse risque d'être réductrice et ne pas englober les multiples facettes que cette compétence complexe peut avoir. Il serait intéressant d'élargir le corpus analysé à d'autres revues, particulièrement dans les domaines de la psychologie ou de la gestion.

Afin de donner une réponse à l'appel d'article de cette revue concernant la réactualisation du rôle de l'enseignant et aux défis de notre société en perpétuel changement, il semblerait primordial de s'intéresser à la pensée informatique et à la résolution de problèmes. Ces concepts sont importants de nos jours avec la robotique pédagogique, le *learning analytics* (l'analytique des apprentissages numériques), l'intégration de la programmation dès le primaire, l'intelligence artificielle et la présence des algorithmes dans la vie quotidienne (Netflix, Spotify). Toutefois, notre sélection d'articles ne semble pas refléter la réelle dimension de ceux-ci dans notre société. Dans le domaine en pleine émergence de la pensée informatique, nous observons que les études autour de cette compétence n'ont pas encore un corpus de recherches de la même ampleur que dans les domaines artistiques. En lien avec les compétences de pensée informatique et de résolution de problèmes étudiés dans le deuxième champ de connaissances, nous pouvons également considérer que l'approche de résolution créative de problèmes abordée par Bélanger et coll. (2014) se développe en lien avec l'approche qui mise sur la science, la technologie, l'ingénierie, les arts et les mathématiques (STIAM).

Cet état-de-l'art a identifié cinq champs de connaissances, mais l'état actuel de la recherche en sciences de l'éducation reste limité sur la question de la

formation à donner aux enseignant·e·s. Cette formation se doit de transmettre des champs de connaissances nécessaires pour leur permettre de devenir des enseignant·e·s créatif.ve.s et pour enseigner la créativité.

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ANNEXE A

Liste des 67 revues francophones

	Revue	Nombre d'articles trouvés	Nombre d'occurrences > 5	Nombre d'articles inclus dans le corpus de sélection	Nombre d'articles inclus dans le corpus d'analyse	Commentaire
1	Administration et éducation	33	1	0	0	interface
2	Agora	19	1	0	0	interface
3	Annales de didactique et de sciences cognitives	0	0	0	0	
4	Année de la Recherche en Sciences de l'Éducation	1	0	0	0	
5	Les Cahiers d'Éducation & Devenir	0	0	0	0	
6	Les Cahiers de la Recherche sur l'Éducation et les Savoirs	18	0	0	0	
7	Canadian Journal of Higher Education	5	0	0	0	
8	Carrefours de l'Éducation	39	2	1	1	
9	Le Cartable de Clio	13	0	0	0	
10	Distance et Médiations des Savoirs	27	1	0	0	
11	Distance et Savoirs	19	1	0	0	
12	Diversité (Ville-École-Intégration)	22	0	0	0	interface
13	Les dossiers des Sciences de l'Éducation	15	0	0	0	
14	Éducation et Didactique	19	1	1	1	
15	Éducation et Formation	0	0	0	0	
16	Éducation et Formation (Belgique)	0	0	0	0	
17	Éducation et Francophonie	99	18	11	9	
18	Éducation & Socialisation, les Cahiers du CERFEE	44	9	2	2	

	Revue	Nombre d'articles trouvés	Nombre d'occurrences > 5	Nombre d'articles inclus dans le corpus de sélection	Nombre d'articles inclus dans le corpus d'analyse	Commentaire
19	Éducation et Sociétés	35	0	0	0	
20	Éducation Permanente	10	0	0	0	
21	Éducation relative à l'environnement	37	9	1	1	
22	Éducation, Santé, Sociétés	1	1	0	0	
23	eJRIEPS	8	1	0	0	interface
24	Études de linguistique appliquée	21	4	0	0	
25	Évaluer: Journal International de Recherche en Éducation et Formation	0	0	0	0	
26	Formation-Emploi	25	1	0	0	
27	Formation et Profession: Revue Scientifique Internationale en Éducation	1	0	0	0	
28	Histoire de l'Éducation	17	0	0	0	
29	LIDIL (Revue de linguistique et de didactique des langues)	25	5	4	2	
30	MathémaTICE	13	1	1	1	interface
31	Mesure et Évaluation en Éducation	9	1	0	0	
32	McGill Journal of Éducation	20	4	3	2	
33	Nouveaux C@hiers de Recherche en Éducation (NCRE)	23	2	0	0	
34	Nouvelle revue – Éducation et Sociétés Inclusives	47	2	0	0	interface
35	L'orientation scolaire et professionnelle	49	3	3	3	
36	Penser l'Éducation	5	0	0	0	
37	Petit X	0	0	0	0	interface
38	Pratiques	57	6	4	1	
39	Raisons Éducatives	5	1	1	1	
40	Recherche en éducation (AFIRSE)	39	2	0	0	

	Revue	Nombre d'articles trouvés	Nombre d'occurrences > 5	Nombre d'articles inclus dans le corpus de sélection	Nombre d'articles inclus dans le corpus d'analyse	Commentaire
41	Recherche en soins infirmiers	76	4	1	0	interface
42	Recherche et Formation	0	0	0	0	
43	Recherches (revue de didactique et pédagogie du français)	10	2	0	0	interface
44	Recherches en Didactique des Mathématiques	0	0	0	0	
45	Recherches en Didactique des Sciences et des Technologies	17	1	1	0	
46	Recherches en Didactique - Les Cahiers Théodile	11	2	1	0	
47	Recherches et Applications	6	0	0	0	
48	Recherches et Éducations (Éduquer, Revue Binet-Simon)	1	1	1	1	
49	Repères	25	1	0	0	
50	Repères IREM	0	0	0	0	interface
51	La Revue d'histoire de l'enfance "irrégulière"	5	0	0	0	
52	La Revue française d'éducation comparée	0	0	0	0	
53	Revue Française de Pédagogie	33	6	3	3	
54	Revue Fantice	12	3	0	0	interface
55	Revue Internationale d'Éducation (CIEP)	136	6	0	0	interface
56	Revue Suisse des Sciences de l'Éducation	2	1	1	1	
57	Revue internationale de pédagogie de l'enseignement supérieur	28	6	5	3	
58	Revue internationale des technologies en pédagogie universitaire	20	0	0	0	
59	Savoirs	32	0	0	0	interface
60	Les sciences de l'Éducation pour l'Ère Nouvelle	31	1	1	0	
61	SpécifiCITéS	24	1	1	0	interface
62	Spirale	8	1	0	0	

Étude de la littérature sur la créativité en sciences de l'éducation

	Revue	Nombre d'articles trouvés	Nombre d'occurrences > 5	Nombre d'articles inclus dans le corpus de sélection	Nombre d'articles inclus dans le corpus d'analyse	Commentaire
63	STICEF - Sciences et techniques éducatives	1	0	0	0	
64	Le Télémaque	34	4	1	0	
65	TransFormation	0	0	0	0	
66	Travail et Apprentissages	0	0	0	0	
67	Travail et Formation en Éducation	6	0	0	0	
TOTAL	1455	1338	117	48	32	

ANNEXE B

Liste des articles avec les matières, dispositifs, niveaux d'enseignement et nombre d'occurrences des mots clés

	Auteur(s)	Matière	Niveau	Créativité	Créatif et créative
1	Jelen et Necker (2013)	EPS	Primaire secondaire	31	2
2	Meuret et Lambert (2011)	Sans Objet	Secondaire	7	2
3	Bélanger et coll. (2014)	Math	Primaire secondaire	68	15
4	de la Durantaye (2012)	Arts plastiques	Primaire secondaire	83	32
5	Raymond et Turcotte (2012)	Culture	Gestion	36	9
6	Duval (2012)	Danse	Primaire secondaire	43	10
7	Marceau (2012)	Théâtre	Supérieure	36	10
8	Leuba et coll. (2012)	Arts plastiques	Primaire secondaire	64	22
9	Ouellet (2012)	Arts plastiques	Supérieure	82	89
10	Mili (2012)	Musique	Supérieure	60	7
11	Thibault (2012)	Théâtre	Extra-scolaire	16	3
12	Chaîné (2012b)	Théâtre	Secondaire	15	4
13	Chaîné (2012a)	Sans Objet	Sans Objet	43	2
14	Dirani (2016)	Dvlp. personnel	Gestion	129	19
15	Zérillo (2012)	Dvlp. personnel	Gestion	30	11
16	Dionne et coll. (2017)	Technologie	Primaire	9	4
17	Caron (2018)	Langues	Supérieure	6	17
18	Sérusclat-Natale et Adam-Maillet (2018)	Langues	Secondaire	9	9
19	Cocton (2015)	Langues	Supérieure	6	3
20	Maizonniaux (2015)	Langues	Supérieure	4	9

	Auteur(s)	Matière	Niveau	Créativité	Créatif et créative
21	Couvrechef (2019)	Math	Gestion	19	1
22	Comeau (1995)	Dvlp. personnel	Gestion	39	22
23	Pepin (2011)	Entrepreneuriat	Gestion	5	0
24	Comeau (2004)	Musique	Primaire	22	18
25	Yérémian (2002)	T.P.E.	Secondaire	19	9
26	Barbot (2008)	Dvlp. personnel	Secondaire	73	122
27	Hernandez (2016)	Dvlp. personnel	Supérieure	8	0
28	Legallois (2018)	Langues	Gestion	9	0
29	Bozhinova (2017)	Langues	Primaire secondaire	11	2
30	Delarue-Breton (2017)	Dvlp. personnel	Supérieure	8	6
31	Brun-Lacour (2018)	Langues	Gestion	5	7
32	Schneider et coll. (2018)	Technologie	Extra-scolaire	5	5
33	Meyer (2010)	Dvlp. personnel	Supérieure	5	10
34	Slaïma et Maurines (2017)	Sciences	Secondaire	12	0
35	Daunay (2011)	Dvlp. personnel	Gestion	15	0
36	Besançon et coll. (2011)	Dvlp. personnel	Gestion	44	36
37	Fürst (2016)	Dvlp. personnel	Supérieure	108	42
38	Puozzo Capron (2016)	Dvlp. personnel	Supérieure	103	23
39	Quiamzade et Mugny (2008)	Dvlp. personnel	Sans Objet	5	3
40	Didier (2016)	T.P.E.	Supérieure	33	11
41	Metz et coll. (2019)	Dvlp. personnel	Supérieure	38	28
42	Longuet (2018)	Sciences	Supérieure	42	10
43	Springer (2018)	Langues	Supérieure	17	18
44	Verzat (2016)	Ingénierie	Supérieure	10	6
45	Mailles-Viard Metz (2016)	Dvlp. personnel	Supérieure	5	2
46	Sonntag (2007)	Ingénierie	Supérieure	7	3
47	von Stebut (2017)	Arts plastiques	Gestion	11	8
48	Bishop (2012)	Langues	Primaire	6	0

"WHAT'S THE BIG IDEA?" A CASE STUDY OF WHOLE-SCHOOL PROJECT-BASED INSTRUCTION IN SECONDARY EDUCATION

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ABSTRACT. This paper presents the results of an inquiry into a creative, whole-school integrative learning project that started with posing a 'big question'. Data were generated to deepen understanding regarding the effects of implementing creative project-based learning Hi on student lived experience and student attitudes toward learning. Research on project-based approaches is required to reflect the current contextual realities specific to high schools. The focus on integrative and arts-based approaches as they relate to high school classrooms indicate that secondary education lags in comparison to elementary and middle grades. The findings presented here provide the possibility of a more informed, attentive, action-sensitive professional practice in the development of educational experiences designed to influence the learning experiences of secondary students.

« QUELLE EST LA GRANDE IDÉE ? » UNE ÉTUDE DE CAS D'ENSEIGNEMENT ÉCOLE-ENTIÈRE BASÉ SUR LE PROJET AU SECONDAIRE

RÉSUMÉ. Cet article exprime les résultats d'une enquête sur un projet d'apprentissage, école-entière, intégratif et créatif qui a été déclenché par des enseignants qui se posaient les « grandes questions ». Des données ont été générées dans le but d'approfondir la compréhension des effets de la mise en œuvre d'un apprentissage créatif basé sur des projets sur l'expérience vécue des étudiants et leurs attitudes envers l'apprentissage. La recherche sur les pratiques d'apprentissage basées sur des projets est essentielle afin de refléter les réalités contextuelles actuelles propres aux écoles secondaires. L'accent mis sur les approches intégratives et fondées sur les arts dans les classes du secondaire indique que l'enseignement secondaire est en retard lorsque comparé aux classes d'écoles primaires et intermédiaires. Les résultats présentés dans cet article offrent la possibilité d'une pratique professionnelle plus informée, attentive et sensible à l'action dans le développement d'expériences éducatives conçues pour influencer les expériences d'apprentissage des élèves du secondaire.

Provincial school curricula are being reformulated to include what are commonly referred to as 21st century learning or global competencies (Alberta Education, 2011; Council of Ministers of Education Canada, n.d). The provincial initiatives reflect a global embrace of 21st century skills and competencies and are believed to represent an important and powerful shift in education. Momentum is building as countries, states, provinces, and school systems re-write curricular goals and learning outcomes to align with "deep learning and new pedagogies" (Fullan & Langworthy, 2013; 2014).

Many educators realize that the new pedagogies being promoted can be traced to the tenets of Progressive Education and Experiential Education. The history of Progressive Education begins in the early 20th century and over the intervening decades has inspired inquiry and arts based learning, and experiential learning designed to increase student creativity and problem-solving skills. These have re-emerged as new pedagogies. The 5Cs[1] of 21st century education as skills, competencies, and dispositions bear a striking resemblance to progressive education aims from an earlier era, excepting the strong link to technology prevalent in the more recent initiatives. Many teachers have been pursuing these approaches for over a century. But today there is a renewed interest due to many factors, not least of which is the economic imperative to prepare a future generation for rapidly shifting technologies and the knowledge economy (Patrick, 2013). The recent initiatives, taken together under the umbrella term of 21st century education, continue to advocate for creative pedagogy and personalized instruction, student independence, global competency and awareness, and using technology as learning tools. A visit to almost any elementary or middle school in this country will illustrate a reliance on progressive, now 21st century, educational approaches.

The impetus for this research project is the recognition that secondary school, serving the interests of students roughly aged 15-18, "has arguably become a neglected part" of 21st century educational approaches (Brooks & Holmes, 2014, p. 11). A quick survey of 21st century education publications, websites, depictions, news stories, and media representations will, by and large, feature early childhood, elementary, and middle school students and teachers engaged in creative learning tasks associated with arts-based and 21st century learning. The focus on and support for creative, arts-based approaches as they relate to high school classrooms indicate that secondary education lags in comparison to elementary and middle grades. This is in keeping with secondary educational research.

> In general, there has been much more attention to pedagogy in elementary schools than in secondary schools. Debates over methods of teaching mathematics, over the role of phonics, or over whole class teaching, have

been primarily in elementary schools. Pedagogy in secondary schools has been the subject of less research and less policy. (Levin & Segedin, 2011, p. 46)

This paper presents the results of an inquiry into a whole-school, project-based, integrative learning project that starts with a 'big idea' and involved the posing of a 'big question.' The research took place in a large suburban high school in Atlantic Canada. The research team, a university teacher educator and two creative high school pedagogues, inquired into the effects of an interdisciplinary, project-based approach to teaching and learning at the secondary level. Using case study methodology, data were generated to deepen understanding regarding the effects of implementing whole-school, project-based learning on several factors including student experience, student engagement, and attitudes toward learning.

BACKGROUND

What Does It Mean to Be Human? A Whole-school Project

The origins of the project span a number of years of teacher professional learning experiences aimed at increasing teacher creative agency (Carter et al., 2011). The broad professional development areas that contributed to the creation of the whole-school project were: the implementation of the Professional Learning Community (PLC) collaboration model; the development of a new model of assessment; and development of large scale, creative project-based learning opportunities. These three parallel strands of professional development contributed to teachers' understanding how to create an integrative project to meet the objectives of personalizing student learning by focusing on the Global Competencies as outlined by the Council of Ministers of Education Canada (CMEC, nd) while building capacity among teachers to develop the Global Competencies in students. Creativity, innovation, critical thinking, and problem solving are core to these competencies. The development of creative pedagogues capable of modeling these competencies is a gradual and incremental process in which teachers re-conceptualize their roles in safe environments in which risk-taking and experimentation is supported (Howard et al., 2018). In the high school under study, two earlier projects spanning almost a decade — the Xenotransplant Project in 2010 and the Saxby Gale Project in 2013 (Dealy et al., 2017) — provided important scaffolding toward the whole-school What Does it Mean to Be Human project in 2017 that is the subject of this inquiry.

Developing the "What Does It Mean to Be Human?" Project 2017

At the end of the 2017 academic year, the teachers at the high school learned of the New Pedagogies for Deeper Learning framework (Fullan & Langworthy,

2013; 2014) and joined a provincial government initiative Learning Through Personalization. This initiative placed the focus of competency-based learning, as described by Fullan and Quinn (2016), at the forefront of many classes. In October of 2017, a big question project was introduced by a small group of interested teachers to the rest of the staff. Of the 70 full-time teachers approximately 50 indicated interest in participating in a whole-school integrative project. The question "What does it mean to be human?" was connected to a foundational text, Sapiens by Yuval Harari, that was read by a core group of student volunteers and a number of interested teachers dedicated to designing and implementing the project.

From February to June 2018, time was spent coordinating teachers and students to respond to the big question. The project culminated in a public presentation to teachers attending a provincial professional learning day. This provided students a "real world" opportunity to present to a knowledgeable audience. Student content was displayed in an art gallery style exhibit with visiting teachers, guided by students, touring the high school. These exhibits included science courses using art, language arts courses representing aspects of humanity, interdisciplinary collaboration between four high school courses (Fine Arts, Psychology, Personal Development, and Leadership), design courses creating fashion representing human development, and student produced public Ed Talks representing learning growth.

Literature Review

With the beginnings of the Progressive Education in the early 20th century and the "Project Method" as early as 1918 (Little, 2013), it is not surprising that there has been a great deal of research on these educational approaches over the intervening decades. Project-based teaching and experiential learning and the related approach of problem-based instruction (now common in medical and science education and training) have been studied across a number of measures (Neufeld & Barrows, 1974). These measures include effectiveness (in comparison to more traditional approaches); achievement; performance on standardized tests; content knowledge retention; long term retention; application and skill development; student motivation; and teacher attitudes (Harris, 2014).

For the purposes of this study, we are reminded that a majority of the research conducted on project-based approaches involves primary, elementary, and middle school classrooms, with far fewer studies examining secondary levels (Holm, 2011). Also, a review of the literature did not reveal any studies at the secondary education level of a whole-school, project-based learning approach similar in intention, size, and scope as the one being described here.

There is renewed interest in project-based approaches in the last decade as part of the growing global uptake of 21st century education initiatives (P21, 2016;

C21, 2017), global competencies (CMEC, n.d.), and "new pedagogies for deep learning" (Brooks & Holmes, 2014; Fullan & Langworthy 2013; 2014). These initiatives have motivated stakeholders to look again at project-based learning research and the many comparative studies. As expected, the results of this renewed interest and the interpretation of the results have sparked debate as to the efficacy of inquiry-based, integrated, student-centred approaches compared to more didactic, discipline- and teacher-centred approaches. Holm (2011) conducted a review of research specific to the effectiveness of project-based instruction in pre-kindergarten through 12th grade classrooms. The research was conducted between 2000 and 2011. The findings supported earlier positive findings regarding the overall efficacy of project-based instruction (Thomas, 2000). Holm (2011) concludes:

> Project based instruction in pre-kindergarten through 12th grade has yielded improved content learning, higher levels of engagement and more positive perceptions of the subject matter. With such a clear research base in support of its effectiveness, project-based methods appear to offer the possibility of success both overall and to a broader range of students than traditional lecture-based instruction. (p. 10)

Kokotsaki et al. (2016) conducted a literature review of Project-based Learning (PBL) research that provided recommendations for key elements for the successful adoption of PBL in mainstream schooling. The researchers do not draw a certain link between PBL and positive student outcomes. Primarily found in American research are the studies that show project-based learning to be as effective as traditional methods as measured by direct, summative achievement or standardized tests. (Duke & Halvorsen, 2017). One of the most cited studies in the literature (Bell, 2010; Bender, 2012; David, 2008) is the research by Boaler (1998a; 1998b; 1999). The Boaler study describes a three-year inquiry into project-based and traditional approaches in middle school mathematics. The study took place in two schools: one used a traditional textbook approach to teach mathematics to middle school students and another used a more open project-based environment to learn mathematics.

Ultimately, the Boaler (1998b) study suggested the students from the two schools developed different kinds of mathematical knowledge (Thomas, 2000). Students from the more didactic, traditionally taught school were able to apply specific mathematical skills shortly after taught and demonstrated knowledge of mathematical procedure. Students at the more open, project-based school were able to still sufficiently demonstrate knowledge procedure, but also showed superior mathematical conceptual knowledge and were able to apply that knowledge beyond traditional classroom contexts.

Many of the skills inherent in project-based learning have a greater focus on students building knowledge through the process of tackling a problem rather than rote memorization after lecture. Standardized tests measure the latter rather than the former (Ravitz, 2009). For this reason, selected literature suggests that project-based learning is not the most effective means of addressing some student learning as measured by standardized tests especially when the tests are designed to assess skills or knowledge obtained through rote memorization. The Boaler (1998a) study showed the students performed on par with their traditionally taught peers on sections of the assessment designed to assess procedural math. Nevertheless, the literature supports that students who engage in project-based learning do significantly better than their peers in application of concepts (Boaler, 1999; Geier et al., 2008; Strobel & van Barneveld, 2009).

In Canada, Hutchison (2015) provided an Ontario Education What Works: Research into Practice monograph and outlined both the strengths and the challenges of Project-based Learning (PBL). The author claimed that PBL had much to offer as a "holistic strategy" promoting "student engagement" and instilling "21st century skills," including creative problem solving and critical thinking. However, it faced "challenges that can limit its effectiveness" (2015, n.p.). The challenges described focused on teacher readiness to adopt the approach and the constraints of time, concerns about classroom management, project management, and content mastery in preparation for standardized and exit testing, particularly at the secondary level (Hutchison, 2015; Ryan, 2016; Fogarty & Ryan, 2017).

As stated above, further research on project-based approaches is required to reflect a renewed focus on 21st century competencies and the current contextual realities specific to high schools. Areas largely absent from the research include how secondary school structures and policies might be adjusted to best support teachers and learners; and how to maintain content integrity and meet mandated curriculum outcomes and standardized assessments while incorporating the recognized benefits of project-based teaching and learning. Holm (2011) states, "Researchers should continue to refine understanding and respond to the practical challenges of this teaching method" (p. 11).

APPROACH AND METHODS

Theoretical Framework

In this current study, the researchers situate the study, the methods, and the approaches to analysis in the experiential — in the well-known theory of learning most often associated with Dewey (1938/1997), and also in the expanded sense that education has as its central purpose a focus on human

becoming. Therefore, education is also an existential undertaking. We are interested in student lived experience as it relates to project-based teaching and learning. As we have seen, 21st century learning is grounded in creative and purposeful learning by doing. Teachers are learning designers, partners, and co-learners who enter a different relationship with students to support young people in discovering what it means to connect, thrive, and flourish in a constantly changing world (Greene, 1995).

Data are available that verify the large numbers of students who are disengaged from schooling, specifically secondary schooling (McKeown & Nolet, 2013), and there is ample evidence of the alarming rise in the emotional and mental health issues among children. Suicide accounts for 19% of all deaths among children aged 10-14 and 23% of deaths of young people aged 20-24; 14% of high school students have seriously contemplated suicide and 4% report having attempted suicide (Centre for Addiction and Mental Health, 2020).

John Dewey wrote extensively about the impact of experience on learning in Experience and Education (1938/1997). His work on the impact of experience on a child's education is foundational to the formation of project-based learning as we know it today. Dewey's work focused on a theory of experience that challenged both traditional and progressive forms of education. Dewey also reminded us many years ago, "Experience is not something which goes on exclusively inside an individual's body and mind" (1938/1997, p. 39). Experience is inherent through bodily engagement and it is also an interactive process. Interaction "assigns equal rights to both factors of experience — objective and internal conditions...[and] is an interplay of these two sets of conditions" (1938/1997, p. 42). Our experience directs us toward some sort of contact with the world, and the world calls forth our experience.

Progressive approaches adapted for the 21st century (Little, 2013) have the potential to address the weaknesses in education today (Atlass & Wiebe, 2017). Historical barriers should not prevent credible attempts to examine the challenging issues facing secondary schools with a holistic perspective that connects social, environmental, economic, and health issues to the lived experience of both students and teachers in our secondary schools (O'Brien & Howard, 2016). The creativity, imagination, discovery, and resilience inherent in arts-based, integrative projects provide secondary students with a range of essential skills, as well as the flexibility to apply those skills in new contexts (Carter et al., 2011).

Methodology

In keeping with the experiential and the existential orientation of the research, a Qualitative Case Study (QCS) methodology was chosen that best aligned with these underlying orientations. Researchers' views about the nature and production of knowledge, their epistemological leanings, underlie the inquiry

project they conceptualize and implement. We were fundamentally interested in the lived experience of students immersed in a whole-school project-based learning activity. The whole-school learning activity was the case; however, the research was focused on the experience of individual students participating in the whole-school project. It was a priority of the researchers not to lose sight of the student experience over the macro level of organizations, design, and implementation aspects of such an ambitious project. To this end, we chose an approach to case study conceptualized by Stake (1995; 2005). This approach to case study includes "naturalistic, holistic, ethnographic, phenomenological, and biographic research methods" (Stake, 1995, p. xi). From a Stakian viewpoint, constructivism and existentialism (non-determinism) should be the epistemologies that orient and inform the qualitative case study research since "most contemporary qualitative researchers hold that knowledge is constructed rather than discovered" (Stake, 1995, p. 99). The researchers also draw on the work of Merriam (1998) who conceives Qualitative Case Study as "an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, a process, or a social unit" (p. xiii).

As well, in keeping with the focus on student-lived experience that emerged out of the data while staying oriented to the distinctive case study attributes as explicated by Merriam and listed above, the researchers employed human science meaning-making methodologies related to interpretative research approaches useful in uncovering or isolating thematic aspects significant to the participants' experiences (van Manen, 1997; 2014; Vagle, 2014). This provided for the identification of important experiential themes that recur in the analysis of the data. Data collection and instruments employed are described next.

Data Collection

At the end of the 2017 academic year, the teachers at the high school learned of the New Pedagogies for Deeper Learning framework (Fullan & Langworthy, 2013; 2014) and joined a provincial government initiative Learning Through Personalization. This initiative placed the focus of competency-based learning, as described by Fullan and Quinn (2016), at the forefront of many classes. In October of 2017, a big question project was introduced by a small group of interested teachers to the rest of the staff. Of the 70 full-time teachers approximately 50 indicated interest in participating in a whole-school integrative project. The question "What does it mean to be human?" was connected to a foundational text, Sapiens: A Brief History of Humankind by Yuval Harari, that was read by a core group of student volunteers and several interested teachers dedicated to designing and implementing the project.

From February to June 2018, time was spent coordinating teachers and students to respond to the big question. Each week teachers allotted time in

the traditional high school timetable to the project. The time devoted to the project and the class structure varied among teachers and subject area. Time, scheduling, and the tension in organizing class schedules and curriculum coverage emerged as an important theme. Teachers were provided professional learning through the professional development (PD) initiative above and interpreted best practice in PBL including structuring the class and supporting students through the project based on that learning. There were two methods of data gathering for both students and teachers in this project. The focus on this paper is on the student data and findings only. The two sources of student data, student surveys and conversational interviews, provided an opportunity to collect two distinct sets of data. The data collected from the student survey asked specific questions regarding levels of engagement, types of learning environments, and depth of content learning. This provided aggregated data that allowed researchers to understand the broad changes that took place for students participating in this project. The conversational interviews were conducted in a focus group setting using open-ended questions to allow students to provide more details and share stories of their experiences during the project.

Bagnoli and Clark (2010) suggest that focus groups work well because group members influence each other with their comments and participants may form opinions after considering the views of others. Tapping into this interpersonal dialogue can help identify common experiences and shared concerns. The researchers conducted the conversational interview following ethical guidelines. The interview was audiotaped and subsequently transcribed, supplemented with notes taken during the process. The main interview questions focused on: the overall impressions of students; students' thoughts on how project-based learning compared to traditional teaching methods; and the benefits and challenges of project-based learning Planned follow up questions were asked to make interview questions more specific and provide opportunities for elaboration. Spontaneous questions from the interviewer were asked after listening to the first responses to add richness and to help clarify the meaning of responses.

To assist in the early analysis of the case studies a decision was made to use the Codes and Coding technique (Atkinson, 2002). The research software Atlas.ti was used for this purpose. According to Miles and Huberman (1994) and Atkinson (2002), the codes and coding technique utilizes a strategy referred to as "partial ordered displays" to analyze case study data. This strategy allowed for the quick identification of the segments relating to the research questions and any potential themes to be identified. The identification of the codes was facilitated by the creation of meta-matrices to assemble descriptive data from the different cases into a standard format. The process grouped all the condensed data together allowing for comparisons to be made between them.

TABLE 1: *Survey Questions and Focus Group Procedure*

Grade 9 n=23
Grades 11/12 n=19
1. What has been your experience in the past with projects that are part of multiple classes?
2. How did this project-based learning style compare to your previous experience with big projects?
3. Would you look forward to more opportunities to learn this way?
4. How would you describe your interest/attitude toward the topic after participating in the project?
5. What do you think could have been done differently? Suggestions for future projects?
6. Were you interested in learning when it was connected to a larger question? Why/why not?
7. Did your participation in the project increase your interest in classes? Why/why not?
8. How would you describe your classmates interest level in learning?
9. Provide examples of what you observed that was different from other classes.
10. How would you describe your teacher's engagement? Provide examples.
11. Did you feel differently coming to class? Why/why not?
12. Do you feel an integrated project-based approach helped you learn the subject material? Why/why not?
13. Do you feel you gained knowledge and understanding about the big question?
14. From your experience do you think PBL is as effective as traditional methods? Why/why not?
15. What did you learn about yourself in taking part in this project?

Additionally, to align with experiential and lived dimensions of the inquiry, the researchers used, as a guide to deepen reflection on the coding generated by the analysis data, the "four structures of meaning" employed in human science research (van Manen, 1997; 2014). It is given that all participants have different experiences. The four existentials of lived time (temporality); lived body (corporality); lived space (spatiality); and lived relations (relationality or communality) provide a fundamental existential structure and a useful heuristic by which to arrive at relevant themes and further insight. It is important to note that the four existentials can be differentiated but not separated from each other. They form a unity that assists us in making meaning from the complex, multi-faceted experiences of people.

RESULTS AND DISCUSSION

The "What Does it Mean to be Human Project?" provided students a very important "real world" opportunity to explore a big idea through an interdisciplinary lens. Teachers provided support and acted as guides, mentors, and coaches. Students collaborated in small groups across the disciplines to respond meaningfully to the big question. The project culminated in the presentation of student work to teachers attending a provincial professional development event. Student content was exhibited as visiting teachers toured the high school and students provided interpretation. The exhibits included

science concepts represented through art. Language Arts provided the means to explore aspects of human communication. A model of the human brain the size of a classroom included interdisciplinary collaboration from Fine Arts, Psychology, Personal Development, and Leadership. Students in design courses created fashion representing human development, and a series of Ed Talks were student produced and demonstrated learning and growth. The approach represented a dramatic departure from traditional pedagogical approaches with which many students are most familiar.

Lived Body

Lived body or corporeality refers to our primary way of moving through the world as embodied beings. In our physical or bodily presence, we understand and experience the world through felt sensations, and emotions and these feelings permeate our language as metaphors we use to describe, represent, and make sense of certain phenomena. A great deal has been written about our use of metaphor in thinking (Lakoff & Johnson, 2003), but by way of illustration we have only to recall the popular phrase to describe teaching that reaches the head, hands and heart. This phrase encapsulates the immediacy of embodied images to represent abstract ideas and complex experiences in ways that make sense to us.

The data revealed many instances of students describing their experience that evoked an embodied response. One theme to emerge related to the focus group question about students' general impressions about participating in a project-based learning activity. The theme was the experience of "support" or conversely, the "lack of support". Sometimes recalling the origins of a word can shed new light on the experience with which it is most connected. Support comes from the Latin supportare, from sub- , "from below" + portare , "carry". The students talked about various aspects and forms of being guided, helped, and assisted by the teachers. Some students welcomed the teacher taking a less direct approach during the project, other students did not. A student commented, "It was scary at first; you don't know what to do, where to go, and I kept thinking, how am I going to be supported to complete these things?" Students were challenged to negotiate the feelings that accompany experiencing more open-ended structures inherent in project-based learning. When the teacher's role shifted from one of a didactic, transmissive coordinator of all learning activities, some students experienced trepidation. The concepts of fear and support also point to the important relational quality of the teaching required in this approach to teaching and learning. Teachers are challenged to be sensitively oriented to when to intervene directly as students communicate levels of discomfort, anxiety, and frustration. This represents a tension with knowing when to hold back that aligns with making room for student agency. It speaks to a sensitivity and patience to give the

student the space, the time, and the opportunity to struggle, and thereby learn.

While students recounted feelings of insecurity, of "stress," and "being uncomfortable" at various times during the project, others described feeling "excited," "loving the hands-on learning," and being "not distracted". The project was interpreted as a welcome respite from students who understood traditional classroom learning as "sitting at a desk," "taking notes," and "memorizing stuff for tests". The students' experiences speak to the tension often described by teachers when a student does not seem to know something or be able to perform a task. We are inclined to intervene. When expectations in a project are set at appropriate developmental levels, teachers can respond to students in a manner that supports the student's personal growth and development.

Another embodied response to the experience of the project-based learning approach was manifested in the idea of risk and risk-taking. "We were not really sure what the final product was going to look like... risk-taking was a big thing for us in class." Feelings of fear, discomfort, and of doing something new were also related to change and the unknown. "I think a lot of us were not willing to take the risk, make a decision, everyone had different ideas on what to do. It's difficult because there's not set instructions." Risk can have negative meanings, but to take a risk also includes positive possibility. Smith (1998) reminds us that genuine risk implies growth and development and the increasing acceptance of who we are. With this in mind, Smith writes, "the most responsible thing we can do is allow and encourage another person to take risks" (1998, p. 12). In this sense risk-taking is a form of pedagogical responsibility that again requires thoughtful attunement to the student who is being asked to take a risk. Developing creative capacity calls for both teachers and students to be risk-takers and thereby develop the dispositions to push boundaries, try new things, and embrace change and failure (Fullan & Langworthy, 2014: Brooks & Holmes, 2014). This expectation requires a deeper appreciation of the risk-taking experience and attention to how teachers can appropriately orient sensitively towards encouraging the risk-taking of young people (Howard et al., 2018).

Finally, students related the experience of being "stuck," of "struggling," and of "not knowing which way to go." At the same time, there were descriptions of "having my eyes opened," and "seeing the big picture," and "I can do more than I think." Authentic learning is often fraught with confusion and struggle, of not knowing how to proceed, and of being lost. English (2013) draws heavily on Dewey when she refers to the experience of struggle and doubt as the "in between realm of learning" (p. 55). "It is in this space," she writes, "that learners can find possibilities for experimenting with the new and, on that basis, develop new learning experiences" (p. 56). When the teacher

provides space for students to work through difficulties together, the students come to understand the discomfort as a shared experience of what authentic learning feels like. When this is made explicit, it becomes a point for discussion and reflection in the classroom, and students can begin to "learn how to learn" (English, 2013, p. 56).

Lived Space

A quality of lived space, or spatiality, was described in many student responses in interesting ways. First, lived space refers to how we experience space. We are very aware that certain spaces and places affect the way we feel, even if we are not consciously aware of it. Popular media shows us that how we design, build, and furnish our living spaces is an area of great interest.

There is also a sense of inner and outer space, and spatiality may help us gain further insights into the experiences of the students in this case. The concept of "structure" revealed itself as a common theme across the grade levels. Also related to the idea of structure was the experience of "being free" or "freedom." Some examples are; "I like having freedom;" "some people feel they need more structure;" "I like working toward a bigger picture and the freer open structure;" "It felt more open to me; the project helped us collaborate;" "...to know that I was participating in something bigger made me feel more important." In descriptions such as these we see an inner experience of spatiality that represents open, expansive, less restricted experiences of learning. While learning occurred in the same physical spaces (classrooms, labs, library, etc.), something felt different while in these spaces. We did see the physical space also emerge in a comparison made to more traditional learning that was described as "sitting in desks, taking notes, memorizing stuff..." This depiction, it could be argued, aligns more with a restrictive, contained, and controlled experience of previous learning situations.

The experience of freedom, of more openness and less structure, addresses an increased sense of student control and engagement. One student went as far as to comment the experience of the project was more like, "... democracy instead of a benevolent dictatorship... we were given responsibility, control, which was refreshing." In response to the survey questions: "Would you look forward to more opportunities to learn this way?" and "Do you think PBL is as effective as traditional ways of learning?" students indicated they welcomed "more choice," "more freedom," and felt they were "more engaged." At the same time, students, sometimes the same students, commented they found learning this way, "harder," "more challenging," "difficult because it required deep thinking and there was no set structure." In the Grade 9 group, 70% of students indicated they would look forward to more opportunities to learn using PBL, citing "more creative expression", "individualized research," and "being open to different perspectives" as some of the reasons. A third of the

students indicated no, they would not look forward to more PBL saying, "it was confusing," and "I prefer direct instruction."

These student responses draw on language aligned with spatiality, openness, expansiveness, freedom, and choice by pointing to the concept of agency. Human agency is a complex topic and the subject of social cognition and sociological theories related to the field of social psychology and self-efficacy (Bandura, 1986; 2001). It is beyond the scope and intention of this study to take up the discussion of human agency in detail as our primary interest is in student experience. However, educational theorists (Barnett, 2007; Biesta et al., 2008; Klemencic, 2015) have inquired into student agency and help us understand the student experience of agency in this case. According to Biesta et al., student agency is something that individual students or groups develop alone or by interacting with others, with materials and ideas connected to a specific socio-structural and relational context of action. Agency is the quality of self-reflective and intentional action and instruction and not something a student possesses but develops (Biesta et al., 2008). A student with a more highly developed sense of agency welcomes less structure and more choice, while another student with less developed agentic resources (social competencies, self-regulating skills, and self-efficacy beliefs) may find the more open, democratic, student-centred PBL approaches to be less than personally optimal resulting in stress and a general level of discomfort and aversion (Bandura, 2001).

Biesta et al. (2008) assert that student agency can be developed, and it emerges only when students are given the opportunities to act intentionally and to interact with someone or something — and then reflexively self-engage to better understand their learning experience. To be agentic, students need to act intentionally even if their intentionality is not supported by a clear idea of goals and action plans, but some anticipation of likely outcomes and some belief by the student in their efficacy (they can achieve the desired results by their own actions). Again, this seems to point to the central role of teachers in assisting in the design of developmentally appropriate projects through which students may acquire a deeper sense of agency. Pedagogical sensitivity, the tactful awareness of which students require additional support as they continue to grow and build agentic resources, is crucial. Young people at the secondary level inhabit a life world that is a developmental in-between space. Barnett (2007) writes that the secondary years are a stage for being free and becoming. And in that sense, it is highly agentic — highly conducive to the action and interaction in the spaces of openness and choice inherent in project-based learning approaches.

Lived Time

Lived time, or temporality, refers to subjective time, our felt sense of the passage of time. This is different from clock time or objective time. A common theme to arise out of the data was the experience of "feeling rushed," of "not have the time to sufficiently explore," and "feeling pressured" or "squeezed" for time. These descriptions surfaced most often in response to the survey question: What do you think could have been done differently? Also, it came up in the focus group session when students raised the issue of having "more time."

Time emerges as a constraining factor for the students. They do not seem to be as interested in objective time, how many more hours or minutes would be required. No student mentioned the length of the working sessions as measured in hours or minutes, other than to refer to "class time." The experience of time seemed more qualitative at this point. Time was equated with opportunity or even activity — as in "time to explore." Time unfolds as a multitude of experiential occurrences and the tempo of time can then be interpreted, or felt, as a hurrying or being squeezed. These descriptions are most likely related to the fact that the project was undertaken largely within the parameters of a traditional secondary timetable with limited allotment of time within each subject area to devote to the project.

The concept of time management was also an aspect that arose for students. In response to the question that asked what they learned about themselves by taking part in this project, students commented on the need to juggle responsibilities and meet deadlines. "I suck at time management" was how one student summarized the experience. Other students related that managing the project was something they would have liked more support with, including "regular check- ins;" "help with clear goals" and "deadlines to meet" were all connected to the concept of managing time.

It is a common human experience that when thoroughly engaged in an activity, or when doing something enjoyable, that time will seem to disappear or speed up; we "lose track of time" as one student put it when describing the experience of her group's detailed planning of the final presentation. "When you really got into it, there never seemed to be enough time." And conversely, we can also perceive time slowing down, dragging, or seeming much longer than the minutes measured by the clock. Without an objectivity of time we are unable to think, plan, organize, execute, and solve problems. An integral part of growth and development is to assume responsibility for time. Dependability, trustworthiness, successful social relations, and the ability to collaborate are related to being responsible for time.

Lived Relation

Lived relationality or lived self/other guides us in exploring the relational aspects of student experiences during project-based learning. It became evident in the analysis of the survey and focus group data that themes connected to relationality were prevalent. Students focused on experiences of working with others and on how the self is experienced in relation to others. Comments representative of a strong relational orientation included; "we learn a lot from each other;" "building consensus and agreeing on our priorities was sometimes challenging;" "... it's hard when we all have different ideas and what the final product should look like;" "We connected with a bunch of different classes through filming;" "We worked with a group from the business class and talked to them about ethics and how that related to being human;" "it allowed more connection with others...I'm not artistic but working as a team helped me enjoy making the sculptures;" "I liked the integration of the classes...I was excited to be a part of the group;" "I learned I am more capable than I think and that I really enjoy working with others... really it all comes down to being collaborative, I guess."

The last student comment succinctly captured what many students expressed. Collaboration and the creative pooling of abilities, perspectives, and approaches proved to be challenging, yet rewarding for the participants. Learning through collaborative projects places learners in authentic situations that call on a much richer set of skills than more traditional lessons do (Thompson, 2013, p. 194). The skill of being a team member, of being a valuable collaborator, is central to 21st century education approaches. The opportunity to work together in an environment and with a facilitator and mentor who guides and promotes productivity and innovation builds in adolescents' developmental proclivities to connect socially with peers. As indicated above, student agency is enhanced when activities align with the developmental capacity of the learners. Developing agentic resources through collaborative learning approaches may assist in addressing what Brooks & Holmes (2014) call "...chronic disengagement that sets in at secondary schools across the world creating social, economic and health problems" (p. 13).

"Together we create our futures" (John-Steiner, 2000, p. 204) is the last line in the ground-breaking work Creative Collaboration. The Western ideal of the self-maximizing individual is culturally embedded and how we organize schools and curricula still reflect this enduring cultural value. However, in the past two decades the focus of individual attainment and personal creativity is starting to shift. Despite many years of employing teaching strategies such as cooperative learning, group learning, and learning communities, the foundational structures of schools largely remain top-down, and authoritarian with organizational approaches that curb agency, motivation, and engagement. Working together in groups and teams is not new, yet a closer look at the

concept of creative collaboration that is required in project-based learning may assist us to understand the student experience and thereby derive new insight.

Student comments speak to a degree of empathy, of being able to listen and value others' perspectives, a readiness to communicate and learn from others in pursuit of a common goal, in this case a product and a presentation. Schrage (1990) proposed understanding collaboration as a process of shared creation, in which two or more individuals with complementary skills interact to create a shared understanding that neither had previously possessed or have come to on their own. Moran and John-Steiner (2004) comment:

> "Although collaboration, cooperation, social interaction and working together are used nearly interchangeable...we hold collaboration differs from the daily exchanges that take place between people... Collaboration ... involves a blending of skills, temperaments, effort and sometime personalities to realize a shared vision of something new and useful" (p. 11).

Taken together, social constructivism as theorized by Vygotsky and Cole (1978) understands people learn through social engagement, and a more nuanced understanding of creative development and capacity (Moran & John-Steiner, 2004; Kelly, 2016) allow for a deeper understanding of creative collaboration as a distinct process from the everyday working together, cooperating, and sharing as partners that is so prevalent in schools. This is an area in need of further research to fully understand the nature of what we mean when we ask students and teachers to be creative collaborators and the type of organizational change required to support this type of collaboration.

IMPLICATIONS AND CONCLUSIONS

As indicated above, this inquiry represents a response to a gap in the research literature. Early childhood, elementary, and middle school contexts predominate in the research record on integrative, project-based approaches. Research in secondary education is under-represented. Growing interest in and uptake of experiential, project-based approaches that undergird popular educational initiatives such as: 21st century teaching and learning; New Pedagogies for Deep Learning; and Global Competencies among others call for further research at the secondary level.

The research presented here demonstrates that experiential pedagogies such as whole-school, project-based learning resulted in meaningful experiences for high school students. The descriptions of those experiences, and the outcome of employing a qualitative, phenomenological lens, revealed important structures of the students' life worlds as they were immersed in a specific pedagogical approach. The shift away from traditional, didactic, teacher-centred approaches revealed fundamental thematic structures that emerged for students. It is important to inquire into student-lived experience to provide for

a fuller understanding and the lived meaning of pedagogical interventions. Findings, such as those presented here, provide the possibility of a more informed, attentive, action-sensitive professional knowledge and practice in the development of educational experiences designed to influence the learning experiences of secondary students.

NOTES

1. The 5Cs in most 21st century education publications include collaboration, critical thinking, creativity, citizenship, and communication. New Pedagogies for Deep Learning promotes 6Cs, substituting community for communication and adding character. These competencies are also similar to the Global Competencies.

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THE PATCH: AN ARTFUL SYN(AES)THETIC MAPPING OF LINGUISTIC DATA THROUGH COLLABORATIVE DIGITAL / ANALOGUE LITERACY PROCESSES

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ABSTRACT. The Patch workshop explores creative / critical analyses that can map the collectively relevant topoi of semiosis in linguistic texts according to the three ecologies as articulated by Félix Guattari. As creative pedagogues both in service and critical of creative economics, we valourize a generative practice, one that results in successive creative readings, writings, visualizations, sonifications and audiovisual artifacts. The Patch is a human-computer procedural algorithm, engaging a series of recursive and recombinant processes that utilize several software programs, collaborative writing and performance practices to bridge analogue and digital literacies. A total of 80 teacher education students, graduate students and faculty, working with a single input text, provided the data reported in this paper.

LE PATCH : UN TRACÉ ARTISTIQUE ET SYNESTHÉSIQUE DES DONNÉES LINGUISTIQUES PAR DES PROCESSUS DE LITTÉRATIE NUMÉRIQUE / ANALOGUE COLLABORATIFS

RÉSUMÉ. L'atelier Patch offre une exploration d'analyses créatives et critiques qui tracent les thèmes traditionnels de sémioses collectivement pertinents dans les textes linguistiques selon les trois écologies telles qu'articulées par Félix Guattari. En tant que pédagogues créatifs à la fois au service et critiques de l'économie créative, nous valorisons une pratique générative, qui entraine des lectures créatives, des écritures, des visualisations, des sonifications et des artefacts audiovisuels successifs. Le Patch est un algorithme procédural personne-machine, engageant une série de processus récursifs et recombinants qui utilisent plusieurs programmes logiciels et des pratiques d'écriture et de performance collaboratives pour faire le pont entre les littératies analogiques et numériques. Un total de 80 étudiants en formation à l'enseignement, étudiants diplômés et professeurs, travaillant avec un seul texte d'entrée ont fourni les données rapportées dans cet article.

The Patch is an experimental workshop approach to creative / critical text analysis, a collaborative w/reading[1] (Torres, 2005) of linguistic data in which an input text undergoes multiple states and stages of transformation before reaching the output as multimedia audiovisual artifacts (see Figure 1). It emphasizes the role of teachers as creative pedagogues who collaborate with students in the realization of meanings that can be mapped simultaneously

across three different ecologies of significance: mental, social and physical. In taking up Guattari's notion of the three ecologies, we place a critical yet playful lens on the notion of creative economies, a concept that attempts to territorialize, indeed quantify, the explicit value of human creativity as a force and function within national economies (Schlesinger, 2016). As Guattari (2000) states,

> by their very essence analytic cartographies extend beyond the existential Territories to which they are assigned. As in painting or literature, the concrete performance of these cartographies requires that they evolve and innovate, that they open up new futures, without their authors [auteurs] having prior recourse to assured theoretical principles or to the authority of a group, a school or an academy ... Work in progress! (p. 40)

The Patch's textual procedures are recursive and recombinant; inputs and outputs can be re-patched to render alternative w/readings that privilege neither the technological nor the human, neither the digital nor the analogue, in collaborative cultural production.
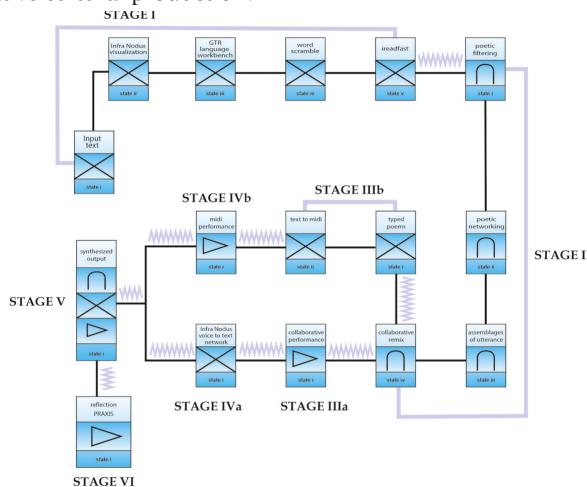
FIGURE 1. *The Patch schematic. Using the metaphor of an electrical circuit, we chart the stage and state transformations the input text undergoes throughout the workshop.*

This immersion of being in the becoming textual field of creative analysis manifests a polysingularity — an experiential context — in the face of analytic fixity and dogmatic abstraction, forging instead creative interagential analytics that undermine regimes of knowledge control and capital flow in cultural (re)production. The output of the Patch remains indistinguishable from the context and circumstance of analysis, in line with Bateson's remonstration that "it is important to see the particular utterance or action as part of the ecological subsystem called context and not as the product or effect of what remains of the context after the piece which we want to explain has been cut out from it" (Bateson, 1972, p. 338). This reneging of data analytic theories

and practices disrupts discursive conventions by which analysis and criticism might be reduced to the parroting of tropes; as a praxis it repels the alienating transubstantiation of meaning as intellectual property from the material, personal and political contexts in which it occurs. Such a rethinking of creative work in the digital age — an age marked by its uptake of hypersignifying media, informational manipulation and profound social divisions of wealth and power — responds to divisive capitalization. We see the notion of creative pedagogues introduced in this special issue as stimulating the development of underlying values of collective enterprise and creative solidarities in the production of dissensual cartographies of meaning; we thus have sought to map collectively relevant topoi of active semiosis in a linguistic text and thereby account for imagination's role in stimulating a rhizomatic growth of knowledge according to the three ecologies as outlined in Guattari's anticapitalist critique.

Instantiated as a workshop, the Patch embodies economic value as a site of cultural production, teaching participants to work in creative and collaborative production teams that are integrated with contemporary digital technologies of reading, writing and media production, thereby promoting the participants' future economic potential. Our work systematically challenges the central tenets of creative economies, which emphasize the capital side of cultural capital through its targeting "wealth and job creation through the generation and exploitation of intellectual property" (Department for Culture, Media, and Sport [DCMS], 1998, p. 3), and its attempt to instrumentalize and quantify what Yúdice (2003) calls the "transcendent" (p. 11) aspects of culture that have fallen into the domain of the "managerial professionals" (p. 12). By positioning analysis within the material circumstance of interpretation as creative play and performance with and through technologies, we discard authoritative summaries in favour of imaginative recreations that prioritize and map hard-to-measure outcomes and impacts on mental, social and material ecologies that vitalize culture. It is these same aspects of culture that the latest update to the seminal Creative Industries Mapping Document of the UK Department of Culture, Media, and Sport (DCMS) admitted, "For personal wellbeing, educational attainment, life chances and soft power, more work is needed to refine how we measure the specific impact that culture makes" (DCMS, 2016, p. 58). Originating in Britain, and now having spread through international policies, the economics of creativity have translated the material and social impact of cultural products and practices into actuarial registers (Schlesinger, 2016) but have missed personal investments such as those made by creative pedagogues who inspire and expand the creative consciousnesses and solidarities of their students.

We approach this work as "ecosophical" textual analysis using arts-based practices in concordance with Guattari's (2000) postulation that:

in mapping out the cartographic reference points of the three ecologies, it is important to dispense with pseudoscientific paradigms. This is not simply due to the complexity of the entities under consideration but more fundamentally to the fact that the three ecologies are governed by a different logic to that of ordinary communication between speakers and listeners which has nothing to do with the intelligibility of discursive sets, or the indeterminate interlocking of fields of signification (p. 40).

As creative pedagogues working in the context of a centre for digital literacy, we are equally interested in the potential to teach and incorporate digital literacies into our arts-based practices, and as researchers our work is focused on the attempt to look at a symbiosis of the organic and the automated, the interagencies of the human and non-human at work today in the generation of meaning (Adema & Hall, 2016). In this way, the Patch proceduralizes multiple stages in which modal transformations occur between the analogue and the digital, the individual and the social, and the unit and the whole in contextual networks that leave textual traces of intention, pleasure and symptomatic autoreferentiality. At each of these key stages in modal transformation we exploit notions of glitch and error (Peña & James, 2016) as a means of revealing otherwise hidden processes in the technical automation and cognitive automaticity of language-meaning generation. Guattari (2000) states "the crucial objective is to grasp the a-signifying points of rupture — the rupture of denotation, connotation and signification — from which a certain number of semiotic chains are put to work in the service of an existential autoreferential effect" (p. 56). As a shorthand for the processes we undertake in analyzing linguistic data through the Patch, we treat the words *digital* and *analogical* as acronyms of two enactments of literacy (see Figure 2).

D	directive		A	attention-based
I	interactive		N	numinous
G	generative		A	affective
I	interagential		L	lucid
T	technological		O	organic
A	algorithmic		G	granular
L	logical		I	intentional
			C	collaborative
			A	aesthetic
			L	linguistic

FIGURE 2. *Digital and analogical literacies as procedural gestalts.*

These terms are not polarized in opposition; instead, different surplus values of signs are given off by the filtering effect of these modalities. Both modes are generative of new meaning-potentials within critical / creative literacy praxis; therefore, we position both modes as significant in authoring meaning through eco-logical processes that are grounded in the autopoesis of living language.

Theories espoused by Deleuze and Guattari (1983; 1987) are rooted in a rethinking of the abstract machine of capitalism and its assemblages of utterance into territories of meaning that can be owned and thus co-opted for the extraction of capital. The Patch sets up a sequence of recombinant transformations that break with the forms of territorialized cultural production that seldom benefit artists, while removing intellectual goods from the creative commons (Lessig, 2004) and depleting shared human productions and experiences that inhere to collective subjectivities and are, ipso facto, *our inheritance*. Discourse operates as a flow, and the analytical desiring machine we call the Patch (see Figure 15) engages this flow through processes that interrupt, collapse and expand the text, cause it to breathe, shout, be lulled by melody and sink silently into code. Like desiring-machines (Deleuze & Guattari, 1983), the Patch disrupts all continuities and arranges them in chains of signification that reflect not a summary of origins and expectations, but "the surplus value of a code" (p. 39). Deleuze and Guattari (1983) continue:

> It is an entire system of shunting along certain tracks, and of selections by lot, that bring about partially dependent, aleatory phenomena bearing close resemblance to a Markov chain. The recordings and transmissions that have come from the internal codes, from the outside world, from one region to another of the organism, all intersect, following the endlessly ramified paths of the great disjunctive synthesis. If this constitutes a system of writing, it is a writing inscribed on the very surface of the Real: a strangely polyvocal kind of writing, never a biunivocalized linearized one; a transcursive system of writing never a discursive one; a writing that constitutes the entire domain of 'real inorganization' of the passive syntheses, where we would search in vain for something that might be labelled the Signifier–writing that ceaselessly composes and decomposes the chains into signs that have nothing that impels them to become signifying (p. 39).

The Patch is this kind of writing — iteratively atomizing, tentatively reconstituting, embodying and recoding chains of significance in the synaesthetic surplus of polysingular potentiality and possible meanings.

A practice of deterritorialization and recombinant cultural recycling is central to these procedural techniques (James, 2017a), which together make up the version of the Patch workshop described below. The stages and states of recursive transformation through which a text flows (each Patch is a sequence of operations including close and distant reading, automatic writing and oral

performance, algorithmic interventions and transmediations) create human and computational artifacts from which creative analyses and analytic creativities emerge energetically, as surplus values and excess data, fostering new assemblages of meaning that undercut regimes of predictive syntax and discourse. Figure 1 provides a full schematic of the Patch processes examined in this paper. To date, the Patch workshop has been conducted on ten occasions.[2] This paper presents data from three workshops for which the same textual input was used. Two workshops were presented with Bachelor of Education students (n = 75) in a course called Teaching Writing. The third workshop was an in-house session at the Digital Literacy Centre (DLC), in which the authors and a visiting scholar engaged as participants using the same textual input. To help guide the reader through this series of data-analytic writing processes, we provide a variety of figures and examples. Readers are encouraged to view the multimedia artifacts-as-outputs that are linked to online resources accompanying this journal.
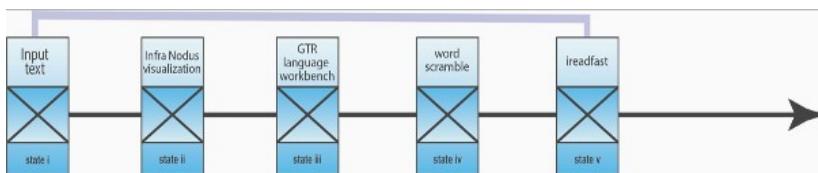
FIGURE 3. *Patch schematic, Stage I: Digital processes.*

INPUT DATA

The first step of the Patch, *Stage I state i,* is to read and discuss the textual input. For these workshops, we chose a short story by the Argentinian author Jorge Luis Borges (1975), "On Exactitude in Science":

> In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography. (p. 131)

This story, originally written in Spanish and then translated / transformed into English, contains 145 words and describes Borges' answer to a question that arose in Lewis Carroll's *Sylvie and Bruno*: "What do *you* consider to be the *largest* map that would be really useful?" (Carroll, 1893, para. 40, emphasis in

the original) to which another character replies, "[W]e use the country itself, as its own map, and I assure you it does nearly as well" (para. 42). The idea of the largest useful map is transformed and resingularized a century later by Borges in "On Exactitude in Science". "There is no individual enunciation" (Deleuze & Guattari, 1987, p. 80), explains the crowd of authors that is Guattari and Deleuze, there are only "collective assemblages" (p. 80). With his short story, Borges joins Caroll and "all the voices present within a single voice" (Deleuze & Guattari, 1987, p. 80), or, as Thomas King (2003) quotes Silyx Okanagan author and educator Jeanette Armstrong,

> Through my language I understand I am being spoken to, I'm not the one speaking. The words are coming from many tongues and mouths of Okanagan people and the land around them. I am a listener to the language's stories, and when my words form I am merely retelling the same stories in different patterns. (p. 2)

In Borges, the cartographers, in their zeal for exactitude, create the largest of maps, a map as large as the Empire itself. The map lays over the land inch by inch and mile by mile, and due to this exquisite exactitude becomes utterly useless. Among the many reasons we chose this story as the source text / input data for our inquiry is the central philosophical problematization of accuracy or exactness in scale when mapping space, geography, text and meaning.

Mapping is a kind of colonization of geography; like language, it is a way of laying claim through naming, delineating and defining boundaries. If Borges' story is a map, like the people of the Empire we deliver it up to the "Inclemencies of the Sun and Winter" and create of the "tattered ruins" new meanings and geographies (Borges, 1975, p. 131). In the Patch, we invite the creative pedagogue / cartographer to re-engage with the geography of a text and creatively remap, remix and reinvent new complexities. In this way, we problematize the notion of definitiveness and finality in text; Borges' story is one moment, one terminal, for ideas that radiate throughout time, minds and assemblages of subjectivities. Throughout the Patch process, we explore the idea from information theory that "an infusion of noise into a system can cause it to reorganize at a higher level of complexity" (Hayles, 1999, p. 70). Each state along the circuit of this process systematically introduces noise and excess into the system / geography of the text, purposefully inviting innovative and generative complexities to occur.

TEXT NETWORK ANALYSIS

After Borges' text is shared with the participants, the metaphor of the map is literally configured in InfraNodus, a textual network analysis tool. InfraNodus transforms the text into a visual network, plotting word / nodes and their co-occurrences in lexico-syntactic relationships. The resulting graph is a map, a two-dimensional representation of the text that breaks the linearity of its

narrative, allowing the visualization of its polysingularity or its "multiplicity of possibilities ... offering a more holistic approach" to the text (Paranyushkin, 2012, p. 3). InfraNodus visualizes Borges' story as pathways of meaning and identifies structural gaps between nodes inside the graph where ideas and meanings can be explored by creating new connections or *betweennesses* (Paranyushkin, 2011).

When the textual network is shared with participants, a new form of reading is encouraged. The units-to-be-read are transformed and the focus is now on the words mapped as a system, which allows what literary historian Alfredo Moretti (2000) called distant reading, where the intention is to unveil meaning without getting involved in linear reading. This is in opposition to close reading, where the goal is to pay attention to the linearity of the story by attempting to capture all the features of the text (Baldick, 2015). Distant reading seeks to capture the nature of the story by aggregating data and then analyzing it (Schulz, 2011), creating a map of the linguistic data to be apprehended by participants.

Other features of InfraNodus are focused not on the visualization of new pathways of meaning but on tools to better read the text network graph. For example, the network structure is analyzed and categorized from dispersed (where ideas are completely spread out) to diversified (where several topics are central), focused (where communities of meaning are centred around a few topics) and biased (where ideas are centred around one single topic). InfraNodus also identifies words that are most influential (those that serve as anchoring terms for connecting other words) and the main topical groups (communities of words) in the input text. Borges' story, for example, is categorized as focused with the most influential words being *map, empire, there* and *tattered* and shows several communities of meaning in the network, identified by different colours (see Figure 4).

The decomposition of the text into its constituent elements leads not only to a visualization of the specific text's polysingularity, but it also configures the network with relevant information to begin assembling new structures of meaning beyond the boundaries of the text under consideration. In the Patch, "the relevance of such models to [mapping] mental ecology ... [are]: (1) their capacity to recognize discursive chains at the point when they break with meaning; (2) the use they make of concepts that allow for a theoretical and practical auto-constructability" (Guattari, 2000, p. 56).
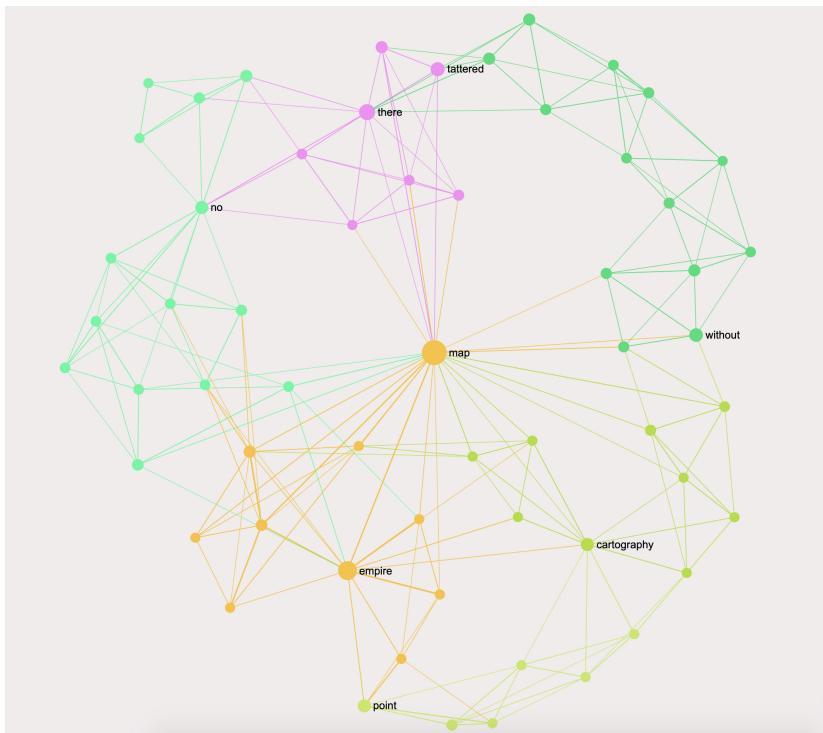
FIGURE 4. *"On Exactitude in Science" as a textual network in InfraNodus.*

ALGORITHMIC AUGMENTATION

The third step in the Patch is to take the initial 145-word text and begin to complicate and elaborate upon the embedded meaning by further algorithmic intervention via the linguistic algorithms of Andrew Klobucar and David Ayre's *GTR Language Workbench*. Language workbench is a project that "explore[s] how creative writing (and language use in general) might take advantage of digital processing applications to create new and innovative forms of literary art, electronic or otherwise" (Klobucar & Ayre, n.d.). Figure 5 illustrates one of several processors we used to elaborate upon the kernel story. This one is designed to find and replace nouns, adjectives and verbs in the original text with antonyms, hyponyms and synonyms.
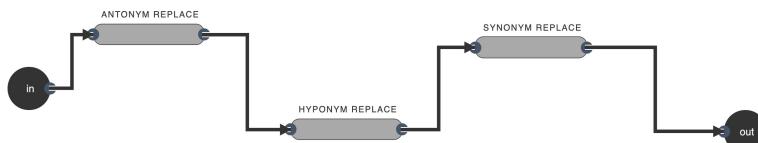
FIGURE 5. *Algorithmic text transformation.*

The initial 145 words become augmented with iterations that extend the map outwards to include families of words and related meanings. For example, the first sentence of the short story:

> In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province.

Becomes the following:

> In that conglomerate, the art of fashioning attained such imperfections that the mapping of a single Kansu occupied the wholes shebang of a written communication, and the single-valued function of the imperium, the whole works of a state.

We ran the story through a series of these processes, adding each permutation to the initial text. In this way we augmented our initial data set of 145 words, to 1,088 words.

UNMAPPING THE TEXT

The next algorithmic intervention is a word scrambling tool called Word Shuffler (Online Random Tools, n.d.). By removing the syntactic mapping of the words, we invite participant / poet / cartographers to engage with the unformed geography at the level of the words themselves. Our minds naturally find meaning and coherence in worlds and words as we encounter them, and once this coherence is encountered, it becomes difficult to unsee it to find new patterns and geographies. With this disruptive process, we are initiating a practice of creative reading in which we intentionally unmap then remap words through ecological praxes, and

> seek something that runs counter to the 'normal' order of things, a counter-repetition, an intensive given which invokes other intensities to form new existential configurations. These dissident vectors have become relatively detached from their denotative and significative functions and operate as decorporealized existential materials. (Guattari, 2000, p. 45)

In this stage, the words become deterritorialized both from the kernel story / singularization as well as the basic principle of authorship / ownership of that story. The particle-signs of individual words become available for reabsorption into new discursive ecologies and geographies of meaning.
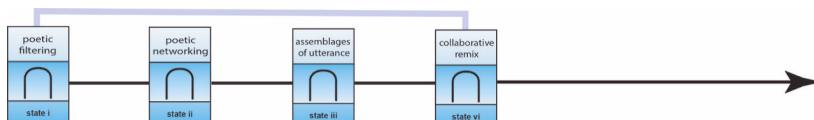
FIGURE 6. *The Patch schematic, Stage II: Engaging the analogue.*

I READ SLOW

The randomized words are now projected upon a screen using a program called iReadFast (Del Maschio, n.d.). This program allows the reader to control the rate of words as they appear sequentially upon the screen. Intended to help readers increase their reading speed, we use this program instead to facilitate a creative apprehension of text. Rather than attempt to grasp and comprehend each word, we invite increased noise into the reading process by displaying the words at improbable rates of up to 1,200 words per minute. Unlike a computer, which can process linguistic data at fantastical speeds, the human mind works more slowly and imaginatively. We intentionally invite this human slowness, along with emotion, desire, memory and intuition, into the creative abduction of reading / encountering words. This is the first *state transformation* in the Patch, as we cross the digital / analogue divide (see Figure 1). In so doing, we invite a generative opportunity for glitch and error in our human processing.

The instructions are to allow the flickering words on the screen to wash over the eyes. Rather than seek meaning among the words or attempt to write (map) each word by word, inch by inch — an impossible task for human beings at rates this fast — we encourage participants to follow their poetic instinct when selecting words. We record only those words that appear louder and more stimulating to our eyes than the others. When watching words flash by in this way, it becomes apparent that some words emerge in our minds with a kind of resonating clarity, while others simply pass by unheard. (This sonic analogy will be taken up in the transmediation stage of the Patch in which we transform text into MIDI[3] code that is then sonified as music). This idea of the generative togetherness / collaboration between the digital and the human is explored and amplified throughout the Patch: Our slowness and limitation in processing speed becomes the root of our creative agency in the act of reading, filtering and mapping linguistic data.

Upon the large white paper / space spread across the tables before us, the participants gather around with black felt pens in hand, encountering the projected words, scrambled and deterritorialized and flickering at impossible speeds. Our arms cross over each other, reaching into that white space, *drawing* the words by hand. The handwritten words sometimes misspelled, sometimes illegible, are singularized gestures of meaning. Here the words flashing from the digital space are plucked, transformed and resingularized into flesh and gesture (see Figure 5). Here, "[w]e are dealing ... with the very important occidental difference between the *visual* and the *haptic* (a seeing by touching, as when we say that blind [people] see with their hands) ... We are also dealing here with a narrative of *touch*, a narrative of membranes as revived" (Wetzel, 2006, p. 54). This materialization from digital image into tangible cursive is a kind of "scarring, stitching, or the 'suture' mending the gaping hole between the original and the image" (Wetzel, 2006, p. 55).

We draw the words, populating the space with a new geography as of yet unmapped. To use the language of network analysis, each word is a node without edges — there is no betweenness among them. Next, we physically embody InfraNodus's digital text network generation, but here poetry and improvised meaning will be our guiding principles for generating analogue lexical networks. We have deterritorialized the text, losing

> not only ... the pagination that makes reading possible ... [but] also fill[ing] it with information derived from elsewhere, and, in doing so, [we] assemble that information into a new structure. Rather than reduce the sophistication of the text, a semantic model embeds that text in a web of others (Gavin, 2019, p. 19).
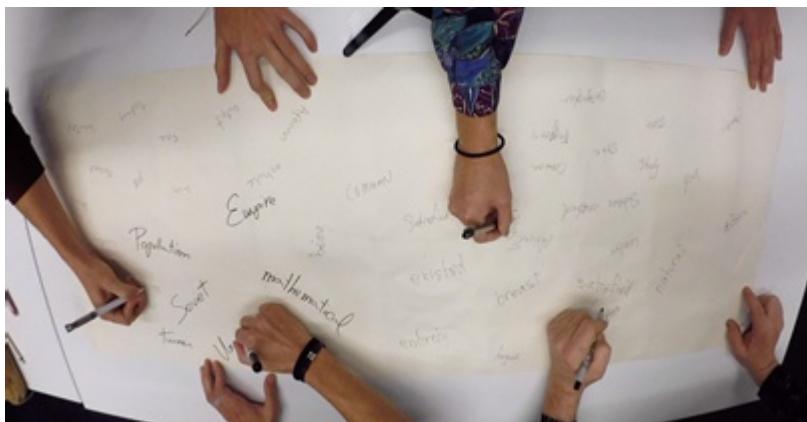
FIGURE 7. *Analogue filtering of digital textual data.*

Here, Gavin is referring to digital network analysis in which each word is in relation to the entire digital corpus of the language. In physical networking, the de/re-composition of text invites the participants' human algorithmic processing, which incorporates not the entire corpus of the language but the entire personal corpus of each participant. The words resonate not with their limited meanings embedded in the specific Borges' map / story, but within the participants' own life maps, thus combining physical, mental and social geographies.

In *Stage II state ii,* we begin to create poetic networks of meaning by encircling nodes with multicoloured pens and connecting them into small assemblages of poetic utterance or expression (see Figure 6). The empty space is haptically mapped, and networks emerge, overlap, and commingle in a "logic of intensities, or eco-logic, [which] is concerned only with the movement and intensity of evolutive processes" (Guattari, 2000, p. 44). We do not yet seek a coherent narrative between these poetic utterances. This "[p]rocess, ... oppose[d] here to system or to structure, strives to capture existence in the very act of its constitution, definition and deterritorialization" (Guattari, 2000, p. 44).

FIGURE 8. *Analogue textual network.*

ASSEMBLAGE OF UTTERANCE AND COLLABORATIVE REMIX

Once we have delineated our analogue network among the isolated nodes, we begin narrowing the meaning through poetic association, creating betweenness and relationships among the nodes. Each participant chooses at least five of these networks to begin altering, augmenting and assembling into a discrete poetic utterance. Now we begin to divine and invent contextual relationships between the words, allowing for new words and concepts to enter into the poetic geography. Each participant works on their own collection of poetic utterances without seeking cohesion between them. Once the lines have been drafted, we then cut them up and collaboratively reassemble them into a poem (see Figure 9). As Swiss and Burgess (2012) suggest, "[c]ollaboration allows writers and artists ... to reconsider both our work and our identities, to literally see them anew, as we move from individual to composite subjectivity" (p. 75). We continue here to problematize the concept of authorship / ownership / identity by exemplifying how the lineage of each poetic utterance has been de/re/territorialized numerous times within the Patch, breathing through subjectivities, both digital and analogue, and momentarily cohering within a poem that is neither final nor expository but merely (and abundantly) a singularity within this process of constant transformation.

In the case of new media poetry, the work sometimes remediates procedural writing, gestural abstraction, and conceptual art, while contributing to an emergent poetics. New forms of digital poetry, especially collaborative digital poetry, challenge already contested terms such as 'poetry' and 'literature,' and further complicated boundaries between literary genres. (Swiss & Burgess, 2012, p. 74).
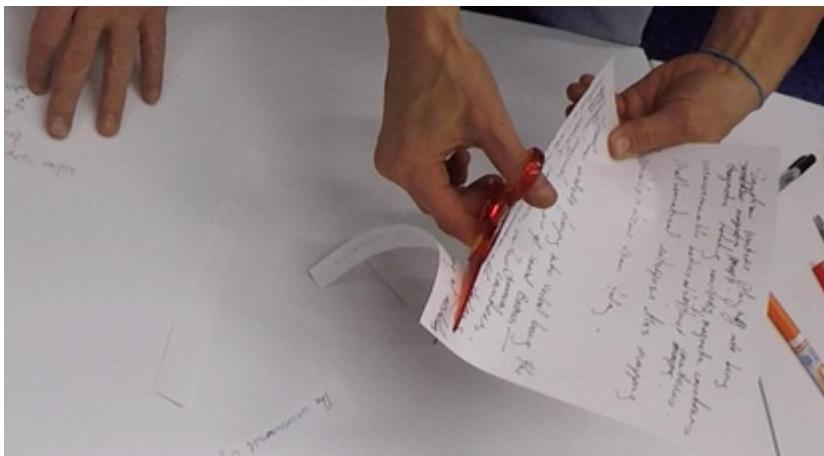
FIGURE 9. *Collaborative, recombinant, cut-up poetry.*

FIGURE 10. *The Patch schematic, Stage IIIa: Collaborative performance.*

COLLABORATIVE ORAL PERFORMANCE

We have now mapped the social ecology of our collective aesthetic resonation with the words, infused them with personal poetic sensibilities, and collectively regenerated the text by recombining the composite linguistic elements within the deterritiorialized data. At this point we call upon participants to collaboratively perform their cut-up poems to enunciate and produce the language as physical stimulus. This envelops us proprioceptively. The text becomes environmental and a function of hollows in bones, muscle mass and spaces in architectural structures, reverberating off flat surfaces and thereby mapping words temporally in space. This emphasis on oral language convinced Guattari (2000) "that the question of subjective enunciation will pose itself ever more forcefully as machines producing signs, images, syntax and artificial intelligence continue to develop. Here we are talking about a reconstruction of social and individual practices" (p. 41). Thus far, we have allowed the visual to dominate our mapping of textual process, and vocal performance introduces the first transmutation that departs from alphabetic or binary code and embodies the materialities of the body, the voice and the environment in which it is situated. In this mode, variations in pronunciation and accent, mis/readings, as well as the composite sound of multiple voices — sometimes in unison or taking turns — puts both organic and artificial listeners in a creative role. While the performances occur, the speech-to-text

processor packaged with InfraNodus attempts to assimilate a logical text from the performed poems using probabilistic algorithms trained on everyday speech. In other words, the syntactic networks which InfraNodus produces while recodifying these live, collaborative performances are very loosely structured. The software describes them as evolving / developing / diffuse, networks of meaning opened up by logical disjunctures (and inherent ambiguities) associated with poetic expression wherein listeners or readers are expected to contribute more fully to the transaction of meaning. These poetic gaps in predictive speech patterns help us map fertile sites (topoi) of semiosis where fresh meanings can emerge through disruption of functional, efferent transactions of meaning (Rosenblatt, 1994). As a result, the subsumption of the voicing of the poems into code is an exquisite partnership of the human voice and automated interpreter, wherein the algorithmic listener creatively approximates the actual text being performed. The voice recognition software produces a new literal text that is simultaneously visualized, the mapping of data that has undergone individual, social and environmental transformations. In this state, the data of recorded voices is harvested by our DLC team as acoustic and literal information to be incorporated in the culminating artifact / video output.

FIGURE 11. *The Patch schematic, Stage VIa: Voice to text.*

THE GENERATIVE DIGITAL GLITCH

As the participants read their co-authored poems out loud, their voices become text through the speech-recognition algorithm, and the graphemic representation of these evolving new textual networks is projected upon a screen as they speak. The audience receives multiple synesthetic enactments of the recycled poem: 1) a live polyvocal performance of the poem, 2) an input linear text that is being shown as the reading progresses, and 3) a developing visual network of words and terms that is projected on a large screen. The poem that was born of cut-up pieces of paper is resingularized as a digital poem, embedded with openness, interactivity, hypermediality and analogue-digital collaboration (Torres, 2005), where "the incorporeal transformation is recognizable by its instantaneousness, its immediacy, by the simultaneity of the statement expressing the transformation and the effect the transformation produces" (Deleuze & Guattari, 1987, p. 81). The poems' multiple layers of representation do not act in opposition to each other but transform

themselves as a whole among the collaboration between participants, the enactment of the poem and the technology that is used to expand its pathways of meaning.

One valuable outcome of turning our voices into text for InfraNodus to map is the glitch[4] – the unforeseen behaviour of the computer when it interprets the voice input (Peña & James, 2016) – caused by technical limitations in the software's capability of processing atypical vocal sounds. These glitches promote creative and pedagogical engagement with the text by allowing participants to explore the inter-relationships between the sound of their voices and the resulting visualization – an instantaneous transmediation of the poem (Peña & James, 2020). Figure 12 maps one poem through this morphological process.

Stage II state iv: Collaborative remix

Stage IIIb state i: Typed poem

Stage IVa state i: Infra Nodus voice to text network

Stage IIIa state i: Collaborative performance
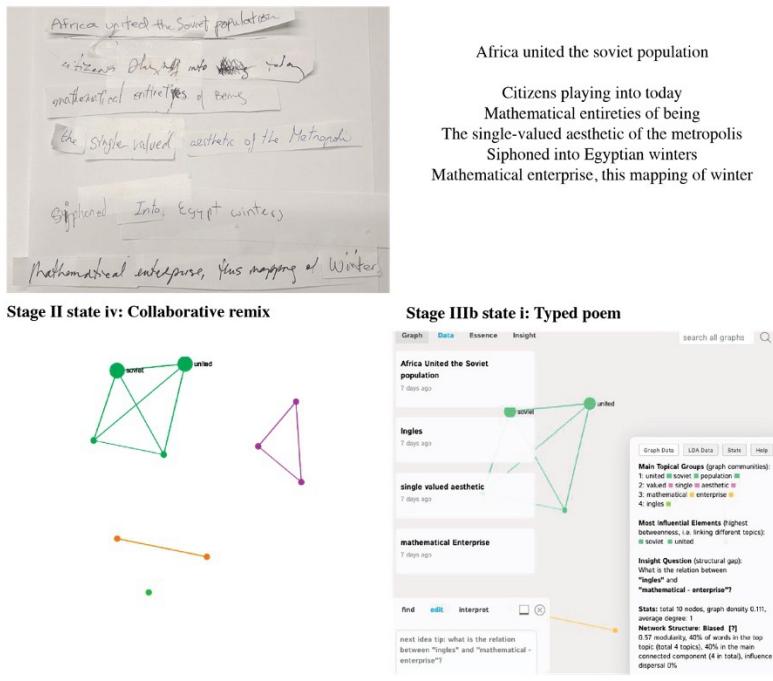
FIGURE 12. *Mapping one poem through a series of transformations.*

This glitching, in the form of missing words and misrecognized terms, affords a learning and a creative opportunity in which the software's agency is visible in the assembly of the textual network; this inquiry promotes an interrogation of the "relationship between served and server, between used and user, dialogically and creatively" (Peña & James, 2016, p. 123).

Performance A

Performance B

Performance C
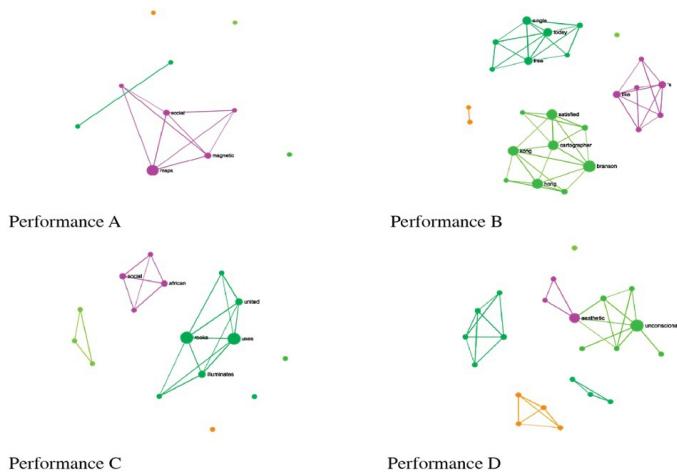
Performance D

FIGURE 13. *The author's poetic performances as text networks in InfraNodus.*

The resulting graphical text networks allow participants to compare the original story (in Figure 4) and their poetic performances (in Figure 13) by visualizing the multiple potentialities of text, the surplus of signs transfigured through the Patch. The variations among the textual networks, more than a mere quantification of Borges' story and the poetic performances of the participants, show the creative and pedagogical value of the Patch. The deterritorialization of the text, filtered and recombined through several states and stages of transformation and transmediation, now makes visible entire geographies of interagentic expressions of meaning. Networks of meaning are generative and situated rather than conclusive and transcendent of the content, where no two poems are the same, and the chaos of the Real is apparent. Even if the lexicon is derived from the same fiction, no single interpretation is extracted to form dominant trajectories of meaning.
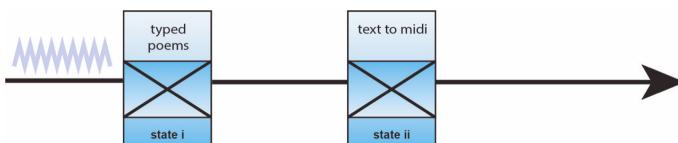

FIGURE 14. *The Patch schematic, Stage IIIb states i and ii: Typed poems and MIDI transmediation.*

REDIGITIZATION

The stage change from the physicalized poetry — handwritten, cut-up and taped back together into its typed, digitized and infinitely reproducible file format — is a significant and meaningful transformation. The digital poem

becomes visually distinct from its physicalized iteration (see Figure 12). Not only do participants continue to make edits in the typing process, but there is a homogenization of form that takes place as well. As Hayles writes, "[d]ifferent technologies of text production suggest different models of signification; changes in signification are linked with shifts in consumption; shifting patterns of consumption initiate new experiences of embodiment; and embodied experience interacts with codes of representation to generate new kinds of textual worlds" (Hayles, 1993, p. 69). In Figure 15 we visualize the transformations one word / node makes, through three different workshops, as it moves from the source input text through the processes and subjectivities of the Patch; it visualizes the relative frequency of each algorithmic variation of map / mapping, as it is taken up or discarded along an ideational transfiguration through this semiotic desiring machine. The radiating lines of poetry are poly-resingularizations of the initial "map" but do not stop there in meaning; rather, they continue on in a journey of transformation.
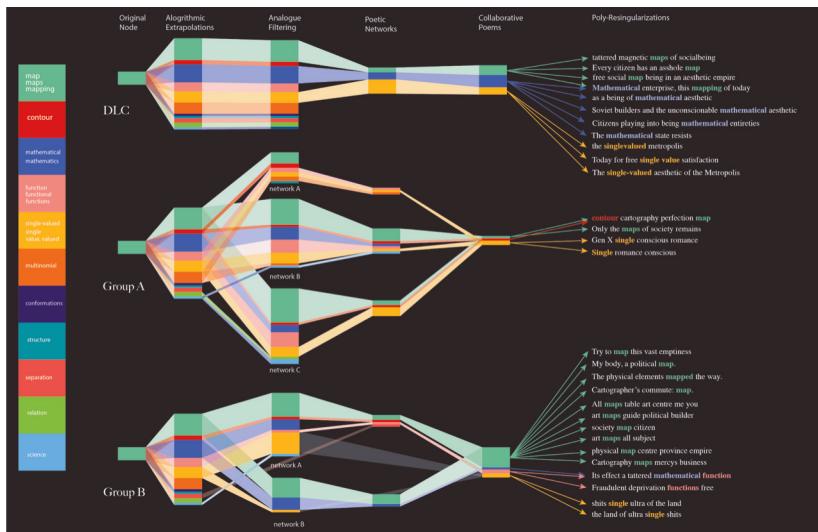
FIGURE 15. *A visualization of the Patch as desiring machine, following the word* map *through its flow of transformations in three different Patch events*.

What happens when the map of the empire is deterritorialized, when the paperweight snow globe of a story is smashed in the collider of collective imaginations? This not only reveals the adaptability of logics involved in apprehending the linguistic data, but it also maps an underlying relational network between human and automated agents processing the data according to the related ecologies of mind, society, and the physical environment. As demonstrated in Figure 15 which details the transformations of a single seme, *map* – both noun and verb, an indexical supersign coding the infinitely complex singularities of place but also the act of exploration that produced

it — evolves as it occupies different ecological niches according to the aesthetic needs and desires that nourish it. This is no mere roll call of cognates buzzing around a Signifier, but instead the sign's evolving situatedness within the minds of the participants and their collective imaginations that draw incessantly on experience of physical and virtual worlds. *Map* becomes a central figure in a relational network that draws together texts, readers, writers, listeners, speakers, and viewers, shunting phrases together and setting up emotional topographies:

> Try to map this vast emptiness —
>
> its effects a tattered mathematical function,
>
> a single-valued aesthetic of the Metropolis.

The chains of signification, in which *map* takes up residence, reinvent the Signifier each time while holding traces that leave a filigreed residue of context and intention. It is impossible, in fact, to isolate these ecologies of meaning from each other, to say that the map in Borges' narrative has a subjective meaning apart from its social and political meaning, or what it means to the physical space and relational networks in which it was conjured. It is metaphor only insofar as it initiates a cascade or avalanche of emergencies; in its mutations it escapes closure, and is unredeemable for legitimate tender.

DATA SONIFICATION

The next step in the Patch is a gesture towards a world of inquiry that we cannot possibly explore very deeply within the confines of either this paper or the Patch workshop itself; instead, this step is an invitation to further explorations and experimentations in the sonification of linguistic data. The transmediatory process of sonification is being used across the disciplines, from astronomy to medicine to geography, in order to provide new pathways for recognizing pattern and meaning within data.

> Data sonification offers the chance of analyzing and communicating processes in very different ways. Firstly, sonfication artefacts are events ... [they] retain temporal and performative dynamics within themselves as they play in time. Secondly, human affective processing works very differently between the visual and the aural (Palmer & Jones, 2014, p. 222–223).

In the Patch, we take up sonification as a way to encounter poetic data whose semiotic properties have been transformed into frequencies of vibration.

For this transmediation, we developed a text-to-midi program based upon jFugue, software that translates textual features into musical sequencing commands. This program, now called Singling[5], allows us to make specific decisions about how we will *hear* the data. Letters, spaces and other textual features correspond to such melodic information as tempo, note and octave range. The program then both translates the text file into MIDI format (a file

that can be edited in a variety of different software programs) and also plays / performs the MIDI file with user-selected digital instruments. Participants then listen to their poetic data performed musically by the computer (James, 2017b). Here temporality becomes a significant feature, given that "current, dominant visualizations or processes struggle to appreciate this as we freeze the world, cut it up into objects for study, risking that the essence of life is lost" (Palmer & Jones, 2014, p. 223). Unlike InfraNodus, in which we encounter the data all at once with its linearity removed, polysingularity in sound would be one instantaneous blast in the speakers. Instead, we can begin to layer sonified data upon itself, listening to a polylinearity of meaning, in which each layer of data becomes a voicing within the orchestration.

FIGURE 16. *The Patch schematic, Stage V: Video, the synthesized output.*

Throughout the Patch workshop, each process of text production, collaboration, performance and amplification are documented with video recording. The video and audio files are edited on-site during the workshop by one of the facilitators. The images are delineated in chronological order and sped up for the entire video to fit under two to three minutes. Fragments of audio files of poetry performances are selected and inserted into the video, and the sonified MIDI sounds are also incorporated in their entirety. This synthetic video, which blends diverse and divergent texts produced by the participants in the workshop, is presented at the end as the cumulative output of the Patch. Here, we wish to highlight two interrelated aspects of each video: (1) as a polysemiotic ensemble, and (2) as an expression of creative solidarity (Gaztambide-Fernández, 2009).

OUTPUT: VIDEO AS A POLYSEMIOTIC ENSEMBLE

Throughout the Patch, Borges' short story is processed through multiple digital tools and the participants' creative interactions. Texts diverge through these heterogenerative processes, and their meanings are deterritorialized. The written and remixed texts, vocal performances of poetry, glitched voice-to-text visual network, text-to-MIDI sonification, and images of participants' movements produce what Guattari (2000) calls *dissensus*. While such a state of rupture is something to be celebrated, as pedagogues, we also look for a terminal where differences meet in order "to resingularize serialized ensembles" (Guattari, 2000, p. 46). In the Patch, the video is the terminal for this resingularization.

Because of the nature of video, texts of different modalities are mapped onto a linear timeline (Wildfeuer, 2014). However, in order to produce a short video, temporalities are differentially manipulated for the images and sounds. The images of the participants' movements in writing activities and InfraNodus network production are sped up by 800%–1,000%, while the speed of audio files remain unchanged. Also, vocal performances of poetry are fragmented and re-mixed to fit the length of the video. As discussed above, the speed of the sonification of the MIDI file is controlled. However, speed of the recorded sound is not manipulated at this stage. Hence, despite the linearity, three expressions of temporalities are operating in the video.

In addition to the movements in the video being sped up, the production is also done in haste. As the editing of the images and audio happens in parallel to the recording of them, editorial decisions such as the selection of the fragments of poetry performance depend largely on intuition rather than deliberation. This resembles the iReadFast writing activity in the Patch and destabilizes the exactitude of the mapping. Compressed and converged, the video / output lets the participants experience three layers of texts (images, oral performance, and sonification) in ensemble, catalyzing reflection and stimulating inspiration (an example Patch ouput video is available at the following link: https://youtu.be/EO2O2QiYEYA).

VIDEO AS AN EXPRESSION OF CREATIVE SOLIDARITY

In addition to the poetic texts, the video reminds us that participants generate another important kind of text during the Patch: their movements. The movements of writing-hands express a form of solidarity that consists not of uniformity and solidity, but of difference and fluidity. Here, we borrow Gaztambide-Fernández's (2009) idea of "creative solidarity" in a pluralized form. While it is clear that Gaztambide-Fernández (2009) used the word "solidarity" with an awareness that it takes multiple forms depending on how people gather together, the idea of solidarity is indefatigably associated with unions — therefore, oneness. In its plural form, creative solidarities, we wish to foreground the multiple, transitory potentialities of the collective. According to Gaztambide-Fernández (2009), creative solidarities are spaces "where discourse is unstable and language is highly polysemic, where meanings are negotiated, and discursive practice is contested" (p. 89). Inside the creative solidarities, there is heterogeneity as opposed to conformity.

While embracing transitivity as a form of solidarity, creative solidarities do not deny the importance of discourses that organize meaning. Guattari (2000) was certainly aware of the danger of radical destabilization of meaning: "There is the possibility of violent deterritorialization which would destroy the assemblage of subjectification" (p. 45). Without others, we cannot even exist as subjects. To be in solidarity, Gaztambide-Fernández (2009) says, "means to be

in relationships that recognize interdependence and the realization that our lives and our work cannot carry on without others" (p. 90).

As we argued above, the Patch catalyzes heterogenesis of texts. It highlights the polysemy of texts and provokes them into dissensus. However, it also demonstrates a trace of solidarities in the form of audiovisual artifacts. The video not only synthesizes the different modalities of texts into a polyphony (or a cacophony, depending on one's aesthetic taste), but also synthesizes creative solidarities. Instead of the image of fists going up in the sky, hands of people are scribbling words, meshing networks, and collectively composing poetry. Such interweaving of words is also expressed in re-mixed fragments of voices together with the sonified MIDI sounds in ensemble. The video, therefore, is a polysemic signifier that denotes dissensus and connotes solidarities. This output becomes a new input for the participants and lets the diverged chain of signification continue to evolve.

FIGURE 17. *The Patch schematic, Stage V, state i: reflection and praxis.*

CONCLUSION

As artists, scholars, teachers and researchers, we see creativity as arising from the intentional enfolding of chance, the autopoiesis of the text as a living (eco)system capable of responding to interagential, polydimensional, and polysemiotic feedback collapsing into any given instance of singularization. We treat this notion of unpredictability and discovery through the process of synthesizing information as central to our aesthetic and academic activities as creative pedagogues and arts-based researchers. Rather than seeking predictable outcomes, we believe that the Patch can be used to channel these chaotic variables of instantiation and present complex data-analytic gestalts in entertaining and imaginative ways. The synergetic, audiovisual result of the Patch suggests intrinsic value functioning within many strata and scales of relational networks. As creators, we are witness to the results of our creations, and if we continue in our practices, we will recognize patterns in the outcomes over time. We are ourselves deterritorialized in this country of every twenty minutes, in this empire of an hour. We are thus positioned as learners, mapping out the probable outcomes of a given analytic process, monitoring the desiring-machine that we make manifest: We could very well be describing what it is to be a teacher. As creative pedagogues, we observe the results of our

magical interventions in normative dynamics and witness the perturbations and effects of chance operations that result in patterned outcomes. As Richardson (2000) states, "any dinosaurian beliefs that 'creative' and 'analytical' are contradictory and incompatible modes are standing in the path of a meteor, they are doomed for extinction" (p. 962). In the case of the Patch, the textual gestalt captures not only the surplus signification of the input text but also its modulations by the variables of the material circumstance during which the data was processed, analyzed and utilized aesthetically, collectively, to produce poems, soundscapes and videos.

NOTES

1. W/reading combines writing and reading as a way to recognize the creative role of the reader in digital contexts where interaction and choice are fundamental to navigating through a text. For more information, see Torres, R. (2005). Digital poetry and collaborative wreadings of literary texts. *Telepoesis*. http://www.telepoesis.net/papers/dpoetry.pdf

2. For examples of the Patch workshop processes and products, see https://dlsn.lled.educ.ubc.ca/wordpress/the_patch/

3. Musical Instrument Digital Interface

4. Glitch, as Jim Vespe writes in the October 2019 issue of *Air & Space Magazine*, https://www.airspacemag.com/airspacemag/just-right-word-180973113/ has Yiddish origins meaning a slippery place, to slide or glide, which connects to the notion of slippages in the normative flows of discourse discussed here. This term was taken up by engineers to mean a spike in voltage or an error in systems. Although glitch has negative connotations for engineering, we understand glitch as a positive slippage from normative operations, a place where human and machinic creativity are collateral and where hidden, underlying processes are made apparent through disruption of normative or expected outcomes.

5. To explore the affordances of Singling for text sonification, please see https://dlsn.lled.educ.ubc.ca/wordpress/singling/

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IN PRAISE OF UNCERTAINTY, AMBIGUITY & WONDER

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ABSTRACT. This article takes its direction from notable educators such as John Dewey and Elliot Eisner who argue in favour of endorsing uncertainty and related responses within educational practice. The argument is a push-back against current emphasis on standardization, with its accompanying focus on single right answers that don't do justice to the complexities inherent in our daily lives. The dual nature of uncertainty is exemplified in the depiction of one person's interactions with two famous paintings. To provide the reader with a parallel encounter with uncertainty, the article includes a short video and concludes with an ekphrastic poem in response to the video, to illustrate the points being made.

CHANTER LES LOUANGES DE L'INCERTITUDE, DE L'AMBIGUÏTÉ ET DE L'ÉMERVEILLEMENT

RÉSUMÉ. Cet article s'inspire d'éducateurs de renom tels que John Dewey et Elliot Eisner, qui plaident en faveur de l'adoption de l'incertitude et des réponses associées au sein de la pratique éducative. L'argument repousse l'accent mis actuellement sur la standardisation ~ un accent qui dépend, par exemple, sur les bonnes réponses uniques qui ne rendent pas justice aux complexités inhérentes de la vie quotidienne. La double nature de l'incertitude est illustrée dans la représentation des interactions d'une seule personne avec deux peintures célèbres. Afin d'offrir au lecteur une rencontre parallèle avec l'incertitude, l'article comprend une courte vidéo et se termine par un poème ekphrastique en réponse, pour mettre en lumière l'argument suscité.

There are combined impetuses for this paper. One is John Dewey's concept of reflective experience, the first feature of which is: "perplexity, confusion, doubt, due to the fact that one is implicated in an incomplete situation whose full character is not yet determined." (In Gerald Gutek, 2001, p. 175). Another is from Matthew Bevis's commentary in the March 2017 issue of Poetry wherein he cites Nietzsche's recommendation to be "good at not

knowing" (p. 578). I take the phrase to mean that one should be willing to accept uncertainty, ambiguity (as opposed to taking pride in a state of ignorance). This stance applies to both teachers and students, so I include myself here (Campbell, 2007). I teach pre-service teachers, mostly undergraduate, in a large urban university. One course I teach addresses issues in aesthetics for generalist classroom teachers. Thus, a third impetus comes from my students' predilections. Most are inclined towards a quest for certainty, for finding the right answer (Dayan & Jyu, 2003; Floden & Clark, 1988; Helsing, 2007). That is their school-based heritage after all. Those inclinations persist in much of their university-level course work. Through the introduction of arts-based exercises that involve the embracing of questions that have no single "right" answer, I resist such inclinations. In the following paragraphs I explain why I take the position that I do, argue for increased attention to the arts in education as an antidote to certainty, offer an example of video art that defies certainty, and close with my own ekphrastic exploration of the video.

PERSPECTIVES

Education has, in recent decades, become increasingly reliant on data-based knowledge that can be assessed through standardized testing. We are teaching what can most easily be tested and avoiding the uncertainties involved in addressing more difficult (and more interesting) questions. This paper is a push-back against such tendencies in its celebration of uncertainty, ambiguity, and attendant wonder.

Eliot Eisner was a strong supporter of such an educational orientation. In the 2002 John Dewey Lecture, delivered at Stanford University, Eisner stated: "Opening oneself to the uncertain is not a pervasive quality of our current educational environment. I believe that it needs to be among the values we cherish. Uncertainty needs to have its proper place in the kinds of schools we create" (Eisner, p. 7).

Despite Eisner's recommendation, as I mentioned earlier, most of my students are inclined towards a quest for certainty. They are going to be teachers after all. Surely there must be correct do's and don'ts. I resist such inclinations on students' behalf for at least two reasons. First, teaching is a moral enterprise (Ayers, 2014; Brell, 2001; Coles, 1989; Noddings, 1992, 2003; Ward & McCotter, 2004). That is, like Nel Noddings (1992, 2003), I am persuaded that education is a relational exercise — an interaction between individuals, also keeping in mind that one is part of a social group. And those interactions do not lend themselves to absolutes. How a student will respond to a teacher's overtures, and vice-versa, is uncertain. How one sees oneself as a teacher among teachers, and within the larger community, is also variable.

Second, standardized testing cannot begin to address subtle distinctions, nuances, preferences, ambiguities — the sometimes-conflicting experiences that layer up in our minds and contribute to awareness of the complexities of the human condition. The arts, however, do explore such complexities.

For example, David Swanger (1990) addressed the need for ambiguity in his discussion of Picasso's Guernica. While the work has been generally acknowledged as perhaps the greatest antiwar painting of the twentieth century, Swanger insisted that there could not be a singular answer to the meaning of the work. He asked, "What would that be, that war is wrong?" (p. 90). In other words, an attempt to reduce the meaning of the painting to a single answer is to reduce the work to a cliché. To do the painting justice, one must acknowledge the built-in ambiguity inherent in the myriad possible individual experiences of violence, not necessarily of war, that one brings to encounters with such a work. An exploration of ambiguity would disclose the variety and fragility of claims to knowledge in that particular case. It would draw attention to the necessity to celebrate uncertainty, perplexity, and acknowledgement of the importance of attention to the relation between embodied thinking (Johnson, 2007; Shusterman & Tomlin, 2008), rationality, and feeling in processes of meaning making (Langer, 1953; Nussbaum, 2006).

In parallel with Swanger's attention to ambiguity, New York's Frick Collection, former Head of Education, Rika Burnham (Burnham & Kai-Kee, 2011), has addressed the topic of uncertainty. In her chapter titled "Intense looks…", Burnham described her encounters with two of Bellini's paintings. One was the San Giobbe Altarpiece; the other, what has come to be known as the Frick St. Francis. In regard to the former, Burnham struggled mightily over what had to have been at least a two-hour session to make sense of the work. She was, as she termed it, "bewildered" (p. 68), also frustrated and irritated. Finally, the pieces fell into place for her, resulting in an "epiphantic clarity" (p. 70).

Burnham's many interactions with the Frick St. Francis were of a different order altogether. Where, in the former work, Burnham was satisfied that she had solved Bellini's puzzle, in the latter she acknowledged that "there is no consensus …about what it means" (p. 70). Nonetheless, Burnham loves the Frick St. Francis. Indeed, she "revel[s] in the uncertainty" (p. 75). Burnham quoted Keats: "We must learn to accept 'being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason'" (p. 75).

Sometime before publication of their book, Burnham and Kai-Kee gave a joint presentation at the National Association for Education Through Art (NAEA), that was a prelude to the book. What Burnham admitted at the presentation, but only implied in her chapter, was that, having reached a conclusion about

the San Giobbe Altarpiece, henceforth she could not see it any other way. She had resolved the "incomplete situation" and arrived at the "full character" to which Dewey alluded; and that, as Burnham admitted, is, in some sense, a limitation. By comparison, the Frick St. Francis continues to tantalize. It still "merit[s] long and devoted study" (p. 75). In short, Burnham has advised us to "accept ambiguity and uncertainty as paths with their own pleasures" (p. 76).

Burnham's anecdote provides us with two categories of uncertainty, one in which the puzzle is resolved, and the other in which ongoing uncertainty is celebrated. This is an important distinction because the former characterizes the orientation of most curricular activities. And while problem-resolution is generally personally satisfying and a responsible pedagogical goal, it is the latter category that I address here in pursuit of Burnham's "paths with their own pleasures."

I do so through a poetic exploration of a video artwork. I use a video because it is readily accessible to readers of this journal — no museum visit necessary — and, despite there not being a definitive answer, the exploration opens up possibilities for shared meaning making, for raising awareness of the complexities of our contemporary world that resist simplistic answers, but that can be addressed through more open-ended educational practices.

METHODOLOGY

I began my academic career as a painter and studio art instructor. In recent years, I have widened my arts orientation to include the writing of poetry in the form of experientially motivated responses to artworks, in other words, ekphrasis. The word ekphrasis comes from the early Greek and means "a speaking out" or "telling in full" (Heffernan, 1993, p. 3). That "telling in full" can be a faithful verbal description of the visual representation, but it can also be much more — an elaboration on the viewer's experience, whatever directions that experience might take. The writing contributes to my research on aesthetic engagement and meaning making. Thus, my work is a particular branch of qualitative research, namely Arts-Based Research. I endorse Melisa Cahnmann-Taylor's (2018) stipulation: "All arts-based researchers must ask: what and whom are the subjects of this work and to what extent does this project further some aspect of the public good?" (p. 248). In other words, while the description of personal experience requires the adoption of a radically subjective stance, there is an expectation, an obligation, for inter-subjective sharing. To that end, in some of my classes I show a 7-minute, 56 second video, "The carpet told me" by the Dutch artist, Jeroen Kooijmans (2007)[1] and invite participants to write down questions and comments. What do you see? What do you hear? What does it mean? (Click on the image below to watch the video)
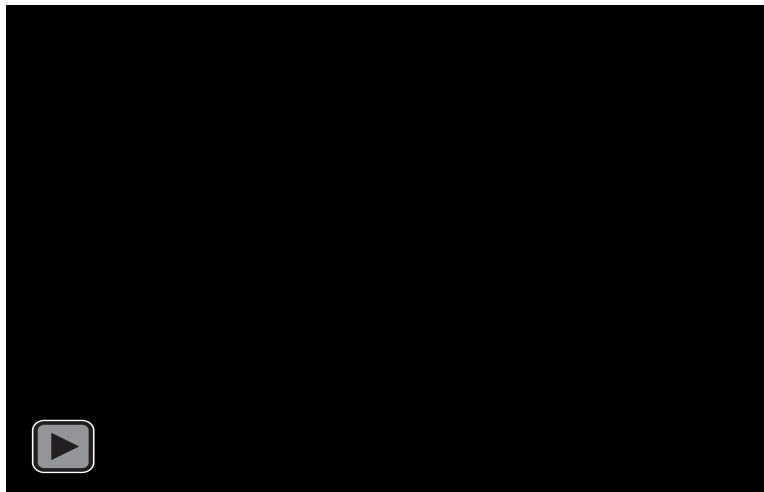
When people reach an impasse, I provide some context. The artist was living in New York at the time of the Twin Towers collapse, which he witnessed from his apartment window. The event caused him, and continues to cause him, to meditate on the state our world. Kooijmans does not editorialize. That would limit discussion, disregard the uncertainty that characterizes the human condition.

The video is meant to evoke, to puzzle, perhaps to make us pause, to wonder. The image seems peaceful enough — slow moving clouds in a clear blue sky, gently rippling water, pastoral sounds — except that carpets don't normally float on water. That's a bit of a surprise, enough to make one uneasy, to wonder. When I showed the video to a class a few years ago, the uneasiness was exemplified by a young woman who asked, "Does it explode, or something?" This is my evolving, tentative response to the video.

> The Carpet Told Me
>
> The world is uncertain.
>
> Aged four or thereabouts
>
> at the seashore
>
> I looked at the horizon
>
> and wondered
>
> where the water ended and
>
> the sky began.
>
> Now a carpet floats

even hints at

flying

as water reflects

sky.

Clouds scud silently by

rippling water.

Reeds tremble in the sky and

Their shadows

stripe the carpet.

The world is upside down

Insistent wind, distant dogs barking,

muffled cowbells

A pastoral chorus

An elegy

for the figures

not flying but falling

from the flaming towers

A prayer for the living and the crying.

SUMMARY

I return now to Cahnmann-Taylor's questions that I introduced earlier: "What and whom are the subjects of this work and to what extent does this project further some aspect of the public good?" My poem is certainly about me. As I grow older, I am less and less sure about things that I thought I knew when I was younger. And the poem is an invitation to share my uncertainties, to reject the current emphasis in education on the quest for right answers, for one-size-fits-all. So, to answer Taylor-Cahnmann's "whom" question, the answer is "us". In the current protectionist mentality that passes for thinking and colours political decision-making in increasing parts of the world, it is important to remind ourselves and our students of just how complex our world is. There are no simple answers, no quick fixes. We need to take time to reflect on that complexity and the wonder of it all. That is what the arts have to offer to education.

NOTES

1.   https://www.jeroenkooijmans.com/portfolio/the-carpet-told-me/

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(UN)SEEN UNDULATION: REFLECTING ON THE RIPPLES MADE BY ARTIST-TEACHERS AND RESEARCHERS

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ABSTRACT. This Artistic and Creative Inquiry (ACI) uses personal narrative to share examples of how poetry has been successfully used in both classroom and academic support settings to enhance students' understanding of course concepts and to identity their own learning preferences. This pragmatic discussion of poetry as a teaching tool is then coupled with a poetic exploration of artist-teacher identity and how this identity influences teaching approaches. The inquiry concludes with a discussion of the power that exists when there is an awareness and ownership of the role of artist-teacher (and researcher) and the impacts that it can have on students and ultimately society.

ONDULATION INVISIBLE : UNE RÉFLEXION SUR LES OSCILLATIONS CAUSÉES PAR LES ARTISTES-ENSEIGNANTS ET CHERCHEURS

RÉSUMÉ. Cette enquête nommée « Artistic and Creative Inquiry (ACI) » fait recourt à un récit personnel afin de partager des exemples de la façon dont la poésie a été utilisée avec succès dans des contextes de soutien scolaire et académique. Dans ces situations, la poésie est employée pour améliorer la compréhension des étudiants des concepts de cours et afin d'identifier leurs préférences d'apprentissage. Cette discussion pragmatique de la poésie comme outil d'enseignement est ensuite couplée à une exploration poétique de l'identité artiste-enseignant et de comment cette identité influence les approches pédagogiques. L'enquête se termine par une discussion sur le pouvoir qui existe lorsqu'il y a une prise de conscience et une reconnaissance du rôle de l'artiste-enseignant (et du chercheur) et des impacts que ce rôle peut avoir sur les étudiants et, en fin de compte, sur la société.

When I meet new people, I am often asked the usual question of "What is it that you do?" The open-ended question leads my brain down a multitude of pathways, and I try to follow all of them until they intersect or bisect at a point where my words can begin. I often say, "I am an instructor, a teacher". They nod. I then add, "But I am a poet, a writer, a researcher." Brows furrow. "I am

a poet, teacher, artist, educator…" I stop myself. They ask, "What do you teach?" "I teach in the areas of education and communications." They get it. I muddy the waters. Thinking of my research, I then harken back to my initial readings of Prendergast (2009) and Leggo (2005) and the now dozens of others whose work converses with my own, I speak again: "But I also include elements of poetry and poetic inquiry to support students in thinking outside of the proverbial box. I challenge them to consider how they can think and learn in different ways. This helps them to identify ways to personalize their learning, giving their learning greater purpose, which ultimately keeps them motivated as they navigate their educations. What I mean to say is that I support students in using poetry and art to learn more than I think conventional means can teach them, but then I always bring them back to conventional forms and norms so that they understand how to be within the system." Smiling and nodding, an unabashed shift to a discussion about the weather. I have come to realize that I need to work on how to express what I do (in my role as an educator, scholar, and poet) so that people 'get it' and so that I can have fewer conversations about the weather.

These are typical interactions in some social settings. This is a recurring issue when it comes to describing what I do. These occurrences now see me considering how our work as creative pedagogues contributes to our students' lives and beyond. In this article I address such questions as: What is a creative pedagogue? Who am I in relation to that title? What do I do that some of my colleagues do not do? My conversation, finding my way to an answer, is not conventional, I choose instead to lace my thoughts with poetry. I begin by looking at how I integrate poetry into my two major roles, one as a classroom instructor in two major universities in Western Canada, and the other as a Learning Strategist, who works in academic support in one of the aforementioned institutions. I then move from the pragmatic nature of what I do, written in prose, to an exploration of self and the impact of what I do through the medium of poetry. Having previously felt adrift in the academy, I have chosen to enact, through this poetic exchange, a conversation with my late mentor whose many decades of teaching and writing provided a home for my own work. Through a mixture of prose and poetry, I seek to better identify what it is that I do, why I do it and what ripples my approach to educating may cause (both seen, like that of water, and unseen, like that of a breath of air) for my students and beyond.

CREATING POETRY: INFORMING TEACHING, INFORMING CURRICULUM

The poetry in my research seeks to better understand my positionality, to see the unseen (like the wind gently creating ripples on the water) and to expand on my understanding of lived experience, contradictorily enough, by using shorter lines and poetic devices to encapsulate grander experiences. This is the

same in my teaching. I strive to facilitate a greater understanding in my students by giving them the permission that they seem to need to explore differently. I exemplify and promote ways to use language differently in order to find deeper meaning. Is that what a creative pedagogue does? Do we give permission that some need, simply by living our craft? Do we use our position to show our students that you can at once adhere to convention while being unconventional as you learn and grow?

I have spent the last decade engaging with learners on the post-secondary level. From work as staff and faculty in university academic support centres to lecturing, facilitating, and teaching in the classroom in a number of major Western Canadian universities. I have dedicated much of my life to helping others through their higher education journeys. During this time, I have created ripples. I have integrated my passion for poetry and arts-based approaches to research, learning and teaching into my own teaching practice. Over the years, I have also presented on the topic at a number of conferences and facilitated workshops for other faculty members who wish to reach students who they see as unreachable. I promote multimodality and creating lessons using the tenets of universal design for learning (UDL), based on the work of Story, Mueller, and Mace (1998) and the contemporary work being done by CAST (2018), and encourage faculty members to adhere to the fundamental concepts associated with appreciative inquiry, based on the work of Cooperrider and Whitney (2005). I then create ripples as I promote and exemplify the use of poetry across the disciplines as a tool for deeper learning; that is learning that extends beyond rote memory and ventures into layers of understanding and application that is ultimately more personal for the student This use of poetry as part of my teaching practice began during my time in our academic support centre (The Learning Centre) where students would request help with writing their introductory English essays, the 5X5 expository essays (five paragraphs, five sentences) that nearly all students are required to do. It is here that I first saw the anxiety that students had over the form of the standard academic essay and I wanted to find a way to break away from the form and focus on the ideas. This would not only help students with one particular assignment, but it would also show them ways in which arts-based approaches could allow their thoughts to develop before having to write for course required conventions.

To begin, I took the learning strategies of mind-mapping and concept mapping and thoughtfully integrated my knowledge of poetry and poetic forms. I asked students to write short lines of ideas (not complete or complex sentences), use metaphors or similes (asking them such questions as "If you could describe your idea using different words, what would you say? What is it like?" "Is there something concrete that you would say X is like?"). I would then have them cluster their ideas into common themes, akin to that of a

poetic stanza, and then worked with the students to take this free verse poem and transpose it into an essay outline and then finally their essays (see Figure 1). I am aware that in creating ripples that I must ensure that they do not turn into damaging waves; they must help to propel the students along in their academic journeys. Students were able to get their ideas down on the page, often using non-academic language or metaphors to express their thoughts and understandings, and position their ideas in a conventional essay outline template. This allowed them to see that they had strong ideas, arguments and evidence that could meet their assignment criteria, but that they had to process their knowledge differently before using academic language, conventions, and forms.
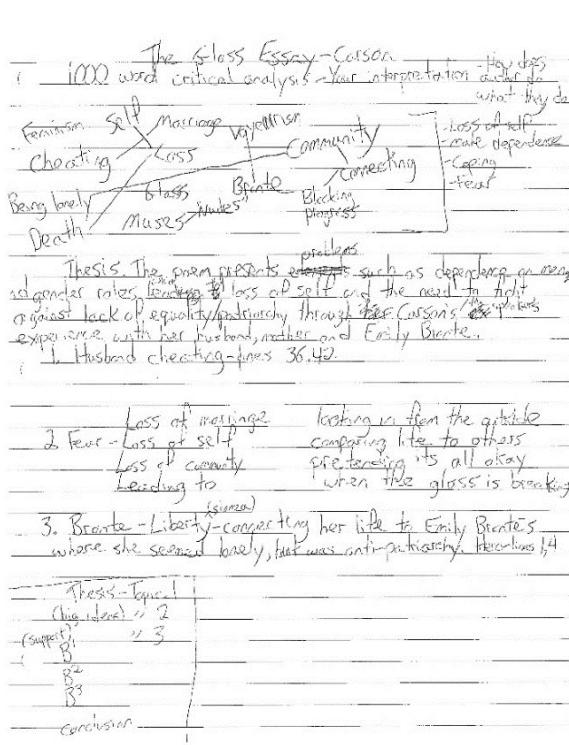
FIGURE 1: *Poetic Outlining Example*

This rippling idea of breaking away from requested forms and using metaphors and descriptive language proved itself useful for students in such areas as biology and chemistry, as they tried to identify parts of the body, parts of cells, biological events, and chemistry problems. Seeing the problem differently resonated with them deeply and I was able to support them as they brought their ideas and knowledge forward into the requested format(s) of their instructors. Lab report details became clearer as they understood the

processes that occurred in a more meaningful way. Word counts for their papers also became less of a concern as their initial arts-based interactions with course concepts, then synthesized critically with the literature, provided students with greater depth and breadth to write on.

I continued to integrate poetry, especially lyrical poetry, into my classroom teaching practice. In my courses which focus on university transitions, educational theory, critical reflection and basic communication skills, poetry has provided an additional layer to my curriculum. For example, I have used music and poetry to link to larger concepts and themes (e.g., using such songs as Pink Floyd's "Another Brick in the Wall" to discuss models of schools), to show students that learning exists beyond the classroom (promoting intertextuality) and to offer poetry as an acceptable form of reflection. This different way of reflecting has allowed them to better know who they are as individuals and what they would like to get out of their education. This moving away from and beyond the standard response paragraphs has provided a formative and summative way for students to demonstrate their engagement with course concepts. Receiving positive responses from students, as they are related to their non-standard reflective practices, then lead to me integrating poetry itself or elements of poetry (e.g., using poetic devices such as metaphor or rhyme and various textual forms to engage students differently) into my lessons. Instead of having small group discussions about concepts with strict prompts, I created a ripple where students were asked to use metaphors to show the depth of their understanding and to support their classmates in thinking beyond their expectations of what learning is or looks like. This yielded deeper meaning-making opportunities and saw a greater level of criticality for most students as they linked their metaphor not only to course concepts, but what that concept meant in their lives. This formative assessment technique, which I sometimes refer to as poetic triangulation (using course content, personal reflection, and poetic devices), also led to greater classroom engagement. Through the vulnerability of sharing their metaphors and what they mean to them, students built stronger bonds and mutual respect.

As I design with creativity, married with theories of curriculum development; as I facilitate knowledge creation and collaboration through words, both academic and non-academic; and as I support crafting and craft development through modeling and directive techniques with metaphors to further understanding, I sometimes wonder where I fit within the academy.

RIPPLING REALIZATIONS OF THE POET-TEACHER

Leggo (2012) wrote:

"As a poet, I often wonder

if anybody besides other poets

really care

about poetry.

And as an educator,

I often worry

about the influence of schools,

curricula,

and teachers

in shaping the literacy experiences of learners.

And as a language and literacy researcher

with a focus on poetic inquiry,

I often wander in the magical places of the alphabet,

with a wand in hand,

ready to spell possibilities

for new ways of seeing and knowing" (p. 143)

Ultimately, Leggo asked: what is a poem good for? (p. 141)

Had he still been here

not an infinite number of time zones away

reposing with rhetoric

from a life lived poetically (Leggo, 2005)

with successful semantics

resonating in hearts and minds

brought forward from

his life of love

for and with language

for and with teaching

for and with family

I would have asked him

'Carl (for I knew him with kindred spirited familiarity, over coffee and nicoise),

what is a poet good for?'

We would then talk for hours

about poets

and poetry

and promoting pops of inspiration

and introspection

to create a world where students feel

liberated

to learn, to explore

to be.

Yet, I have to ask myself:

do I pop inspiringly?

I position myself as a poet

as an educator

(facilitator, demonstrator, creator, investigator of ideas)

who pushes poetry

(peacefully)

in to view,

(unavoidable unless you swerve or swivel daftly and intentionally

or squint so tightly that the light cannot get in),

in hopes of inspiring change

with(in) each student

that may ripple through society

building their creativity and capacity

to learn differently

to seek their own way to contribute

to their micro or macrocosm.

I wonder:

What, then, am I?

Does this make me an a/r/tographer? (Irwin, 2013)

I am

Poetic a/artist/

choosing words as my instrument of expression

metaphors merging meaning

spoken or spiraled in scrawl

(admittedly) only I can read.

I am a r/researcher/

I research that which came before

delving into the literature

picking the minds of mentors and colleagues alike

to push myself to do more

to give the facts for those who ask

to present the path blazed by others:

their successes

their follies

their foibles

their lessons for me to apply

to my crafting of curriculum

to my creation of crisp mind calligraphy

imagery of stanza upon stanza

of symphonic language

of sequenced cadence

composed with the intent to teach aesthetically

supported by the giants

whose broad shoulders I stand upon

offering my hand for others to stand next to me.

I am t/teacher/ by a variety of names

too many to count.

Fashioning fora for forays into fundamentals

bolstering and buoying forethoughts for success

stretching myself beyond institutionally given titles

which ask me to question myself

What am I good for?

What is a poet, researcher, teacher good for?

I/we inspire

through a modelled life

a mere suggestion of a way of being

living artistically

poetically

phonetically sounding out the inspiration inside

so that it is heard, clearly

with the hope of rousing rippling realizations

of what education can do

of what art can do

of what the marriage of both can do

for each individual student

for each community

for each strand of humanity in this world.

I/we practice our preaching

by not only teaching our craft

but integrating it into our praxis

to demonstrate how to use creativity economically

in ways that support and stimulate

not dominate

not the cliché of artistic anarchy

where only the art, not purpose, matters

Our craft is our conviction

our conviction is our craft

To contribute to the enlightenment of humanity

through aesthetic thoughtful artistry of knowledge

I think I see it now.

I think I know, Carl.

I know what we are good for.

I know what I am good for.

Still watching the ripples

As in my poem, I recently stopped questioning my value as an educator and embraced my identity as an artist-teacher with an affinity for arts-based research. This is due in large part to seeing the impact of my work (the ripples) on students and their academic journeys. I have had the honour of having some students openly express their enjoyment of my courses and share their new or different realizations that coincided with our classroom discussions (other factors in their lives also seemed to sync at once). This, as other educators can likely relate, is one type of exchange that propels us forward in our academic and teaching endeavours. For my students, these changes are as small as approaching their course readings differently or as significant as changing their ultimate educational goals and career paths. I have also had students return after their consultation in The Learning Centre, where I support students as a Learning Strategist, to share how adapting their approaches to learning led to greater academic success. I am aware that these changes did not happen in a vacuum and that students are constantly adapting and changing, but I cannot help but believe that expanding their awareness of different ways to learn and arts-based approaches to learning caused a spark in them. This small realization that learning need not be constrained gives students the means to personalize their learning, while not forgetting the necessity of communicating through conventions. They develop the power to communicate in and through multiple forms of expression which better demonstrates their understanding and causes deeper learning to occur. Through my crafting of poetry and curricula, designed to use academic research (e.g., the tenets of UDL) and art (from use of form, metaphor, line breaks and enjambment) to draw students in and expand their views on learning, I have found my own way to support students and ultimately support how they live in the world. Some students fully embrace the notion of using art in their daily lives as a means of expression, as a way to learn and as a way

to think differently, while others resist these ideas. Whether or not a student has been consciously changed is no longer an issue for me in my practice. I believe that offering an awareness that extends beyond their usual confines of thinking, an action that creates a ripple, is enough. Creative pedagogues, artist-teachers, a/r/tographers, poetic inquirers, narrative inquirers, arts-based researchers, people who teach and create art, whatever their title may be, are working in current educational systems to give students further opportunities to learn and to be in the world and to create their own ripples.

To me, that is poetry.

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HENRY CLERVAL SCOLDING VICTOR FRANKENSTEIN: AN AUTOETHNOGRAPHIC POEM ABOUT GRADUATE STUDENTS AND THEIR DAEMONS

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ABSTRACT. This article explores the "daemons" that many university students face by investigating Mary Shelley's *Frankenstein* in a creative way. Using a poetic method called "erasure," the author of this article cut fragmented descriptions of Victor Frankenstein and stitched them together to craft a poem about the need for self-care in the university setting. The poem includes a preface to provide some theoretical context and background information on *Frankenstein*.

HENRY CLERVAL RÉPRIMANDE VICTOR FRANKENSTEIN : UN POÈME AUTOETHNOGRAPHIQUE SUR LES ÉTUDIANTS POST-BAC UNIVERSITAIRE ET LEURS DAEMONS

RÉSUMÉ. Cet article explore les « daemons/démons » auxquels de nombreux étudiants universitaires sont confrontés en analysant de manière créative *Frankenstein* de Mary Shelley. À l'aide d'une méthode poétique appelée « erasure/effacement », l'auteur de cet article a sélectionné des descriptions fragmentées de Victor Frankenstein et les a cousues ensemble afin de créer un poème sur le besoin de prendre soin de soi dans le cadre universitaire. Le poème comprend une préface pour fournir un contexte théorique et de l'information de base sur *Frankenstein*.

I: A WORD OF FRIENDLY WARNING

The 1931 Universal film *Frankenstein* begins on an expository note with a "word of friendly warning." Actor Edward Van Sloan steps from behind a curtain and, in an unconventional move, addresses the audience directly. He warns the audience they are about to see a portrayal of a scientist testing the will of God by bringing a dead body back to life. His speech concludes:

> I think it may thrill you. It may shock you. It may even horrify you. So if any of you feel that you do not care to subject your nerves to such a strain, now is your chance to... Well, we've warned you. (1931)

The scene is a last-minute addition on the part of producers who feared church leaders and censors would find the content of the film objectionable. Though the scene was added, *Frankenstein* would become one of the most heavily censored films of the era, with dozens of iterations of the film existing as regional censors around the world cut bits and pieces (Skal, 1993). The addition of Van Sloan's address follows a prevailing trope in *Frankenstein* mythos: a move to disrupt the audience's experience and warn them they are headed someplace ghastly. In most versions of the story, friends and family stage varying interventions in the life of the young student Frankenstein, urging him to preserve his health and wellbeing over his pursuit of study. As a young researcher with bipolar disorder, feeling worn and ragged near the end of graduate school, it was hard not to see myself in Frankenstein. As more of my friends started to interrogate me about my own stress, sleep-health, and alcohol consumption, I realized that I should take the "friendly warnings" of my colleagues more seriously. Perhaps I could reflect on the lessons Frankenstein refused to learn.

As I have prepared this article for publication — an autoethnographic narrative written in verse — I wrestled with whether I should include an introduction that provides some theoretical context and necessary background information. However, a precedent exists for *Frankenstein*. James Whale's 1935 sequel, *Bride of Frankenstein*, includes an introductory scene, and several authors have included prefaces to the published versions of the novel, including Mary Shelley's husband Percy Shelley, her father William Godwin, and Mary Shelley herself.

A word of friendly warning: the primary content of this article is an autoethnographic poem (Prendergast, 2008) that I wrote during the 200th anniversary celebration of the publication of *Frankenstein* (Baumann, 2018). In contemporary mythos, Frankenstein is an accomplished degree-holding scientist who builds a creature in a large, pristine laboratory. In the original 1818 text, however, Frankenstein is an undergraduate student, who reanimates a dead body in his dormitory room. He is not the strikingly handsome Colin Clive or Peter Cushing, with a pressed dress shirt and loosened collar. He is described as haggard and falling apart, more like the face I saw in the mirror during the final weeks of my qualifying exams. That face startled me.

In Chapter 12 of *Frankenstein*, The Creature stares into a pool of water and realizes for the first time that he is wretched. That is an apt metaphor to consider when reading the poem in this article, which was created through a Creative Analytic Practice (Richardson, 1999) called "erasure." Stone (2017) explains: "Also known as blackout or redaction poetry, this is a type of poetry created from the substrate material of an existing text. Obscure many of the words, these poems command, and you will find the sentences that have been there all along" (p. 2). Mimicking The Creature's stare into the pool, I

attempted to look at myself by looking at Victor Frankenstein, using erasure of the 1818 text, to pluck out Mary Shelley's descriptions of the fledgling researcher. Frankenstein insistently ignores warnings from professors and peers about his self-destructive approach to study, and the fractured nature of the text signifies the increasing fractures in his mental health and relationships with others. Young (2008) reminds us that dissection and amalgamation are major motifs in *Frankenstein*. I use fragments of Mary Shelley's text and stitch them together to form a new narrative, which sheds some light on the metaphorical daemons that plague young academics in their quest for skill and mastery. By isolating and rearranging Mary Shelley's descriptions of Frankenstein's self-destructive behavior, my peers and I can reflect on our own unhealthy relationships with things like anxiety, sleep, depression, alcohol, and even suicidal ideation.

Frankenstein's lone friend Henry Clerval is a poet who consistently intervenes and urges Victor to stop isolating himself in his research process. I could hear the voice of my friends in Clerval who all intervened in various ways during my PhD. It seems fitting to author this poem in the voice of Henry Clerval. My friends intervened because they were scared for me, so in turn, I wrote a poem that scares me. Now, as I write this preface on Halloween week (2019), I share this fear with the greater research community. Perhaps this poem may also encourage you to stare into your own reflective pool. I think it may thrill you. It may shock you. It may even horrify you.

II. THE BODY

A Grad School Friend Chastises Me About Self Care, and Sounds like Henry Clerval Scolding Victor Frankenstein

Beloved Friend,

Seeing that sleep has fled your eyes,

I'll assume you've returned to old habits.

You fancy yourself a scientist, but I impress

you've only succeeded in discovering fatigue.[1]

With how very ill you appear, it seems you've

employed every art to destroy yourself.[2]

While we may be unfashioned creatures,
our default need not be weak and faulty.[3]

You've absented yourself from all you love,
dear cousin, consumed in your sick room,[4]
burdening your brain with exploded systems
and useless names; the great ancient.
That sad trash as your father says.

You study structures of the human frame
yet you shun the face of man. Friend, you act
as if writing us back is the most abhorred task.[5]

With knowledge: you wish to overtake winds
and somehow unveil the very face of nature.
To a poet, these are the ravings of insanity.
You've become the author of unalterable evils.

I urge you, hear my deep and voiceless grief:
Banish dark passions. Quit this filthy process.
Say with lips livid with the hue of death you
refuse to walk through life a restless specter.

I've seen the way you stare into the silent lake,
eyeing the pool, an unexplored ocean of truth.
As if your existence is a blot upon the earth.[6]

I cannot support the horror of that countenance, Victor.
I will not be a hapless victim of your unhallowed arts.

The construction of our souls is not so strange.

No deranged mechanism is needed to spark being.

To restore life, you must hasten to seek out the sun.[7]

Behold its rise and recommence a new day, say

What it is to live, your body free of demons.

You need not feel the fangs of remorse,

fair student, or forcefully glut

your carriage with the maw of death.

Your Friend Until Death,

Henry Clerval

III. EPILOGUE: FOR THIS I HAD DEPRIVED MYSELF OF REST AND HEALTH

It was not my initial plan to provide an epilogue, because I hoped the Gothic images of my poem were haunting enough to stick with the reader. After receiving suggestions to conclude this article with a short reflection, I acquiesced, since a precedent for providing an epilogue also exists in *Frankenstein*. Director James Whale intended to end his film with Frankenstein and The Creature meeting a fiery death (Skal, 1993). However, the criticisms of censors compelled Universal executives to rethink the finale, and Whale was tasked with writing and filming a more palatable ending. In the scene, six maids carry a bottle of wine to Frankenstein's bed chamber and tell his father The Baron that a glass of wine may help his recovery. Through the doorway we see an uncredited actor dressed as a bedridden Colin Clive, suggesting to the viewer that Frankenstein survived the fury after all. As The Baron closes Frankenstein's door, he tells the maids his son "doesn't need" the wine for his wellbeing.

Since writing my poem, I have noticed that I take more rest days, and sometimes I even close the door when the chatter outside becomes too much. I am more mindful of when to slow my stride, and I get less frustrated at myself when I take breaks. When offered a glass of wine, sometimes I say that I don't need it. I try to talk more transparently about my daemons now, turning them into metaphorical monsters in my stories. Recovery is a slow process, but lately, the silent lake by my school doesn't seem as scary.

NOTES

1. A study in the United Arab Emirates found that 67% percent of university students "suffer from sleep disturbances and poor sleep quality" (Afandi et al., 2013), which correlates with numbers found in studies conducted in the United States and Taiwan. There are over 30 references to sleep in Frankenstein, and Victor speaks of experiencing insomnia, chronic fatigue, and dream anxiety disorder. One of the most notable passages of the book reads: "Sleep fled from my eyes; I wandered like an evil spirit (Shelley, 1818, p. 75)." I sometimes joke with my friends that I can sleep when I am dead.

2. Research in Iran, the UK, and the United States shows that university students have a high prevalence of substance abuse (Jalilian, 2015), with "tension" cited as a common reason for students to use drugs and alcohol. In Frankenstein, Victor takes an opiate called laudanum to help him stave off paranoia enough to sleep. Victor rationalizes his increased dosage, arguing that "it was by means of this drug only that I was enabled to gain the rest necessary for the preservation of life (Shelley, 1818, p. 164)." I tell my friends the same about my own ways of self-medicating: each dosage is just a "small quantity" to help kickstart my sleep.

3. Studies in the United States and Korea show a correlation between depression, anxiety, and the decision for students to "self-isolate" (Chow et al., 2017). These studies suggest that as digital culture becomes more prevalent in university settings, student mental health challenges will continue to grow on campuses and necessitate the need to hire staff with understandings of the shifting digital landscape. Technology becomes an excuse for Victor to isolate himself in Frankenstein, and he argues why he must keep his experiments secret because he "will not lead you on, unguarded and ardent as I then was, to your destruction and infallible misery (Shelley, 1818, p. 40)." I tell my friends I'm limiting my screen time, and that I'm not spending as much time on social media as it seems.

4. A study in the United States shows that college students with chronic illnesses show a higher prevalence of "depressive and anxious symptomology," (Mullins et al., 2017) suggesting that a student's physical illness may be a significant predictor of symptoms of mental illness. In Frankenstein, Victor's experiences of grief gravely impact his body, resulting in symptoms described as fainting, chronic fatigue, comatose sleep, hysteria, and convulsions. One recollection reads, "I lay for two months on the point of death; my ravings, as I afterwards heard, were frightful (Shelley, 1818, p. 158)." I try to convince my friends that the reason I drink daily is to numb the aches enough to keep going.

5. Research shows that international students face an increased risk of isolation (Wu et al., 2015). A Swiss scientist, Victor himself is an international student in *Frankenstein*, studying at a Bavarian university called Ingolstadt. He describes the journey there as "long and fatiguing," and finds himself at odds with the values of many of his professors. I take the opportunity to use statistics to dismiss the concerns of my friends, saying that I have local supports that some international students don't have in our department.

6. Research shows that suicide is the second leading cause of death for college students in the United States, and studies suggest that experiences of suicidal ideation are disproportionally higher for students who are racial, ethnic, and sexual minorities (Shadick et al., 2015). Victor contemplates suicide by drowning in *Frankenstein*, saying he hopes "the waters might close over me

and my calamities forever (Shelley, 1818, p. 76)." Sometimes I joke with friends that if I kill myself, I won't have to finish my dissertation.

7. A study of 98 campuses in the United States found that many university Counseling and Psychological Services (CAPS) are failing to keep up with a troubling spike in demand for mental healthcare, with some schools listing wait times of two-to-three weeks (Thielking, 2017). A related survey found that large campuses in the United States host an average of one licensed mental health provider per 3,500 students. Though Frankenstein has been used as a cautionary tale for 200 years, most schools still lack adequate support to meet the needs of students fleeing their daemons. For years I used facts about systems as excuses to not get help for my own issues, but the interventions of my friends eventually disrupted this pattern. Finally, I headed the friendly warnings: I promised to reconfigure my relationships with sleep and drinking, and I made an appointment with CAP services at my university.

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A CREATIVE PEDAGOGUE'S INQUIRY THROUGH IMAGES: DOES IT HAVE WINGS?

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ABSTRACT. In this photo essay, I enact how a creative pedagogue engages with artistic practice and contemplative inquiry. As a poet, at home in words, photography represents a creative risk. This vulnerability is felt in the sharing of the work through the lens of (re)search. Hence, I ask: Does it have wings? By delving in expressive forms toward the service of understanding my personal and pedagogical self, creative risk is rewarded in profound ways. I have discovered that my art practice is driven by intention, intuition and imagination. Thus, here is my creative pedagogy in action illuminating how an inquiry through images provokes learning and teaching. Both poetry and photography provide keen vision—a way of sensing and seeing Light.

L'ENQUÊTE D'UNE PÉDAGOGUE CRÉATIVE PAR L'ÉVALUATION D'IMAGES : A-T-IL DES AILES ?

RÉSUMÉ. Dans cet essai photographique, j'explique comment qu'une pédagogue créative peut s'engager dans la pratique artistique et la recherche contemplative. En tant que poète, à l'aise avec son vocabulaire, la photographie représente un risque créatif. Cette vulnérabilité se ressent dans le partage du travail à travers la perspective de la (re)cherche. Par conséquent, je pose la question suivante: a-t-il des ailes? En puisant dans des formes expressives au service de la compréhension de soi aux points de vues personnels et pédagogiques, le risque créatif est récompensé de manière profonde. J'ai découvert que ma pratique artistique est guidée par l'intention, l'intuition et l'imagination. Ainsi, voici ma pédagogie créative en action qui éclaire la manière dont une enquête à travers l'évaluation d'images provoque l'apprentissage et l'enseignement. La poésie et la photographie offrent une vision perçante, une façon de ressentir et de percevoir la Lumière.

Carry your heart through the world like a life-giving sun.

(Hafez, as cited in Ladinsky, 1999, p. 73)

Let your teacher be love itself.

(Rumi, as cited in Barks, 1997, p. 142)

I identify as a poet. I see the world through line and form which colours my imagination bringing a moment or memory to lyrical light. Poetry has been a way of fully attending, "a significant epistemological and ontological way to engage… so we can be and become human" (Leggo, 2016, p. 364). In poetry I feel and know the material and spiritual worlds. These worlds in constant movement and mergence like the wings of a double crested cormorant in midflight rising toward the encompassing sun. Mystical poets, such as Hafez and Rumi, as quoted above, have given me hermeneutic in/sight into the vertical dimensions of my being, as an Ismaili woman becoming in the world, aspiring to live with/in my faith and never existing without this faith. I am an artist, researcher, and teacher — and there is a fluidity in these roles I inhabit — as I exist in the in-between as a reflective and reflexive practitioner living an embodied praxis of integration and wholeness. Here, there is growth and learning in all directions as I become by the doing of, where theory comes from process and processing. I am a conduit, open to creative possibility perpetually flickering like the interplay of dancing light and shadow on my page.

Poetry is the heart of my (re)search and a pathway to express my creative agency and purpose and thus, I bring forth this poetic posture to my pedagogy. As a creative pedagogue, there are three principles which inspire my teaching—as an English language educator — that are integrated and integral to transformative and, with hope, transcendent pedagogical outcomes for student and teacher. I state them here simply as a pathway to illustrate my own understanding of creativity in action, recognizing that my own creative ability and risk-taking is at the centre and core of my students' own learning: Intention, intuition, and imagination. Firstly, the intention of the learning is what I aspire to impart or the task at hand that needs to be acquired and fulfilled, knowing that in the middle of doing, there are no straight lines, and the pedagogical pathway is rhizomatic, intertwining, messy yet integrated and generative. The rhizome and root metaphor of learning has not only depth but offshoots of inquiry allowing for the learning to take its own journey enabling "teachers to better respond to the everyday surprises that are part of their ever-changing world" (Wiebe et al., 2007, p. 263).

Rumi eloquently proclaims: "There are hundreds of ways of kneeling and kissing the ground" (as cited in Barks, 2003, p. 123) and this sentiment makes meaning to my teaching and the varied approaches and beautiful detours I may take to reach the same intention. This now requires my intuition and attending to the rhythms of the individual learner in a leaning in and a leaning out in a pedagogical dance. Intuition has been the most vital and foundational quality of my creative pedagogy in attuning to accessing various modalities — visual, kinesthetic, auditory, and conceptual — toward making sparks, connections and imparting the knowledge at hand. My poetic sensibility speaks in metaphors and believes in its visual and generative power as I conceptualize and simplify complicated writing tasks and create learning methodologies. A teacher's imagination, too, must be large and hold not only creative routes and pathways but contain the possibility of what can be achieved through innovative, inventive, and immediate thinking where imagination is the life blood of learning, pulsing with a source and a force of becoming for the human mind, a force of transcendence (Bachelard, 1988).

As I am always in a place and space of seeking, I now simply contemplate more questions, not in providing an answer, but in holding what I value about pedagogical encountering and inspiring life learners who are critical-creative and ready to make a stand and a stance in the world. This world that is troubling and needs the pedagogical hopefulness (Freire, 1992) that creativity with a solid ethical and pluralistic mindset and heart will bring: How can learning reach an exalted level? How can teaching transcend boundaries and barriers, individually and as a community, with agentive ways of using our knowledge to be our higher selves?

I stated at the onset that I am a poet, and I am most at home in poetry. I have made meaning of my world(s) through words since I was nine-years old and there is an innate deep connection and familiarity with/in poetry where my heart/mind speaks in lyrical metaphors. There is light here and, in my scholarship, I have stated that poetry has led me toward a literacy of light (Rajabali, 2017). Thus, in this photo essay to follow, I take a creative risk. As my artistic self is being compelled and drawn to images, the risk comes not from the process of doing photography — I am learning to sense and see light in diverse ways — but in the sharing of the work and whether it has resonance. With this vulnerability I recognize that risk-taking is integral to expanding my own creative identity and extending my contribution to my arts-based research communities. Barone and Eisner (2012) write of arts-based research as having "legs," this ability to move and be moved to someplace else, as the capacity of creative scholarship is that "it does not simply reside in its own backyard forever but rather possesses the capacity to invite you into an experience" (p. 152). Thus, I ask: Does it have wings?

My discovery is that dwelling in the visual has strengthened my poetic eye/I and living lyrically in the world. Forming art, and art forms, continue to make my pedagogy creative. Herein, the three tenants that guide my praxis: intention, intuition and imagination are enacted in these photographs where I contemplate: How can an aesthetic lens through engagement with images strengthen pedagogical practices? I am open to possibility, and I present each photo with a rumination allowing a phenomenological process to occur where I follow my own rhizomatic journey with the crisscrossing lines of inquiry playing patterns on my soul knowing that "all natural objects make a kindred impression when the mind is open to their influence" (Emerson, 1982, p. 37).

I am opening the wings.

Line of Flight

A bird verges on the edge of flight on the threshold of verticality. I capture this moment as I am also in the in-between perching upon desire and action. Her line of flight inspires my own transformation multiplying into crisscrossing patterns of thought (Deleuze & Guattari, 1987). What happens in the in-between of knowing and being, of thought and action, of learning and doing, of teacher and student? Where can we find our wings?
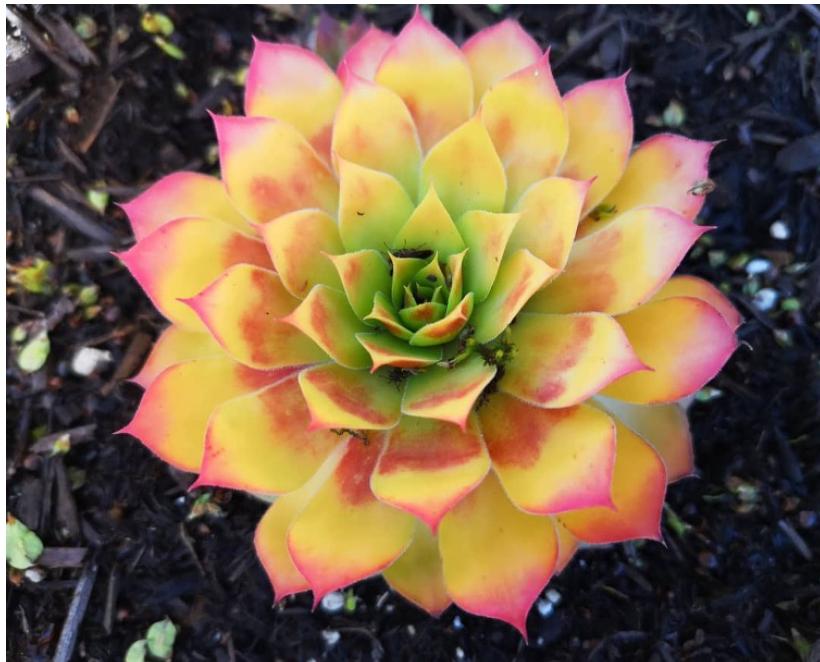
Luminescence

A flower rises from the dirt. I am beckoned by its exquisite beauty in the unexpected of places. I crouch down to witness canary hues and blush-tinted edges colouring my eyes with nature's perfection. In a moment in-between lens, light and shadow, I/eye capture this image. The photograph somehow holds its essence and luminescence. I am astonished at the outcome. Frost (1939/2007) writes of poetry that it "forever keeps its freshness as a petal keeps its fragrance" (p. 1156). This image (re)calls me to perennial sweetness, a moment when I witnessed Nature in her true vivid light. And I am inspired to ask: How can one truly see the light of others?

Hushing the Earth

In the soft silence of one snow felted morning, I capture this image. I stand under nature's arches as the snow lightens and heightens these interlacing branches, intricate and seemingly infinite. Here, I am (re)minded of both my horizontal and vertical ways of being expanding my vision with light and beauty. In the aura of nature's poetry, I am humbled under the grace of this shared abode — hushing the earth and my street with unity and dignity.
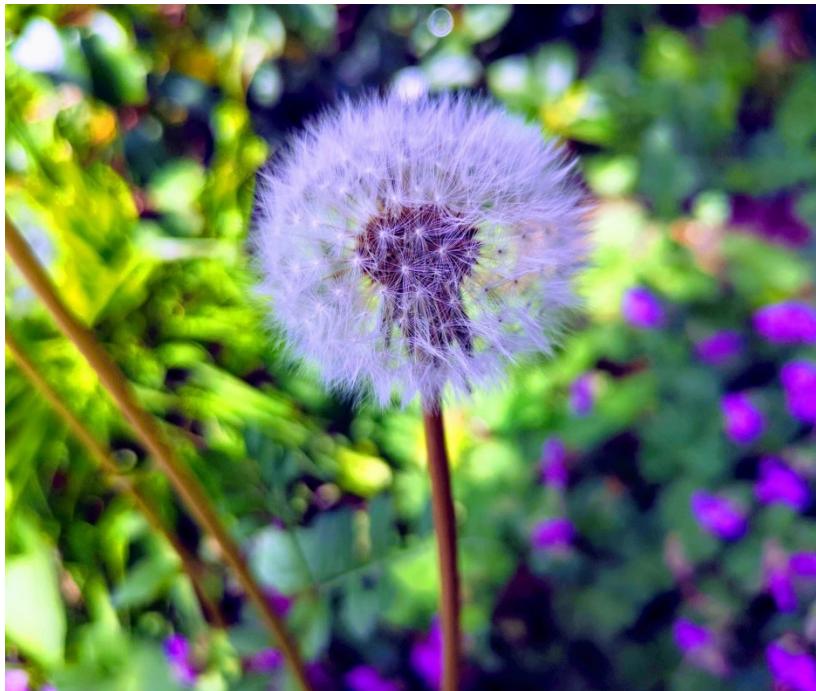
Waiting for the Wind

The white tufts of the dandelion intertwine in nature's patterned perfection. I am tempted to blow and watch the delicate gossamer threads parachute into the spring air, But I wait for the wind to take the seeds wherever it carries. I snap the photograph, gingerly, not to disturb the dandelion form, now immortalized in impressionist hues. I am dwelling in impermanence and permanence. Fels (2013) writes of the act of waiting: "A stop, a moment of risk, a moment of opportunity, occurs when we come to witness or experience an event, an encounter, an action, a relationship that calls us to attention" (p. 39). I reflect on personal moments of tension that occur before seeds of knowledge scatter and implant wisdom. How is the act of teaching an epiphany in waiting?

Night Shadows the Light of Day

I am standing within the shadow of the earth while bold blue brushstrokes are becoming the night sky. Amid dusk is a dawning, some calming that comes over me who finds tranquility in twilight. Nature is flowing through me. And the sky is in I/eye. The poet Rumi writes: "Both light and shadow are the dance of love" (as cited in Chopra, 1995, p. 50) and I wait for a lyrical moment and take the photograph.

Opening Silent Wings

I am writing at a café — a word here, a word there, a sip of strong americano, leaning in, a leaning back, moments of tension, moments of freedom. I am tenderly attending to words revealing "rushing heaven like a soul" (Dillard, 1989, p. 20). I am a seeker of verticality; a poet is a lifter of things. I take that pure leap into thin air to know the galaxy of my own being. And I am learning to see the signs of the sacred, a keenness of seeing that gives me in/sight. I put my pen down and close the old blue notebook, momentarily, and then, I look up. Feathered cloud wings hover in the seamless sky. How is it that nature reflects my aspirations? Am I dwelling in the realm of imagination? I linger and then capture the winged clouds. I return to this image frequently; a force of transcendence for my soul who experiences wings opening on the inside. And in this buoyancy of words, this gravity that keeps me airborne, I call out: How can we give our students their wings?

I entitled this photo essay provoking a question: Does it have wings? And I relinquished to a phenomenological process of discovery uncovering meaning in the images — meaning that was hidden or perhaps at the surface — but evoked by the synergistic act of inquiry fuelled by a question that became generative. This meaning revealed in poetic ways where I experienced the verticality of a creative and contemplative undertaking. Poignantly, I begin and end with wings as I started my journey with the image "Line of Flight" coming homeward with "Opening Silent Wings." I have enacted a rhizomatic patterning of thought and emotion into the open waiting sky of inquiry. The outcomes of this undertaking from a (re)search lens provide a way of seeing

where reflection and standing back gives the vision (Rajabali 2017). The integrity of the (art)work will lie in its ability to resonate with the human spirit and to be evocative as "evocation is therefore an epistemological means for the acquisition of meaning" (Barone & Eisner, 2012, p. 153).

Perhaps, here is where art is a transaction of the heart and Frost (1939/2007) poignantly writes of poetry that "no tears in the writer, no tears in the reader. No surprise for the writer, no surprise in the reader" (p. 1156). I am learning creatively and creatively learning and risk becomes a part of this process. As a creative pedagogue, I am practicing attunement, a tuning in, a turning in. When is she ready (my student, my teacher-self) for a creative leap of faith? I have discovered that my art, be it in poetry or photography, is driven by intention, imagination, and intuition. Thus, represented here is my creative pedagogy in action illuminating how an aesthetic lens through engagement with images provokes teacher inquiry. And in this merger of visuals and lyrical prose is where I have found hope and wisdom — a way of sensing Light, a walking through toward the sun of some understanding.

I end in poetry with a poem to my beloved PhD supervisor, friend and mentor, Carl Leggo who lived and taught poetically, imaginatively, and spiritually. Sadly, he passed on March 7th, 2019, and his lessons will eternally linger. It is my pedagogical hope that I, too, can teach with the same love and spirit he had for his students. And in being with his spirit now, he is always teacher. Still teacher, teacher still. And I am still student, student still. He opened the mind window for me to fly into vertical spaces and places. I only have gratitude for the teacher who guided me to discover and learn the light of my own being. And here, there are wings.

Leggoian Light

One autumn afternoon we walked together

among the marigolds, magnolias, and mountain ash

breathing in

the majesty of creation

where you said in your lyrical way

to think of research as lace

resilient, aesthetic, strong and ornate

And I remember you

bold speckled butterfly

full open wings

a teacher, a student

                (You were one wing and I was the other)

with a brightness that wisdom carried

like the song sparrow that crossed

our path calling to the world in her sweet nostalgic melody

leading toward the soft sun with her poetry

And I envision you now in front of me

                (the wings all yours)

A slight brushing on our shoulders

circling once before heading upwards

swirling whirling whirling

flecks of fervent light showering from the open seamless waiting sky

And Leggoian Light like Van Goghian light

lines crafted with a tender hand that paints

movement and colour with countless brushstrokes.

Behold!

A steeple. A cypress. A crescent moon.

A starry starry night where light-years away

the north star appears

offering a compass for those who are lost

like your poems

glowing and growing with lasting luminescence

LACED WITH ETERNAL LOVE.

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SOCK HOPS AND RED ROOMS: ON TEACHING JANE EYRE TO MARGINALIZED STUDENTS

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ABSTRACT. This short story illustrates an occasion of culturally responsive and sustaining pedagogical practices in relation to the canonical texts which are often used in urban classrooms. In it, a lesson on Jane Eyre's childhood point of view and mode of introspectiveness delves into a tale of dancing and Otherness. The story shows that in spaces where the majority of students are marginalized, opportunities wherein diverse bodies are encouraged to respond in ways that are meaningful to them, to "write themselves" into narratives, are crucial for inclusive and equity-building engagement.

LES DANSES « SOCK HOPS » ET LES CHAMBRES ROUGES : SUR L'ENSEIGNEMENT DE JANE EYRE AUX ÉTUDIANTS MARGINALISÉS

RÉSUMÉ. Cette nouvelle illustre une occasion de pratiques pédagogiques culturellement sensibles et durables en relation avec les textes canoniques qui sont souvent utilisés dans les salles de classe urbaines. Dans cette nouvelle, une leçon sur la perspective de l'enfance de Jane Eyre et son mode d'introspection se transforme en une histoire de danse et d'altérité. Le récit démontre que dans les espaces où la majorité des élèves sont marginalisés, les opportunités dans lesquelles diverses personnes sont encouragées à réagir de façon significative pour eux, à « s'écrire » dans des récits, demeurent cruciales pour un engagement inclusif et équitable.

I'm teaching Jane Eyre to the grade twelves in what they call "the cardboard box classroom." It's the smallest in the school. Its mouse-brown painted walls are unadorned and its desks are strangely aligned, sticking to the margins of the walls in haphazard form — like stray beans from a spilled bag. They're not easy to move because they're heavy with melded seats. I can picture them once existing in a 19th century school house on the prairies where an intrepid carpenter figured that sturdy desks would be a smack in the face to harsh elements. The type of furniture that would laugh in the face of a blizzard or remain unfeeling under the cruel glare of a self-righteous teacher. They're ugly too. These are not the antique expensive kind of desks, they're the old cheap ones that look like they're better off rusting in a junkyard somewhere beyond city limits.

My desk, the teacher's one, is more like a counter with one empty drawer, save for a couple of bent paperclips, a whiteboard eraser that disappears sometimes like it has somewhere else to be (other surfaces to wipe clean), and a binder of loose-leaf paper that comes in handy when the students are using class time to write essays and one of them (a girl who dreams of being a pediatrician) runs out or another (a boy whose dreams of being a pilot are given a wakeup call when someone he loves tells him it's like being a taxi driver in the sky) forgets to bring his own. Or can't afford to.

Even though I sometimes wish there was a window here, the cardboard classroom has grown on me. Maybe it is complacency setting in but it doesn't bother me that we don't have many resources or can't afford colourful inspirational posters. Maybe it's the students who're taking root in my heart. They're a racially diverse class in an urban school meant to serve the Muslim community.

The truth is that I love coming here, discussing books with them. These students of mine. Reading old things in new ways in a grade 12 core English class.

"We live in stories," I told them when they complained about the space. "Never mind where we actually are. We can imagine something better."

Today, that mantra is good because we're talking about Jane Eyre and what it means when an adult narrator (reader, I married him) tries to authentically capture the story of herself as a child growing. What does it mean, for instance, that the infamous Red Room scene of Jane being punished by her aunt, is placed where it is? Does it connect to her later learning that Rochester has a mad wife he keeps locked in the attic? Or is it a site of childhood trauma that she keeps coming too – the story in the beginning that explains everything else that happens in the plot of her life? Different literary theorists have all sorts of ideas about the scene but I'm interested in what the students in this classroom, on this day, think.

"You are all still pretty young," I say, "but how would you write a scene from your childhood now? Would you embellish? Would you play it down?"

We have a short discussion and then I suggest we think of an episode from our childhoods to write about. I do it with them because I used to hate it when a teacher asked us to do things and then sat back doing nothing while the students suffered. Usually, it was the gym teachers.

So, I grab a couple sheets of paper from the binder in my counter-desk and give a few to the girl who wants to be a pediatrician and to the boy who used to want to be a pilot and take some for myself too.

The boy who used to want to be a pilot says he can't think of an incident to write about but I tell him what one of my favourite teachers (definitely not a

gym teacher) used to tell her students: "You may not know, but your pen does, let it guide you along. The pen knows." He grunts like he's heard it before.

When the class is silent, the blank walls start transforming before me into concrete ones painted a drizzly grey and with a large dragon mural. The dragon blows blue fire and represents the school I attended once upon a time. An urging sign.

I start to write my incident:

My socks match. I glare at them, take in their pink heels and toe area on white background. I study my socks like they hold the answers to a test I haven't written yet. A tiny hole near my left baby toe looms large for an instant. I tell myself that it is so small, so insignificant that it's a wonder I can even see it under the fluorescent gym light, dimmed but fluorescent nonetheless. Maybe the yarn just tugged a bit when I took off my shoes. I shift my left foot anyway, trying to make it so that if there is a hole, no one will see. Just in case.

They're playing a song I've heard on the radio. I listen to it on Sunday afternoons; tell my mom that it helps me study in case she complains about the noise. I like the song a lot. It's Against All Odds by Phil Collins. It's written for boyfriends and girlfriends and people who love each other, I think. I don't sing along even though I know the lyrics. If it was playing on the radio on a Sunday afternoon at home with my bedroom door closed and my books open around me, I might have sung along, would have probably sung along. I won't sing here, not on a Thursday afternoon in the large gym at my school with the entire junior high student body around me.

"Look at Johnny and Carrie!" Someone along the back wall where I am standing (staring at my socks) says this.

It sounds like Alison.

"They're so cute together!" It is Alison.

I look up, and sure enough, on the dance floor are Johnny and Carrie. Carrie looks like a doll, not Barbie though, something more classical. Maybe a Victorian doll or something that sits on a shelf in a fancy home with one-of-a kind porcelain china and maybe is enclosed with glass so that people are dissuaded from touching. Johnny touches her now though. His hand rests atop her golden hair that shines bright even under ugly dimmed florescent lighting. Carrie looks like she's meant to live in Hollywood or Hawaii or someplace sunny like that. She's also just broken up with her boyfriend who was three grades older than us and owned one of those fancy bikes that looks like a motorcycle.

Now Johnny will be her boyfriend. I could have guessed that they'd soon be a couple. I sit near them in class and noticed how Johnny helps her with math and how she laughs when he makes a joke. Johnny makes lots of jokes — the smart kind. He's tall too. I watch his hand fingering her hair, and their

bodies swaying, not to the beat of the music, more to their own beat. She rests her head in the groove of his chest. My stomach clenches. Alison is right, they do look good together.

Now that I've lifted my gaze from my socks, I consider those of us on the back wall of the gym. About twenty of us look on while most of our fellow junior highs are on the gym -slash-transformed-into-dance floor. I try to count our number exactly but it's weird craning your neck and trying to count everyone on either side of us. I don't know why I care to get our exact number, I hate math. Sometimes I like to count things but mostly I hate math. 14, 15, 16. Did I include myself? There's a sea of shoes nearby. The smell of sweaty feet wafts into my nose. I wonder how we're supposed to find ours when this thing is done.

Sock hops, what a stupid idea.

"The teachers are just trying to get us all in one room without having to supervise. They're doing report cards." Chris offered this information when the announcement came in the middle of our second period math class. His hair is greasy and his sweat glands are maturing oddly so that I'm always trying to sniff under my own arm pits when I'm near him just in case it is me who smells. I complained to the homeroom teacher earlier in the year, trying to not be rude, but seeing no way around it.

"He has a disease," she explained and I felt ashamed. I didn't insist on switching seats. I just decided that when he wasn't looking or paying attention, I'd move my desk away just a bit. I also started using my mom's antiperspirant and rolling a bit under my nose. It doesn't help that much now.

I spot Chris at the far end of the wall, near the shoes. Alison is there too with a couple of others but she doesn't act like she's on the wrong side of things. She's pointing at the couples, laughing at the pairings from her wheelchair. She doesn't seem like she feels left out. She doesn't seem like she feels like I feel.

And then there's Sameera, the tiny girl from Pakistan whose family had just come to the country. I'd seen her at the mosque a few weeks ago but didn't talk to her there or here at school either. She's ESL so she isn't in any of my classes. She meets my gaze. She waves, walks over. I shudder a bit wondering how my gaze was taken as an invitation. I feel like a giant standing next to her. Too big, too awkward, too aware am I that this place is place far from the middle of the gym. That this is the wall where the outcasts gather. Outcasts, I believe, are those who no one asks to dance when there are slow dances.

She tells me her name, though I know it. I tell her mine, not sure if she already knows it.

"Have you ever watched a Bollywood movie," she asks, her voice bigger than Phil Collins'. Her English sounds fine. She speaks with a British accent even. This surprises me. I nod, thinking about how my mom's friend and her would watch them whenever we visited her house. They had Arabic subtitles so my mom could understand the Hindi and neither would translate for me.

And if I asked what was happening, I wouldn't get a response from either. It's like the movies hypnotized them.

"I never understand why they're singing and dancing all the time," I say to Sameera.

"Do you know how to dance like they do?"

"I can't dance like that," I scoff, abruptly and a bit harshly. She's quiet for a moment and I think I shouldn't have been so rude. She's about to walk away but I don't want to be alone anymore.

"Why are they always breaking into song and dancing in Bollywood movies anyway?"

She smiles at my question.

"It is the only way to break the tension of all that drama. Pretentious drama." She lifts an eyebrow and twirls. "This sock hop is begging for a Bollywood number."

I bobble my head like I've seen them do on the screen when my mom and her friend watch. Sameera grabs my hand and I slip and slide after her. The gym floor is slippery but I soon have control and I move my feet and arms like she does. We come up with an impromptu choreographed number to the last notes of Against all Odds and it's pretty wild and pretty good. People are clapping and joining in. Chris and Alison, Johnny and Carrie. Sameera and I are leading them into the next song. I have so much fun, I forget about the maybe hole in my sock.

"Time's up," I say. We put down our pens, me and the students.

"Who'd like to share theirs?" I ask but no one lifts a hand. Not pediatrician girl nor non-pilot boy. Maybe they don't feel comfortable enough.

It's hard for the marginalized to be vulnerable, I think, when they're constantly told that they need be better than everyone else in everything. Otherwise, what opportunities will they have outside of a cardboard classroom?

 So, I read mine.

"Did you have a crush on Johnny," the students ask when I'm done. There's a snicker or two.

"Not exactly the point of this exercise," I answer, evading. "This is us creating something. A form of artistic expression. Like Charlotte Brontë having her narrator, Jane Eyre, write about something in her childhood with the perspective of insight gained. Our stories matter too and —"

The bell rings, cutting me off. I watch the students rise out of the chairs attached to their substantial desks and remind them to read the next chapter before our next class. "In it we find out what — or who — is in the attic. I'll expect you to have a lot to say about that!"

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COME THROUGH THE DOOR WITH ME: PONDERING INVENTIVE PRACTICE

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ABSTRACT. The purpose of this paper is to engage readers in thinking about the art of teaching and how to support inventive practice. Readers are invited into a classroom and immersed in a day of learning with 11- and 12-year-olds.

PASSONS LE SEUIL ENSEMBLE : RÉFLEXION SUR LA PRATIQUE INVENTIVE

RÉSUMÉ. L'objectif de cet article est d'inciter les lecteur(e)s à réfléchir sur l'art d'enseigner et à la manière de soutenir la pratique inventive. Les lecteur(e)s sont invités dans une salle de classe et immergés dans une journée d'apprentissage avec des enfants de 11 et 12 ans.

Over a century ago, in his talk to teachers, William James (1899), who was one of the first in a long line of psychologists to make suggestions for effective teaching practice, nonetheless admonished teachers not to expect too much from psychology:

> You make a great, a very great mistake, if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite programmes and schemes and methods of instruction for immediate schoolroom use. Psychology is a science, and teaching is an art; and sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application, by using its originality. (p. 7)

We have not heeded his warning. Our school budgets strain to include psychologists, counsellors, speech pathologists, occupational therapists, specialists in literacy, numeracy, English language learning, special needs, technology integration, innovation, all schooled in the latest scientific research for deducing definite programs, schemes and methods for classroom use. A steady stream (at times a firehose) of new scientific theories and technologies fuel ever-new programs based on the latest advances. Our cupboards are jammed full of the assorted debris of the abandoned last best thing: math

texts (a new set for every new approach), assorted manipulative blocks (missing pieces and instructions), colour-coded booklets to support a program we no longer have, games, kits, rows and rows of binders. Yet despite ongoing scientific advances, instruction and support for practice informed by them, teaching hasn't become easier, and children aren't learning with any greater proficiency. We blame teachers, administrators, students, a lack of resources, families, and government policies. No one blames the answers themselves. The facts are facts, after all. We accept, without question, the next theories, new programs, revised systems, and cutting-edge technologies. We keep trying and discarding answer after answer and wondering why what is supposed to work still isn't working. Many agree with Dylan Wiliam (2018) that despite "a great deal of well-organized evidence that shows that there are things that every school district could be doing … they are not being implemented consistently in our schools" (p. 118). We nod along with the belief that if only teachers would just consistently apply best practice derived from solid empirical evidence of what works, then all children would become the "powerful learners, skilled workers and engaged citizens we want them to be" (Groff, 2012, p. 2).

But what if William James is right? What if we need inventive application instead of consistent application? The trouble is, although it is very clear what we must do to generate scientific theories, to develop evidence-based programs and to implement them, we do not know what to do in art — this inventive work. Russian literary theorist Viktor Shklovsky has an answer:

> What do we do in art? We resuscitate life. Man is so busy with life that he forgets to live it. He always says: tomorrow, tomorrow. And that's the real death. So what is art's great achievement? Life. A life that can be seen, felt, lived tangibly. (as cited in Vitale, 2013, p. 53)

Although this might seem too vague to go on with, one thing becomes clear: the art of teaching isn't in the exhaustive and exhausting search for best practices, or in defining future success, or, from targets thus derived, in tracking progress and improvement. Indeed, it is more likely to pause on Sharon Todd's (2011) beautiful question: "What transformational role can education play in order to make a difference in the world if it already presumes to know what it wants that world to be and what it wants students to become?" (p. 509). The art of teaching isn't even about applying "creativity" defined and packaged with (more) best practices and strategies. Shklovsky (1917/2016) contends, "Art is the means to live through the making of a thing; what has been made does not matter in art" (p. 162). What do we make in schools? We make learning (in all its multitudinous variations), which isn't knowledge, but rather knowledge in the making (Ellsworth, 2005). To find "not things made but things in the making" (p. 60), William James (1909) argues, we must seek a "living understanding of the movement of reality, not follow science in vainly patching together fragments of its dead results" (p. 60).

If we gather a living understanding of teaching, what might we learn about its art? Because, if William James is right, our efforts in working toward evidence-based education have been mistaken. And if so, what might we do instead, those of us engaged in education, to support teachers and their students?

What if we experiment, you and I, in trying to capture this livingness now keeping this question in mind?

Come. Walk through the door with me.

As you can see, it's an ordinary classroom. You probably spent many years in one very much like it. A bank of windows across the room from you looks out onto the soccer field and an outdoor basketball court. The desks and hard plastic chairs are arranged in pairs, triads or quads facing toward the front of the room where the blackboard you remember has been replaced with a white board and screen. The children haven't arrived yet, so the desks are neat, the floor clean, but the sheen from the summer waxing is already fading; there is a container filled with sharp pencils at the front, baskets of books on the back shelf, a cart full of laptops on hand; the children's work is displayed everywhere. Look around.

The bell is ringing, now. The children fill up the room quickly: chairs scrape, voices lift, someone is pushing already, another complains. One comes in breathlessly and says she needs to go down to breakfast. They begin to settle into their chairs. Meet them.

This year's group is equally divided between boys and girls. Our school is situated in one of those neighbourhoods tucked into downtown corners and ignored as much as possible. Except for a handful of the children, they have lived unsettled, often very transient lives, moving ahead of the rent due or shuffling back and forth between parents, grandparents, aunts and uncles or in and out of foster homes as families struggle with addictions, poverty, violence. A number of the children have designations: an alphabet soup of labels to try to describe and prescribe for their learning delays and behaviour challenges. I'm sure, though, that you can already see how beautiful they are, how much each child here matters, that the job is breathtakingly difficult and so important that your heart shudders a little, and you think it might be easier to talk about strategies and programs and policies. Stay.

It's Monday, which is always a more difficult day. Who knows what the weekend brought. Yes, we'll have challenges today. You can probably tell, too. Ronald has his hoodie pulled up over his nose and down over his brow. His eyes are slits, and he is muttering, "I hate this school." (I do several "talk-bys," to gently bring Ronald out of "stuck" and back into engagement.) Susan has her head on her desk, weeping already. (I pet her hair for a few minutes, whisper to her to tell us what she needs, and have Annie watch over her.)

Wyatt's face is already bright red, and his eyes are blazing. Something happened in the playground before school, I'm guessing. (I steer clear; you should, too. Intervention at this point will set him on a course that will mean he has to be removed from the classroom.) Dylan is already almost asleep. (I step beside him and ask him if he is well enough to stay in school today. He has recently returned from foster care to his family, and I worry, worry, worry.) Lewis is on form. Despite the heavy rain and cold wind this morning, he's wearing shorts and a T-shirt as usual and beginning his puppet-master role, calling to Matt who, despite his best intentions, can't resist turning his head to engage. (I gesture Matt forward. I give Lewis a look that says, "How much longer do you need?") I've asked for quiet so I can introduce you, but Lewis will take a few more minutes to show that he is the one in control. This sets Wyatt muttering under his breath, and his face gets redder. Now we know who got under his skin before school even started. It will be a dance today between allowing Lewis some rein so he feels freer, more in control and ready to learn, and reining him in so Wyatt doesn't explode. There are 21 more students and so much to say about each of them. How sorry I am that you won't get to know them. There isn't time. There never is.

Still, stay, just for a while longer.

Let us come back to Susan. Remember her? She is the weeping girl. Can you picture her? She has big brown eyes, dark hair to her chin, and she's tiny; she would blend in with a group of eight-year-olds even though she's almost 12. Here's why I think she's weeping today. Her mother is drinking again, and Susan is left to care for her three siblings, the youngest of whom is still in diapers. She's probably exhausted and hungry, even though she's had breakfast provided by the school. But the weekend is long and here, where she is safe again, where she is cared for, she is a little girl again; she puts down her burden and cries. I taught her mother when I first started teaching at the high school up the hill. I remember her. She was such a quiet, keen-eyed girl in my English 11 class. And then she got pregnant. I might have taught Susan's father, too. I don't remember him. He already had a child at the time. Cassandra. I taught her two years ago, Susan's half-sister. Last year Cassandra went to high school. By October she had been hospitalized with a drug overdose. See Susan again. This beautiful girl.

To bring the class — already bubbling and seething with I know not what — to calm, I use direct instruction to support them (in a set of recursive lessons) to respond to complex text. I keep the steps small, the class quiet; I provide prompts, scaffolds, mini-lessons, small chunks of silent focus interspersed with free play. (On another day, I would create an open-ended, immersive experience, but not today. You are here. You understand why.) By lunch, the students have each completed a paragraph, self-assessed, revised after reviewing models and re-assessed. Clarence stares at his paragraph in considerable

astonishment. I point out that it is certainly the longest piece of writing he has done this year. (He is new to our school and so far, he has only written a sentence or two with painful slowness.) He looks up at me and then down at his paragraph again, "This is the most I have written in my whole LIFE!" His joy spills into the classroom and the rest of the children look at their work newly. Can you feel it?

The afternoon looms ahead of us. The rain has stopped, the wind died down and the sun now shines and beckons in a way that only November sun can do. I give the students an option to work to create awareness of global change in any way they want, alone or in pairs or groups. We brainstorm possibilities. We set some behaviour boundaries. Susan and Annie want to make a movie. They dash outside with an iPad, their plan sketchy at best. Blake is excited. He is determined to become an Internet sensation and thinks this might be his chance. A few boys attach to his plan, and I let them go. Blake was recently suspended in a very public display of anger and violence that has left him feeling vulnerable as he tries to restart relationships. I look out the window to see the boys cavorting in the sun, laughing and tumbling. Dylan is with them, playing, free for now of his many cares. Several children are cutting and pasting, gluing and creating. Matt has a big piece of paper in the hall, and they are asking him to help draw. I am so grateful he has this pocket of time to feel competent, capable... powerful even. Clarence and Tommy are chatting and drawing. I don't nudge them. They are both exhausted, I think, from the writing today. Let them rest here in the puddle of sunlight, in the murmur of voices and the muted giggles from the children in the hall. We'll have very little to show for our afternoon, I know. Except for Joey, who calls me over every few minutes to share another astonishing global warming fact, they will have learned very little. Or at least nothing I can measure. Nothing easily explained. Susan and Annie come in, laughing, glowing. The students tidy up and finish the day with a reflection.

The bell rings and the children disappear. Silence descends. The room isn't neat at all anymore. The children who were outside brought in clumps of grass on their shoes, those in the hall left bits of brightly coloured paper in slivers everywhere. The gleaming white boards are covered with the students' ideas, papers are haphazardly stacked, and the floors are littered with broken pencils, dropped markers, a forgotten jacket. I pick up Susan's reflection journal. "I hate everything and everyone," she writes in the morning. "I don't want to be here. Everything just looks hard." In the afternoon, she scribbles, "Sorry about this morning, Ms. B. I didn't think the day would turn out this way, but it was just FUN."

Here in this quiet mulling time, we tidy the room and get ready for tomorrow. This is as far as we can go today. The sun is setting. The janitor has swept and even run a damp mop over the floor. The boards are white again ready, waiting for new ideas, fresh insights.

Thank you for coming with me. What would happen, I wonder, if we stopped trying to find answers for classrooms and began, instead, to join teachers in this necessary daily invention, this making, these living spaces.

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L'HARMONIE DE LA MUSIQUE ET L'IDENTITÉ LINGUISTIQUE : L'A/R/TOGRAPHIE AVEC DES FUTURS ENSEIGNANTS

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RÉSUMÉ. En employant l'a/r/tographie, ce texte tissera le lien entre la musique et l'identité linguistique en éducation. À travers mes expériences en tant qu'enseignante du français au niveau secondaire en milieu minoritaire francophone au Canada et comme professeure à la Faculté d'éducation, j'évoque les possibilités de l'a/r/tographie et les risques de cette méthodologie. Exploiter la musique au moyen de l'a/r/tographie peut susciter un intérêt envers la langue française chez les élèves et les étudiants, pour ensuite contribuer à la valorisation de l'identité francophone. Ce parcours identitaire linguistique raconte la diversité des espaces dynamiques de l'enseignement et le potentiel d'échanges positifs dans ces espaces pour l'identité linguistique des futurs enseignants et des professeurs.

HARMONIZING MUSIC AND LINGUISTIC IDENTITY: A/R/TOGRAPHY WITH STUDENT TEACHERS

ABSTRACT. By adopting an a/r/tography lens, this text will explore the relationship between music, linguistic identity and education. Through my experiences teaching high school French immersion classes and later my transition to teaching at the Faculty of Education, I will explore the risks and possibilities associated with this methodology. Bringing music into the classroom through a/r/tography can contribute to a heightened interest in the French language and a reinforcement of the francophone identity among students. My own identity journey shows the diversity of dynamic spaces in the field of education and presents the potential for positive exchanges within these spaces for the development of linguistic identity among future teachers and professors.

L'art est souvent perçu comme étant un geste posé pour l'artiste qui, à travers l'expérimentation, crée quelque chose de nouveau et prend le risque que ce ne soit pas apprécié (Poorsoltan, 2012). Enseigner, et plus particulièrement l'enseignement en milieu minoritaire francophone (l'enseignement du français au Canada à l'extérieur du Québec), est aussi un geste posé. Comme pour l'artiste, l'identité linguistique de l'enseignant est en exposition, ce qui comprend parfois un risque, surtout lorsque l'insécurité linguistique se ressent de plus en plus chez les élèves. L'identité linguistique de l'enseignant est non seulement vue et vécue mais fait face aussi à la critique. De plus, les

enseignants en milieu minoritaire sont responsables du développement linguistique de leurs élèves. Il n'existe pas un seul chemin qui mènera véritablement à une identité linguistique bien ancrée chez tous les élèves, mais que des pistes potentielles à suivre. Afin de décrire une piste possible vers le développement langagier et identitaire des élèves et des futurs-enseignants à travers la musique, j'emploierai l'a/r/tographie. L'a/r/tographie valorise la relation entre l'artiste, le chercheur, et l'enseignant. La recherche en a/r/tographie se concentre sur les pratiques en éducation et dans les arts, c'est-à-dire la relation conjointe entre la création et l'enseignement des arts (Irwin, 2013; Prendergast et coll., 2009). Entre autres, certains chercheurs ont jumelé alors des pratiques artistiques à leur recherche, telles que la poésie (Leggo et coll., 2011; Prendergast et coll., 2009) ou la métaphore (Boulton et coll., 2017). En particulier, ces derniers emploient l'a/r/tographie afin de mieux décrire les transformations identitaires de futurs-enseignants. Il est à préciser que devenir a/r/tographe est un voyage à travers et dans le temps, un processus créatif et dynamique (Irwin, 2013). En retraçant dans le temps mon parcours personnel en éducation tout en portant une attention particulière à la relation entre la musique et l'identité linguistique, j'explorerai les retombées pédagogiques et les risques de l'a/r/tographie en enseignement en milieu minoritaire. En premier lieu, je décrirai mes premières expériences en tant qu'enseignante du français dans un programme d'immersion française. Par la suite, je présenterai la manière dont j'ai intégré la musique dans un cours universitaire lors de ma première année à la Faculté d'éducation. À travers ma transformation identitaire, toujours influencée par l'harmonie entre la musique et l'enseignement, j'espère pouvoir évoquer la possibilité des espaces dynamiques de l'enseignement (Irwin, 2013) et le potentiel d'échanges positives dans ces espaces pour l'identité linguistique des futurs enseignants et des professeurs.

DEVENIR ENSEIGNANTE

Mon premier poste en enseignement au Manitoba était dans une école secondaire d'immersion française et j'avais la responsabilité d'enseigner des cours d'anglais et de français. J'ai rapidement vu une grande différence entre les deux matières. Notamment, je devais consacrer beaucoup de temps et d'énergie à faire parler les élèves en français dans le cours de français. La théorie, mais aussi mon expérience, m'ont montré les inconvénients de certains dispositifs pour encourager les élèves à communiquer dans la langue ciblée. Un système de prix ou de punitions mène possiblement à une production orale en classe plus élevée, mais ne contribue pas véritablement à susciter un intérêt pour la langue. Bien qu'il soit préférable que les élèves développent une motivation intrinsèque vers l'utilisation de la langue, c'est-à-dire parler français parce qu'on veut le parler au lieu de le parler pour plaire à l'enseignant (Carreira, 2011), je dois dire qu'en désespoir, j'ai essayé une

variété de stratégies. À titre d'exemple, lorsque j'entendais un élève parler en anglais, il ou elle devait se lever, sortir de la classe et là revenir en disant « Bonjour Mme Cormier, je suis ici pour parler le français ». Avec cette stratégie, je faisais le rappel du comportement voulu en m'assurant qu'ils produisaient au moins une phrase complète en français. Même si j'ai obtenu quelque succès avec cette stratégie, c'était probablement plus en raison du fait que les élèves du secondaire trouvaient cela humiliant de devoir se lever devant la classe et de devoir parler. Avec le recul, je n'ai probablement eu aucun effet positif sur leur niveau d'anxiété quant à la production orale, sentiment bien connu chez plusieurs élèves des programmes d'immersion française (MacIntyre et coll., 2011). En effet, le problème était que je voulais qu'ils parlent français — mais je ne leur donnais pas le goût de le parler.

Le semestre suivant, j'ai vite réalisé que le français était le moindre de mes soucis. J'ai eu énormément de difficulté avec la gestion de classe, au point où je m'inquiétais plus pour ma propre sécurité et celle de mes élèves que du français parlé en classe. Sans nécessairement faire le lien entre le français parlé, l'identité linguistique et mes choix pédagogiques, je cherchais en premier lieu à survivre et à rendre mon enseignement dynamique et engageant autant que possible. Dans ces conditions, j'étais prête à prendre des risques : conjuguée au milieu minoritaire francophone, qui, selon moi, est un terrain propice à l'expérimentation, je pouvais mettre à profit cette situation en créant des nouvelles pédagogies et en développant des relations harmonieuses et durables avec mes élèves (Howard et coll., 2018). En milieu minoritaire, le simple acte de parler français en public est un choix qui se fait remarquer et qui s'ouvre à la critique. De la même façon, enseigner une langue ayant un statut minoritaire est oser enseigner différemment.

Voici alors mon geste pédagogique : je voulais tout simplement intégrer la musique dans mes cours de français. Ma première inspiration de cette intégration vient d'un musicien franco-manitobain, mon mari. Ayant cet exemple de quelqu'un qui affirmait son identité linguistique, qui devait justifier son choix de faire la musique « juste » en français, je me suis dit que la musique pourrait être un moyen efficace de partager l'identité francophone dans toutes ces formes et facettes (Field, 2008). Mon objectif principal en intégrant la musique de manière quotidienne dans ma classe d'immersion au secondaire était d'exposer les élèves à une variété de musiques, de styles, et de régions ou de pays francophones. Ainsi, chaque « mercredi en musique » je présentais une chanson d'un artiste francophone d'une région différente accompagnée d'une activité pédagogique qui visait différentes composantes de la langue, allant de la compréhension écrite et orale à la production écrite et orale à travers, entre autres, le champ lexical et l'analyse de vidéoclips. Bien que l'objectif principal ne fût pas de communiquer en français, je constate, rétrospectivement, que c'était justement ce genre d'activité qui était bien reçue par les élèves et qui ne demandait pas énormément d'interventions, telles que

« en français, s'il-te-plaît ». D'autant plus, quand un élève de la 10ᵉ année dit « Mme, regarde, j'ai mis la chanson que tu as jouée en classe sur mon iPod », tu te dis peut-être que l'intégration de la musique en classe peut avoir un impact positif sur le développement langagier et identitaire des élèves, et peut même contribuer à un climat de classe plus harmonieux.

DEVENIR PROFESSEURE

Plusieurs années plus tard, une fois arrivée à l'université à la Faculté d'éducation, je voulais partager quelque chose de pratique avec mes étudiants. En fin de compte, un des défis pour les enseignants en immersion française est justement de motiver les élèves à utiliser la langue française. C'était au sein du cours intitulé *Éducation française en contextes minoritaire et d'immersion* que j'ai voulu encore une fois intégrer la musique.

Un des objectifs de ce cours est que les étudiants se situent face aux visées culturelles de l'éducation française en milieu minoritaire et de l'immersion française. Essentiellement, qu'ils soient conscients des référents culturels francophones multiples, et qu'ils fassent un cheminement personnel et professionnel tout en explorant le rôle des programmes d'immersion et francophone, ainsi que les enjeux historiques et contemporains de la francophonie au Manitoba. Pour leurs élèves, les futurs enseignants seront des modèles langagiers. Il est donc nécessaire qu'ils explorent leur propre identité linguistique et leur rapport avec la francophonie au sens large. Il est à noter que ce cours est obligatoire pour les étudiants à la Faculté d'éducation à l'Université de Saint-Boniface, ce qui n'est pas le cas ailleurs dans la province. Peut-être est-ce encore un exemple de la créativité qui surgit d'un besoin réel en milieu minoritaire. D'autant plus, ce cours est unique, parce qu'il est coenseigné, typiquement par un spécialiste en *Français langue première* et un autre en immersion française. Peu importe le parcours personnel des étudiants et peu importe le milieu scolaire dans lequel ils envisagent d'enseigner, ils doivent comprendre leur propre identité linguistique pour ensuite pouvoir enseigner la langue. Il est important qu'ils réfléchissent à leurs propres choix identitaires et ceux de leurs futurs élèves. Pour un cours universitaire, donné sur une période de onze semaines, c'est un objectif ambitieux, pour lequel il n'existe pas une seule façon de l'atteindre. Avec une pléthore de thèmes et de choix pédagogiques possibles, pourquoi alors cet arrimage entre la musique et l'identité linguistique? Les études qui m'interpellent indiquent que l'identité est complexe, dynamique et ayant plusieurs facettes (Field, 2008; Norton, 2008). En pensant aux étudiants à la Faculté d'éducation, l'identité linguistique de chacun est réellement complexe, dynamique, et contient plusieurs facettes, quoi qu'il existe certaines similarités d'une personne à l'autre. Leur identité linguistique est composée de différents parcours éducationnels et d'une variété d'expériences vécues. Mais comment valoriser toute cette diversité? Ma réponse était la musique. Il paraît que les humains y

sont en effet très sensibles, et peu importe leur culture ou origine, ils sont capables d'identifier la fonction émotive d'un extrait, indiquant la nature universelle de la musique (Mehr et coll., 2018). Ainsi, pour moi la musique est devenue un moyen d'exprimer la diversité des identités linguistiques qui occupaient l'espace de ma classe et une façon de s'unir en apprenant ensemble (Irwin, 2013).

Cet espace libre et riche en identités linguistiques peut certainement inspirer la créativité. Toutefois, la manière traditionnelle et magistrale de donner des cours universitaires ne l'inspire et ne l'encourage pas nécessairement. En raison de cela, même si je voulais présenter des référents culturels musicaux et des activités en lien avec ces derniers, j'avais peur que les étudiants ne me prennent pas au sérieux, qu'ils ne trouvent pas les activités utiles, ou qu'ils se questionnent sur l'utilité de passer du temps de classe à écouter des chansons. Je devais les préparer pour affronter les défis réels de l'enseignement en milieu minoritaire, alors aurais-je dû me concentrer plus sur les méthodes et théories pédagogiques? Ces doutes sont un sentiment commun chez les enseignants qui essaient quelque chose de nouveau en classe. Ils peuvent ressentir de l'anxiété face aux plaintes possibles venant des parents (Howard et coll., 2018), ou dans mon cas, des étudiants-mêmes. Ainsi, essayer quelque chose qui dévie de la norme comporte un certain risque pour la réputation de l'enseignant. Or, j'ai fait de la recherche pour prouver les bienfaits de l'intégration de la musique en classe, notamment pour la production et la compréhension orales (Goldberg, 2012; Kim et Choy, 2008; Trinick, 2012). Ainsi, au début de chaque cours, je présentais une chanson et une activité pédagogique en lien avec celle-ci. Encore une fois, j'ai fait un effort de présenter une diversité d'artistes et de styles de musique. Je désirais écrire une chanson avec eux : j'y ai réfléchi longuement et j'avais planifié que le dernier cours soit réservé à l'écriture d'une chanson qui résumerait leurs apprentissages. Cependant, je changeais constamment d'idée. En fin de compte, j'ai pris le risque et le même exercice a été fait avec deux groupes. En groupe classe, ils ont d'abord fait un remue-méninge du vocabulaire important du cours, puis ils ont écrit les paroles d'une chanson en vue de la présenter à l'autre professeure. J'ai choisi une chanson-modèle, et ils ont réécrit les paroles pour en faire leur propre chanson. Pour l'écriture, il se sont sous-divisés en petits groupes et ont collaboré pour arriver au produit final. Le résultat était alors deux chansons qui suivaient la même musique, mais qui avaient différentes paroles. Un groupe a même ajouté une danse et une étudiante s'est portée volontaire pour diriger la classe avec la chorégraphie.

Le fait de créer une chanson était une façon de collaborer et de vivre une expérience ensemble, mais surtout un exemple de l'a/r/tographie. En prenant un risque, j'ai rendu cette expérience possible, mais les étudiants ont eux-aussi pris un risque et j'espère qu'ils seront prêts à faire cela avec leurs propres élèves. En somme, la prise de risque authentique implique la croissance et le

développement et avant tout l'acceptation de soi (Howard et coll., 2018). Puisqu'un des objectifs principaux du cours est une réflexion sur sa propre identité linguistique, je souhaite que ce risque ait suscité une réflexion au sujet de leur propre identité. À refaire cette activité, j'aurais dû développer un travail réflexif qui demanderait aux étudiants de dessiner ce lien entre l'a/r/tographie, la prise de risques en éducation et leur identité linguistique, afin de mieux comprendre leurs expériences vécues.

CONCLUSION

En réponse à mon anxiété face à essayer quelque chose de nouveau, j'avais fait de la recherche pour justifier mes choix pédagogiques. Cependant, les étudiants ne m'ont jamais questionnée ouvertement sur les bienfaits de la musique, ou sur la raison pour laquelle j'avais choisi d'intégrer la musique dans ce cours. Les questions étaient surtout de nature pratique : « où trouves-tu toutes ces chansons en français? ». Un an après le cours, lorsque les étudiants faisaient leur stage final et enseignaient à temps plein, les questions par rapport à la musique continuaient. Ceci m'indique que l'expérience était non seulement durable pour plusieurs d'entre eux, mais qu'ils trouvaient l'utilisation de la musique en classe utile et qu'ils voulaient reproduire cette expérience avec leurs élèves. Ainsi, les référents culturels auxquels ils ont été exposés lors du cours se sont insérés dans leurs pratiques pédagogiques personnelles et sont devenus pour leurs élèves une représentation harmonieuse de leur identité linguistique et professionnelle. Je peux donc dire que le résultat était positif : les deux groupes avaient écrit une chanson et tout le monde l'avait chantée.

Les étudiants n'ont jamais su à quel point le choix de faire cette activité m'a tourmentée. Je suis fière du processus et surtout du fait que j'aie pris un risque et que j'aie osé faire les choses différemment : en effet, j'ai la ferme conviction que lorsqu'on est en milieu minoritaire, il faut impérativement oser. Je ne suis pas une artiste et si je suis devenue a/r/tographe, c'est parce que la langue, le temps et l'identité sont continuellement en interaction l'un avec l'autre et que l'a/r/tographie attire l'attention vers ces espaces dynamiques (Boulton et coll., 2017). Cette harmonie entre la musique et l'identité linguistique que je ressens est certainement le résultat de mes expériences variées en éducation dans des espaces dynamiques et divers. Avant (ou après) tout, je suis une enseignante qui a à cœur sa propre identité linguistique. Ainsi, je cherche et je présente les artistes musicaux même dans des cours universitaires parce que « l'artiste, par son œuvre, contribue à interroger et à faire évoluer la culture, à la rendre vivante et contemporaine. Il exprime sa vision du monde teintée par son cheminement identitaire et ses expériences culturelles » (Association canadienne d'éducation de la langue française, 2011, p. 21). Et si l'artiste fait cela à travers son œuvre, imaginez ce que l'enseignant peut faire à travers son œuvre.

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EMBRACING AMBIGUITY: THE INTERSECTION OF BIOLOGY, MUSIC, AND ART IN SECONDARY SCHOOL TEACHING FOR STUDENT CREATIVITY

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ABSTRACT. In these conversational field notes, two teachers reveal their experiences with creativity in contexts where students are encouraged to dwell in spaces of ambiguity and vulnerability in learning. Using anatomy to inform music pedagogy empowers students to work through metaphor-rich instruction in order to develop a grounded approach to artistic interpretation, while using fine art in the science classroom allows students of anatomy to explore the artistic possibilities of imagination in relation to the human body. In both cases, the crisscrossing of pedagogical lines from biology into music and music into art helped to transform students' relationships with ambiguity from being negative and closed-off, to positive and constructive.

S'OUVRIR ENVERS L'AMBIGUÏTÉ : L'INTERSECTION DE LA BIOLOGIE, LA MUSIQUE ET L'ART DANS L'ENSEIGNEMENT DE LA CRÉATIVITÉ AUX ÉLÈVES DU PALIER SECONDAIRE

RÉSUMÉ. Dans les relevés de recherches conversationnels si-dessous, deux enseignants révèlent leurs expériences avec la créativité des élèves dans des situations où ceux-ci sont encouragés à vivre dans des espaces d'apprentissage à la fois ambigu et vulnérable. L'utilisation de l'anatomie comme outil d'influence sur la pédagogie musicale renforce un enseignement riche en métaphores ainsi permettant aux élèves de développer une approche fondée sur l'interprétation artistique, tout comme l'intégration des beaux-arts dans les cours de sciences permet aux élèves en anatomie d'explorer les possibilités artistiques de l'imagination en accord avec le corps humain. Dans ces deux cas, le croisement des lignes pédagogiques de la biologie vers la musique, et de la musique vers l'art, a contribué à la transformation de comment les élèves perçoivent le concept de l'ambiguïté — passant d'associations négatives et fermées à des associations positives et constructives.

We write these notes from the field as neighbors and teachers, whose lives are inextricably linked through music, teaching, performance and art. In the week before a new school year, as sounds of Travis's trumpet students echo through the wall of our semi-detached homes, Tasha gets down to work on

deciding which piece of art she will draw for students on the chalkboard of her classroom in Gatineau, Quebec. Sometimes the pictures relate to teaching the biology courses she is assigned, and sometimes not. This year, she decides to welcome her grade nine students with a humorous drawing of the velociraptor from Jurassic Park (Figure 1).

FIGURE 1: Welcome message to new science students drawn in chalk

Our entwined journeys take us between the spaces of music, biology, and art, as Travis teaches trumpet students at a French-language high school in Ottawa, Ontario, while Tasha's daily routine of biology teaching with splashes of artistic creation lead toward the 3:30pm dismissal bell when she welcomes the after-school band into the music room. Some of these band students come over to take trumpet lessons with Travis next door later on in the evening, and so the cycle of teaching and learning literally comes home for us both. Though Travis's performances as Principal Trumpet of the Ottawa Symphony and member of the Central Band of the Canadian Armed Forces are a great portion of his career, Tasha and Travis still find time to trek to the rehearsal of the Ottawa Chamber Orchestra on Sunday nights — a semi-professional community group that plays orchestral favorites throughout the year — and where Tasha is a bassoonist. Each Monday morning, we both begin our pedagogical and performance journeys again, bidding each other farewell on our shared driveway, and travelling to our respective high schools to teach, and to our university classrooms as part-time professors of undergraduate students. Contemplating the renewal of this familiar cycle on a hot evening in August before the new school year, we shared a meal on the patio, asking ourselves how we "got here" after being friends for over a decade. What is the meaning of our teaching, performing, and artistic lives? And why does what we do matter?

In reading through the Call for Papers about Creative Pedagogues, we began to talk freely about our teaching, what kinds of things might help to define the role of the creative pedagogue, and whether our roles as music and science teachers have an impact on students' lives, identities, and their future participation in creative economies — and what those economies might be. As we unpacked what we do, we located our lives at the interstices of art and science, two fields seemingly disparate but linked together in the ways that we teach. To that end, we offer these notes as both a method and meditation on how creative thinking might be the result of embracing ambiguity – between fields of study often categorized by separate class periods and curricula, subject-specific regimes of testing and performance, and particular didactics about mastering knowledge about the human body. We investigate instead the ways that our curricular and artistic worlds reside in the liminal spaces between human biology and artistic expression, practice and study. And we suggest that our interdisciplinary and embedded approaches invoke heightened consciousness about the visceral and emotional humanness that makes both music and science possible, for students now and into the future.

The concept of creativity in music education literature has long been explored, most often to define it through "competing explanations [that] place a strong emphasis on specific psychological states or processes of individual composers" (Burnard, 2012, p.6). These ways of characterizing creativity as primarily emerging from composition and improvisation have become the basis for pedagogical texts aimed at music educators, which encourage them to foster their creative thinking through the implementation of composition and improvisation classes in preservice teacher education (Bernhard, 2013). Abramo and Reynolds (2015) note, however, that,

> …[t]his body of research has focused on creativity within music – the process of generating and having knowledge of music… [However,] becoming a creative musician or composer is not the same as, or guarantee of, becoming a creative educator, and thinking creatively about music does not necessarily lead to creative teaching. (p. 38, original emphasis)

Similarly, in science teaching, creativity is often defined by new teaching styles to reach predetermined objectives more interestingly. Davies and McGregor (2010) take aim at studies like those by Johnston (2005) who recommends,

> Practitioners with subject and pedagogical knowledge need to adapt their teaching to suit the learning objectives, the children and the context, and that they should make their own decisions about teaching styles and learning experiences, producing novel ideas for achieving objectives for the benefit of the children's learning. (p. 15)

Davies and McGregor (2010) rightly point out that "[w]hile this advice is certainly helpful, it doesn't seem to readily distinguish 'creative' science teaching from 'good' or 'effective' teaching" (p. 15). What we see in literature

about creativity in both science and music is an emphasis on the teacher as embodying internal creativity themselves, but with little direction about how being creative transfers to teaching creativity versus teaching creatively. As teachers and artists, we distinguish between pedagogy as an act of creative production, and pedagogy (whether one might define it as explicitly creative or not) whose aim is to foster creativeness in our learners. No doubt, both are entwined, as the creative pedagogue has a repertoire of innovative ideas to share about the way they see the world through an artistic lens; however, we suggest that teaching students to think and be creative is the larger goal of our work inside and outside the classroom, and thus we shift the focus to highlight how our pedagogies help students become creators and creative thinkers themselves.

In what follows, we offer the conversation that unfolded about our pedagogy on that hot summer night in August, and what kinds of practices we employ to enable students to nurture their creativity. We present the evidence of our praxis through a series of images and vignettes, leading us toward the notion that ambiguity in creativity fosters heightened consciousness about the self, identity, and learning.

Travis: First of all, private lessons are about demystifying things. It's really easy to just play for them, to show them how it's done. I am trying to remove myself, instead of giving a mystical "this is how do we do this." I think removing yourself has been underused in teaching. Some great trumpet pedagogues will say certain things or show it, and you take it because they're great players and you assume that what they are telling you is correct, but when you look at anatomy and science, you realize that their suggestions are not grounded in objective facts. You become disconnected and not conscious about what goes on with your own body. When I teach my students, I want them to think about their bodies. We look at the muscles together using an anatomy coloring book [Figure 2] and what roles you can assign to those muscles. After all, it's inside the mouth. This specific muscle will help you with that technique, so you focus on it. You can control it, develop it, and improve your technique. We look at the depressor labii inferioris and mentalis and learn that the lower lip does all the work. You can't really move the upper lip when you play, which they didn't know and it's not obvious, but we can work with moving all the muscles in the lower lip and chin after looking at the diagrams, even coloring them sometimes.

ORBICULARIS OCULI A
NASALIS B
LEVATOR LABII SUPERIORIS ALAEQUE NASI C
LEVATOR LABII SUPERIORIS D
LEVATOR ANGULI ORIS E
ZYGOMATICUS MAJOR F
ZYGOMATICUS MINOR G
RISORIUS H

FRONTALIS I
CORRUGATOR SUPERCILII J
ORBICULARIS ORIS K
DEPRESSOR ANGULI ORIS L
DEPRESSOR LABII INFERIORIS M
MENTALIS N
PLATYSMA O
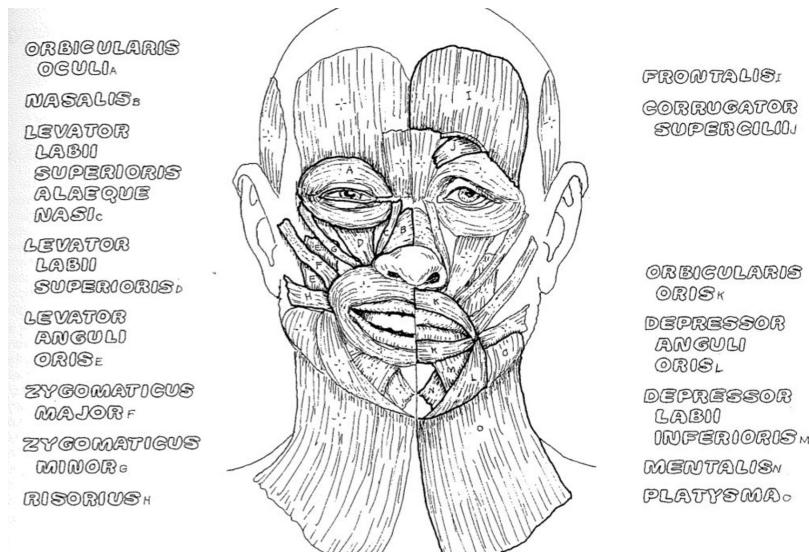
FIGURE 2: Facial Anatomy (Kapit & Elson, 2002)

Tasha: I've never thought about that in music teaching specifically. I mean, I talk about airflow and production from the diaphragm in wind playing with beginner band but I use a lot of metaphor with phrases like "think of it as a musical sentence" or try to "blow air to the back of the room" with a bunch of force and so on. But to point to the actual anatomy is new for me for my after-school band. It's not like in my science class because anatomy is front and center. I deal with it every day. The diagrams, the memorizing, but it used to be lost on some grade nine kids. There's so much information and they're like "why do I have to know this?" They're labelling parts of the lung with words from the digestive system like they don't get that they are living in this body. They're walking around with it not knowing what their own parts are, which is mind blowing to me. I kind of went the other direction, towards art and metaphor, not away from it.

Travis: In music pedagogy it's dangerous when all we have is that — metaphor. When anatomy and physiology are something we have extensive knowledge of at this point in the game. So there's no reason not to use it. You compare a sound to something in nature, or sometimes I use a pearl necklace. You seek definition between things that are linked together. You don't notice the individual pearl linking the whole chain together, just that there are distinct parts of a whole. But when you are teaching from a scientific perspective, you have the power to dwell in metaphor and spaces of ambiguity because you've started from a grounded position. From good technique, you can interpret. You can trust your technique will evolve, and you can actually understand and

apply metaphors like the pearl necklace better. Interpretation, personal taste, sound... they become a choice. Positive ambiguity is how I would define potential. Negative ambiguity is what causes self-doubt. Now you can go places with sound technique and you are empowered.

Tasha: Negative ambiguity is definitely hurting my grade nine science students. When they don't know what they are looking at or why it works, or why it matters, then they lose a grip on what I am trying to teach. The stress becomes evident with summative assessments, where they grab at answers that don't even make sense. Since I started putting my anatomy pictures on the board, and on Instagram, I am getting better results in our assessments. Kids find the pictures on Instagram and share them, or come into the room looking for this week's drawing. So I guess it's part of the formative process in the class. A heart diagram for a dissection one day started it all, but the ear got a great reception [Figure 3] because I saw it going around on kids' snapchats and students from other sections of the same course started coming in a lunch to take pictures.
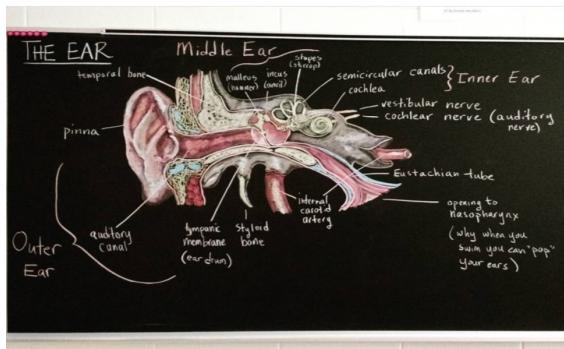

FIGURE 3 : Classroom chalk drawing of the human ear

What struck me the most were some quiet kids last year who were artists and dancers and musicians — who went home and, in some cases, drew their own pictures and brought them back to show me or give them to me as gifts. I had other kids popping in at lunch with their friends from other sections of the same course to show the drawings and explain the anatomy to them. So it kind of changed the morale overall. Some kids really treated it like a present and some asked why. Like, why are you doing this for us? But mostly there is a lot of excitement and anticipation so I just keep doing it.

Ambiguity and student consciousness

From our dialogue, it is clear that we both teach with and through the body in different ways. While Travis leans in towards anatomy as a way of demystifying trumpet playing, Tasha pulls away from the textbook diagrams to render them artistically for the primary reason of giving students something colourful and aesthetic to look at and contemplate – simply to show the beauty of the human body. By crossing curricular lines, we still did the work we hoped to do – demystifying and teaching the fundamentals of trumpet playing and scientific knowledge.

Davis (2004) asserts that creative people are comfortable with yet-unformed ideas, incomplete processes, and dissonant ideas. Abramo and Reynolds (2015) explain that the opposite of this is "cognitive closure" (p. 41), something DeBacker and Crowson (2009) found led students to

> force conclusions, seize on obvious solutions, and assume the veracity of erroneous ideas. Students uncomfortable with ambiguity were also more likely to be satisfied with a generalized understanding of a topic; they were less likely to explore a topic more deeply, frequently seeking out opinions and strictures that conformed to their preconceptions. in Abramo & Reynolds, p. 41

By crisscrossing into one another's conventional pedagogies to implement artistic modes of representation in the science classroom and scientific thinking for music education, we attempt to avert this kind of cognitive closure in our students, and our efforts seem to be gaining traction.

For Travis, giving the opportunity to understand one's anatomy via a coloring book (itself an artistic intervention into conventional science texts) became the place from which students could begin to explore interpretation. His middle and high school trumpet students allow themselves to enter the metaphorical world of musical artistry from a place of heightened consciousness about their bodies and the relationship with the instrument. Given the safety and intimacy of a private lesson where a foray into the anatomy book is both possible and guided by a knowing pedagogue, we assert that students feel more comfortable exploring new and uncomfortable concepts when they belong to an environment that permits and encourages such explorations. Then, the confidence of technical improvement allows students to return to the trumpet day after day, and they begin to enter the interpretive space where they can explore metaphors like the pearl necklace. Furthermore, they don't quit playing the trumpet early on, as many students do who become frustrated. By reducing negative ambiguity and self doubt, students seem to sense they are in good hands, and like in all good learning relationships, this feeling evolves over time. Students always entrust teachers with their learning up front, but it is up to us as pedagogues to curate this trust and to lead students to positive spaces of ambiguity, where opening the doors to imagination is possible.

For Tasha, the chalk art on the board resonated with students in its simplicity — pictures drawn quickly from a six-pack of Crayola coloured chalk between classes or at lunch. They saw that some of the things produced in a science classroom were not defined foremost by the binary of right- or wrongness, and that they could be beautiful. Drawing large pictures worked to demystify science in ways that textbook diagrams of a similar variety did not. It became evident that the intimacy of drawing for the students allowed the doors of their imaginations to be thrust open. While the students might have arrived in the space with negative ambiguity of not knowing labels and functions for which they were inevitably responsible on upcoming unit tests, they shared a common anticipation and excitement about the art awaiting them. What was unknown became something to explore and to challenge them. Perhaps on account of exhibiting joy about the drawings viewed as a "present" waiting for them each week, students could take rightful ownership of the gift given to them — leading them to draw, text, snapchat, and Instagram the board drawings and their own, and to enter the learning space more positively. Tasha saw a change from negative ambiguity to positive questioning on account of students' awareness — a heightened consciousness about why being there matters — to the teacher and to them.

Finally, dwelling in the space of our own ambiguities in embarking on these learning strategies — stepping away from the ways we were taught as children to master the human body — literally puts on display our own vulnerabilities. Through our willingness to dwell in spaces of ambiguity as we embark on unusual entry points to teaching subjects we know well, we show children that part of being more conscious about creativity is to take risks, and to risk failure foremost. Though we continue to travel in opposite directions — Travis away from the subjectivity inherent in artistic creation, and Tasha towards it — the journey that students both witness and in which they partake, continues to embolden them to look outside the parameters of subject-specific learning. We might hope that as a new school year begins, the artists in the science classroom will continue to pull out their sketchbooks from under their notes and follow their instincts and imaginations. And we hope that Travis's students will continue to reach into scientific knowledge to empower their artistic intuitions in ways that are reliable and grounded so that they can then interpret the metaphorical concepts such as tone colour and the storyline in phrasing with a grounded sense of their own bodies.

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