

LEARNING ECOSYSTEMS: CONNECTING SOCIAL CONSTRUCTIVISM
AND DISTANCE LEARNING

A Thesis Submitted to the
College of Graduate and Postdoctoral Studies
In Partial Fulfillment of the Requirements
For the Degree of Doctor of Philosophy
In the Department of Curriculum Studies
Educational Technology and Design
University of Saskatchewan
Saskatoon

By
Racquel Biem

© Copyright Racquel Biem, April 2022. Unless otherwise noted, copyright of the material
in this thesis belongs to the author.

Permission to Use

In presenting this thesis/dissertation in partial fulfillment of the requirements for a Postgraduate degree from the University of Saskatchewan, I agree that the Libraries of this University may make it freely available for inspection. I further agree that permission for copying of this thesis/dissertation in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professors who supervised my thesis/dissertation work or, in their absence, by the Head of the Department or the Dean of the College in which my thesis work was done. It is understood that any copying or publication or use of this thesis/dissertation or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis/dissertation.

Requests for permission to copy or to make other uses of materials in this thesis/dissertation in whole or part should be addressed to:

Head of the Educational Technology and Design Department

University of Saskatchewan

Saskatoon, Saskatchewan

OR

Dean

College of Graduate and Postdoctoral Studies

University of Saskatchewan

105 Administration Place

Saskatoon, Saskatchewan S7N 5A2

Canada

Acknowledgements

This research would not have been possible without the collaborative community that supported me from beginning to end. First, I would like to thank all of my fellow colleagues throughout the province who were willing to share their experiences with me. Without you, this research would not have happened. I'm deeply indebted to my supervisor, Dr. Dirk Morrison, whose belief in my abilities and guidance and support were invaluable throughout my entire journey. Thank you to my dream team research committee, Dr. Rick Schwier, Dr. Marguerite Koole, and Dr. Dawn Wallin— your insights, time and effort are greatly appreciated. Huge thanks to the McDowell Foundation for supporting my work and advancing the work of teachers throughout the province. I would have not made it through this journey without the wonderful team of women surrounding me and cheering me on – to my DMD support team, the rare birds, the 'bad ass' women, and the women who keep going even when it's hard— thank you. To my family who always checked in on me to see if I was leaving the office, to my mom for reading my early writing, to my kids for their support, and especially to my husband. You are amazing, it is not lost on me that my journey was your journey too.

Abstract

Social constructivist teaching practices are understood to foster deep learning through socio-cultural interactions, asserting that individual learning is limited in comparison to what can be learned as a community. Social constructivist principles are embedded within Saskatchewan curricula with little mention of how that might be achieved in asynchronous distance learning. The lack of direct connections places a burden on distance learning teachers, policymakers, and course designers to discover how to actualize social constructivist education practices, within an asynchronous learning environment. This mixed methods study used an online survey and semi-structured interviews to understand teachers' experiences with social constructivist practices in high school asynchronous distance learning within Saskatchewan.

Through the reflexive thematic analysis of the semi-structured interviews and the open-ended survey questions, three themes were constructed. The "Teacher as Catalyst" theme identified the dynamic role that teachers take on to be responsive to student learning needs (e.g., creating flexible learning paths, increasing resources, and strengthening relationships). The theme "Student Agency" represents two key teacher perspectives regarding students' reluctance to take part in collaborative learning with peers. Namely, student readiness and student buy-in. The final theme, "Alignment of Purpose, Pedagogy, and Person" depicts how the learning ecosystem influences pedagogical decisions and the learning experiences of students.

The findings support the integral role of student-teacher relationships to support learning and suggest that under the right conditions, the intent and stance of the Saskatchewan curricula can be achieved in asynchronous distance learning environments provided there is an alignment in purpose, pedagogy, and person. However, the research findings did not support a strong student desire for social constructivist practices.

CHAPTER ONE: INTRODUCTION.....	1
Introduction.....	1
Saskatchewan K-12 Education	2
History of Saskatchewan Distance Learning	3
Researcher Positioning.....	4
Purpose of the Study	5
Research Question	6
Delimitations.....	6
Data Collection	6
Significance of the Study	6
Definition of Terms.....	7
Organization of the Thesis	9
CHAPTER TWO: LITERATURE REVIEW.....	10
Literature Review.....	10
Deep Learning.....	10
Social Constructivism as an Education Theory	11
<i>Collaborative learning</i>	15
<i>Student Agency</i>	16
<i>Flexible Student-centred Learning Path</i>	17
<i>Deep Learning Tasks</i>	18
<i>Summary of the Four Aspects of Social Constructivism</i>	18
<i>Critiques of Social Constructivism</i>	19
Distance Learning Frameworks Supporting Social Constructivism.....	20
<i>Learner Interaction</i>	20
<i>Transactional Distance Theory</i>	21
<i>Transactional Presence</i>	22
<i>Community of Inquiry</i>	23
<i>Academic Community of Engagement</i>	25
Distance Learning Ecosystem.....	28
<i>The Environment</i>	30
<i>Reciprocal Relationships</i>	34
<i>Change Over Time</i>	35
<i>Summary of Learning Ecosystem</i>	36
Summary of Literature Review.....	36
CHAPTER THREE: METHODOLOGY	37
Mixed Methods Design.....	37
Participant Selection	38
Data Collection	39
<i>Surveys</i>	39
<i>Semi-Structured Interviews</i>	41
Data Analysis	42
<i>Surveys - Descriptive Analysis</i>	42
<i>Interviews and Open-Ended Responses in Surveys - Thematic Data Analysis</i>	42
Data Management	43
Ethical Considerations	44
Trustworthiness.....	44

Summary	45
CHAPTER FOUR: FINDINGS.....	46
Survey Data Analysis: Descriptive Findings	46
Summary of Survey Analysis	55
Interview Analysis	55
Phase 1: Familiarizing yourself with your data	56
Phase 2: Generating initial codes	58
Phase 3: Searching for themes	58
Phase 4: Reviewing themes	59
Phase 5: Defining and naming themes.....	60
Phase 6: Producing the report	61
Teacher as Catalyst	61
<i>Deep Learning Tasks</i>	63
<i>Student-teacher Relationships</i>	65
<i>Strengthen learning environment</i>	67
<i>Flexible Student-centred Course Design</i>	69
<i>Supporting Student Engagement</i>	71
Supporting the Catalyst Teacher.....	82
Importance of Viewing the Teacher as a Catalyst	84
Student Agency	86
<i>Student Readiness Skills</i>	87
<i>Student Buy-in</i>	92
<i>Student Readiness: Fixed or Flexible</i>	99
Alignment of Purpose, Pedagogy, and Person.....	100
<i>Purpose</i>	100
<i>Pedagogy</i>	101
<i>Person (The Student)</i>	103
<i>Alignment or Disconnect</i>	104
<i>Summary Alignment between the Purpose, Pedagogy, and Person</i>	108
CHAPTER FIVE: CONCLUSION.....	110
Teacher as Catalyst	111
Student Agency	113
Alignment between Purpose, Pedagogy, and Person.....	114
Barriers to Social Constructivist Approaches in High School ADL.....	115
Recommendations to Strengthen Distance Learning Ecosystems	116
<i>Distance Learning Policy</i>	116
<i>Elevating the Distance Learning Profile</i>	119
<i>The Problem of Homogeneous Pedagogy</i>	119
<i>Distance Learning Processes and Skill Acquisition as an Outcome</i>	121
<i>Institutional Support</i>	123
<i>Shift from Group Work to ‘Supporting the Thinking of Others.’</i>	124
<i>Designing Courses for Emotional Engagement</i>	124
<i>Further Research</i>	125
<i>Limitations</i>	127
Concluding Thoughts/Statements	127
REFERENCES.....	129
APPENDIX A.....	145

Initial E-mail Contact: Superintendent or Designate of School Division.....	145
APPENDIX B	148
Initial E-mail Contact: Cyber School Teachers	148
APPENDIX C	150
Initial E-mail Contact: Principals of Cyber Schools.....	150
APPENDIX D	152
Survey Questions	152
APPENDIX E	158
Semi-structured interview questions.....	158
APPENDIX F	160
Participant Consent Form Interview	160

Figures

Figure 1.1: Saskatchewan School Division Map.....	3
Figure 2.1: Four Aspects of Social Constructivism.....	15
Figure 2.2: Community of Inquiry.....	24
Figure 2.3: ACE Framework	26
Figure 2.4: Sample Learning Ecology Heuristics.....	29
Figure 2.5: Categories of a Distance Learning Ecosystem.....	30
Figure 3.1: Checklist for Thematic Analysis.....	43
Figure 4.1: Paired Comparisons Measuring Contrasting Teacher Beliefs.....	48
Figure 4.2: Types of Interaction	49
Figure 4.3: Learning Approach Assessment.....	49
Figure 4.4: Teachers Use of and Interpretations of Effectiveness.....	51
Figure 4.5: Tools and Critical Thinking Skills	51
Figure 4.6: Tools and Building Community.....	51
Figure 4.7: Tools and Effectiveness Supporting Student Ownership of Learning.....	52
Figure 4.8: Largest Influence on Student Learning	53
Figure 4.9: Teacher Barriers to Collaborative Learning.....	53
Figure 4.10: Student Barriers to Collaborative Learning	54
Figure 4.11: Environment/Context Barriers to Collaborative Learning.....	54
Figure 4.12: Necessary for Distance Learning Success.....	55
Figure 4.13: Theme Diagram.....	60
Figure 4.14: Reducing Unproductive Learning Struggle.....	62
Figure 4.15: Personalized More Efficient Pathway.....	62
Figure 4.16: Facilitating Deep Learning Through Strengthening the Environment.....	63

Tables

Table 2.1: Deep Versus Surface Learning	11
Table 2.2: Social Constructivism.....	13
Table 3.1: Purpose, Research Questions, and Data Sources.....	39
Table 4.1: Time Schedule: Primarily Asynchronous or Synchronous.....	46
Table 4.2: Student Start Times and Pacing.....	47
Table 4.3: Contrasting Statements of Distance Learning Approaches	48
Table 4.4: Beliefs about Collaborative Learning.....	50
Table 4.5: Deep Learning Tasks	64
Table 4.6: Flexible Student-Centred Course Design Elements	69
Table 4.7: Engagement Categories, Purposes, and Strategies	72
Table 4.8: Scaffolding Content, Clear Due Dates, and Adding Exemplars.....	74
Table 4.9: Emotional Engagement Strategies.....	76
Table 4.10: Intellectual Engagement Strategies	79
Table 4.11: Supporting Student Self-Regulation.....	88
Table 4.12: Low Risk Collaborative Strategies.....	98
Table 4.13: Purposes of Distance Learning Programs.....	101
Table 4.14: Diverse Pedagogies.....	102
Table 4.15: Reasons Students Take Distance Learning.....	103

Abbreviation of Terms

ACE Framework (2014)	Adolescent Community of Engagement Framework
ACE Framework (2020)	Academic Communities of Engagement Framework
DL	Distance Learning
IP	Interview Participant
K-12	Kindergarten to Grade 12
ADL	Asynchronous Distance Learning
SC	Social Constructivism
SP	Survey Participant
TD	Transactional Distance
TP	Transactional Presence
U of S	University of Saskatchewan

CHAPTER ONE: INTRODUCTION

Introduction

This research sought a holistic understanding of the processes, contexts, and policies that support social constructivist practices in high school asynchronous distance learning in the Canadian province of Saskatchewan. Much distance learning research and future visioning in Saskatchewan was done in the late 1990's and early 2000's (Brown, 2000; Fleming & Pain, 1996; O'Brodovich, 1997; Saskatchewan School Trustees' Association Research Centre, 1995). Since that time, research and recommendations have been largely absent with little to no follow up on a Saskatchewan distance learning framework.

A social constructivist teaching approach is embedded within Saskatchewan K-12 curricula. Social constructivism is “an established educational theory based on the principle that learners and teachers co-construct knowledge through social processes” (Salmons, 2009, p. 280). Although Saskatchewan curricula promote the use of social constructivist practices (e.g., collective achievement, willingness to collaborate, communitarian thinking and dialogue), there is a notable absence connecting this approach to *asynchronous distance learning* where there is limited, if any, real-time communication (Thompson, 2001).

Lack of reference to asynchronous distance learning (DL) within Saskatchewan curricula may stem from, a) the small “footprint” distance learning had in the education system at the time of curricula renewal, b) a lack of understanding of how asynchronous learning contexts differ from traditional learning contexts, or c) an assumption that asynchronous distance learning is synonymous with self-paced independent paper correspondence courses, limiting consideration of collaborative approaches. Given the recent temporary physical school closures due to COVID-19 in Saskatchewan (Giles, 2020), the distance learning “footprint” significantly increased as all Saskatchewan teachers were thrust into *emergency remote learning*, quickly providing accessible learning content (Hodges et al., 2020) from March to June 2020. It is a goal of this research to examine and illuminate high school asynchronous distance learning (ADL) processes that support student learning to benefit future generations of distance learning teachers and students.

Saskatchewan K-12 Education

Saskatchewan's K-12 education system is composed of both provincially and federally funded education systems. The *federally funded* education system funds education for students living on First Nations attending K-12 schools (Government of Canada, 2018) including 84 Band Council or First Nation education run schools (Indian and Northern Affairs Canada, n.d.).

The *provincially funded* education system includes 27 school divisions (18 public school divisions, 8 separate Roman Catholic school divisions, 1 separate Protestant school division and 1 francophone school division) (Perrins, 2016). Currently Saskatchewan has 186,036 K-12 students enrolled in the federally funded school system (State of the Nation, 2022). There are 780 K-12 schools, including 59 small schools of necessity (the schools are at least 40km away from the nearest similar school and have an average of 14 students per grade) and 20 urban centres (centres with populations greater than 5,000) with approximately 43% of Saskatchewan schools (335) within the urban centres (Saskatchewan Ministry of Education, 2021). As seen in the Figure 1.1, the Saskatchewan publicly funded school system has 13 expansive school divisions. The largest, Northern Lights School Division, covers approximately half the province (Perrins, 2016).

Online schools in the province in 2020, according to State of the Nation: K-12 E-Learning in Canada (2022), included

16 provincial schools in 13 school divisions, one independent school, and one First Nation educational authority that [were] active and recognized K-12 online schools. During the 2019-20 school year, there were 13,666 course enrolments involving 8,138 unique students in Grades 10 to 12. (para. 4)

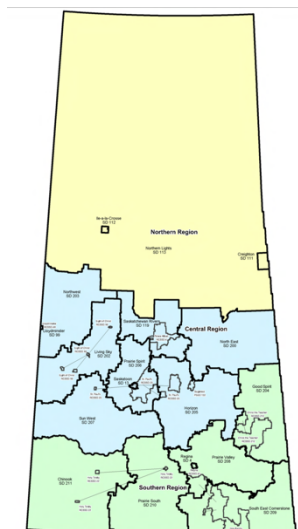


Figure 1.1: Saskatchewan School Division Map
Saskatchewan School Boards Association, (2012, p.14).

History of Saskatchewan Distance Learning

Distance learning began in 1927 in Saskatchewan with the Saskatchewan Correspondence School that provided pre-packaged paper correspondence courses for students in remote areas without access to schools (Luciuk, 2007). Pre-packaged paper correspondence courses were known for their lack of support and assuming internal student motivation for success (Anderson & Dron, 2012). By 1997, the Saskatchewan Correspondence School was offering over 60 courses for Grades 9-12, which by this time included one way video satellite courses and digital resources (e.g., compact disks, cassette tapes) (O'Brodovich, 1997).

The Saskatchewan Ministry of Education Correspondence school closed in 2009 (Saskatchewan Government, 2010), removing the centralized distance learning model operating out of the Saskatchewan Ministry, to a decentralized model where each school division was responsible for providing its own distance learning programs. This change occurred without explicit provincial distance learning policy or funding. Some divisions did not have the resources or were not large enough to build local distance learning programs. These divisions, then, became “consumers” of distance learning courses from school divisions that were willing to sell their courses (typically at the \$500 per course precedent set by the Ministry run correspondence school).

Since the COVID-19 pandemic in 2020, all schools implemented some form of distance learning to meet education needs during school closures. Many divisions without previous

distance learning programs were thrust into building programs quickly. This type of distance learning became known as *emergency remote learning* where the purpose was “not to re-create a robust educational ecosystem but rather to provide temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency crisis” (Hodges et al., 2020). I anticipate many of these new distance learning programs to evolve and continue in some form after the pandemic.

Researcher Positioning

This section provides clarity about my internal bias and positionality as an inside member of the high school ADL community in SK. Transparency with my researcher positioning increases trustworthiness of the research findings. As a constructivist researcher, I acknowledge I am shaped by my lived experiences and “these will always come out in the knowledge we generate as researchers” (Lincoln et al., 2018, p. 117).

My interest in engaging in this research stems from my experiences as a high school ADL teacher in SK. As a distance learning teacher, I come to the research with notions of personal best practices and experiences of “successes” and “failures” within high school ADL. Socially constructed learning is not always successful, students are not always motivated to connect, and there are factors beyond my control to support student success (e.g., organizational structure, funding, attitudes). I also experience frustration with the time it takes to build meaningful learner-learner interactions in distance learning balanced with the learning benefits. I question whether I might be “better off” building less social interaction at the expense of deeper learning if it means a reduction in “feeling like a fulltime nag” trying to get students to socially engage.

I have had various degrees of success with social constructivist learning but, when it works, I see its transformational benefits. Personal experience leads me to believe that socially constructed distance learning practices enhance learning (e.g., increased engagement and interest) in comparison to individual learning, but I am unsure if this is true for all students and in all contexts. I am unsure if a social constructivist approach to distance learning is fully understood, attempted, or desired, perhaps resulting in missing potential transformational benefits (e.g., flexible learning, student agency, global connections, critical digital literacies). I continue to advocate for high expectations and adequate support for high school ADL in the

province. I want to make it as easy as possible for even the most inexperienced teachers to engage in quality distance learning practices.

I often find myself in the role of defending distance learning to others who provide small “jabs” that imply distance learning provides a low-quality education. This is not a new phenomenon, outsiders have often seen distance learning as a “lesser education” or “poor second cousin” (Anastasiades et al., 2008; Macken et al., 2021; Vadillo, 2010), despite research showing there is no significant difference in student outcomes between the two (Chandra & Lloyd, 2008; Fendler et al., 2018; Wu, 2015). I do not suggest low quality distance learning courses measuring surface learning do not exist. I am sure they exist as much as they do in face-to-face environments. However, the term “quality distance learning” is up for debate and I have a subjective and limited view of effective distance learning practices. For example, all my high school ADL teaching experience has been within one school division. A unique feature of my division is that it only offers distance learning to students within the division and is designed to meet the needs of rural students in schools that require distance learning credits for graduation. This contrasts with other divisions that may focus on distance learning as an “additional choice” for urban students and/or actively recruit students external to their division.

As an internal member of the community, I have a vested stake in the research such that the findings will have a positive impact on my students, colleagues, and distance learning in general in the province. My research assumes that there is a shared common interest exists in gaining a better understanding of effective distance learning practices that support deep learning. I am drawn to Stake’s (1995) comment that “all researchers have great privilege and obligation: the privilege to pay attention and the obligation to make conclusions drawn from those choices meaningful to colleagues and clients” (p. 49). It is my hope that the research findings will connect social constructivist approaches to distance learning that will benefit the distance learning community in SK.

Purpose of the Study

The purpose of the study is to explore how social constructivism is, if at all, actualized through high school ADL. The research is informed and interpreted using the theoretical lens of social constructivism, as an educational theory to improve instructional practice, generally (Hirtle, 1996; Leithwood et al., 2006; Moore, 1997; Salmons, 2009; Vygotsky, 1978). The research also used a learning ecosystem conceptual framework (Bronfenbrenner, 2005; Jackson,

2013; Johnson & Cooke, 2016; Nardi & O'Day, 1999) to further understand and interpret the interactive and complex processes that support distance learning. Both are detailed in Chapter Two.

Research Question

The following central research question guided the study:

- How do teachers actualize socially constructed learning in high school ADL?

Sub-questions that are embedded under this core question are:

- What are teachers' experiences with creating socially constructed learning opportunities?
- What processes/strategies do high school ADL teachers identify as best practices?
- Why do high school ADL teachers make the instructional choices they do?
- How might the current high school ADL be strengthened to support social constructivist learning?

Delimitations

Since elementary versus high school, synchronous versus asynchronous, and private versus publicly funded schools have contextual differences affecting teaching practices (e.g., cognitive and developmental stages, motivation, communication strategies, curricular outcomes), the target population chosen was *high school* asynchronous distance learning teachers within publicly funded school divisions in Saskatchewan.

Data Collection

I collected data from online surveys and semi-structured interviews. I sought participation in the online surveys from all high school ADL teachers across Saskatchewan, where divisions had given consent and contact information was available. The online surveys were used, a) for a descriptive analysis of the target population (i.e., high school ADL teachers in SK), b) to collect open-ended responses from the larger population, and (c) as a recruitment tool for teachers to self-select as possible participants in the semi-structured interviews. The semi-structured interviews (Merriam, 2009) were used to gain an in-depth understanding of high school ADL teaching processes that would not be possible through a survey.

Significance of the Study

Much of the current research on collaborative learning in distance learning contexts occurs in higher education where, compared to high school, students experience different

motivating factors, developmental stages, and learning contexts (CoI Framework, 2018; Garrison et al., 1999; Moore, 1997; Stenbom, 2018). For example, parents are integral to supporting student learning in the K-12 system (Pushor, 2019) but tend to not have as much involvement with their adult children's learning. Furthermore, high school ADL in Saskatchewan is largely associated with self-paced individual learning, a marked difference from higher education distance learning, where students are often paced as a cohort.

Given that enrollment in K-12 distance learning in Saskatchewan has more than quadrupled from 2009 to 2020 (State of the Nation, 2021), and in 2021 all teachers implemented emergency remote learning (Hodges, et al., 2020), illuminating asynchronous distance learning teaching practices that facilitate deep learning is timely. This research is needed to connect high school social constructivist curricular goals (e.g., depth of knowledge, collaboration, student agency) (Saskatchewan Ministry of Education, 2010) to asynchronous distance learning practice.

Definition of Terms

Social Constructivism - “An established educational theory based on the principle that learners and teachers co-construct knowledge through social processes” (Salmons, 2009, p. 280). Additionally, “designing, planning and teaching with collaborative e-learning activities based on principles of e-social constructivism will measurably improve learning outcomes as well as learner engagement and satisfaction” (Salmons, 2009, p. 292).

Collaborative Learning – describes learning opportunities where individuals actively learn with and from others. Collaborative learning is intentionally designed, meaningful, and reciprocal (Barkley et al., 2014).

Deep Learning – “The critical analysis of new ideas, linking them to already known concepts and principles, and leads to understanding and long-term retention of concepts so that they can be used for problem solving in unfamiliar contexts. Deep learning promotes understanding and application for life” (Houghton, 2004, p. 9). Additionally, deep learning “develops the learning, creating and ‘doing’ dispositions that young people need to thrive now and in their futures” (Fullan & Langworthy, 2014).

Surface Learning – “The tacit acceptance of information and memorization as isolated and unlinked facts. It leads to superficial retention of material for examinations and does not promote understanding or long-term retention of knowledge and information” (Houghton, 2004, p. 9).

Distance Learning (DL) - refers to learning where the teacher and student are separated by space and/or time and occurs outside of the face-to-face instructional setting in (Saskatchewan Teachers' Federation, 2022). The learning is typically delivered via technology (e.g., an online learning management system - LMS). Sometimes, where technology is unavailable or limited, distance learning is delivered via paper courses or self-contained digital files (i.e., correspondence learning).

Online Learning - refers to learning delivered through an online learning management system (LMS) and is often used interchangeably with distance learning.

Emergency Remote Learning (ERL)– refers to a temporary, often abrupt, shift in teaching and learning environments due to a crisis situation, often from face-to-face to remote learning. The objective of ERL is “not to re-create a robust educational ecosystem but rather to provide temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency crisis” (Hodges et al., 2020).

Asynchronous Distance Learning - Distance learning where students and teachers are not regularly scheduled to communicate simultaneously (Thompson, 2001).

Synchronous Distance Learning - Distance learning where students and teachers are separated by physical space but communicate via online communication simultaneously (Thompson, 2001). Typically, teachers and students connect through regularly scheduled video conferences. Some asynchronous communication may take place, but synchronous learning instruction is a large part of the mandated design.

Student Agency - Student “agency” to refer to students having a more active voice in their learning (Rodriguez & Berryman, 2002). Student agency is often used interchangeably with student ownership (Driscoll, 2005) where the student takes responsibility for their learning, including participating in and contributing to collaborative learning.

Student-Centred Learning - Student-centred references putting the interests of the student at the forefront of learning experiences (Crumly et al., 2014). Student-centred learning considers the relevance of content (e.g., student interest and personal benefit) and student agency (O'Neill & McMahon, 2005).

Deep Learning Tasks - Deep learning tasks are tasks that “engage students in practicing the process of deep learning through discovering and mastering existing knowledge and then creating and using new knowledge in the world” (Fullan & Langworthy, 2014, p. 21).

Learning Ecosystem - describes connections between learners and their environment that are complex, dynamic, personal, relational, and reciprocal, considering both pedagogical processes *and* physical environment to support learning. Learning ecosystems include the processes, context, relationships, interactions, and technologies that provide opportunities for learning (Jackson, 2013). Learning ecology, learning ecologies, and learning ecosystems are often used interchangeably.

Learning Environment - people (e.g., peers, teachers, parents, policy makers, community members) and objects (e.g., policies, practices, resources, technologies, etc.) that affect the learner (Johnson & Cooke, 2016). The relationships between the people and objects in the environments make it an “ecosystem.”

Organization of the Thesis

This study is organized into five chapters. The first chapter introduced the research purpose, researcher positioning, and provided rationale for the significance of the study. The second chapter provides a review of related literature. Chapter three provides an overview of the methodology that guided the study. Chapter four presents the data analysis and findings from the study. Chapter five summarizes each theme with direct connections back to the research questions and provides recommendations to strengthen a social constructivist approach to high school asynchronous distance learning and recommendations for future research.

CHAPTER TWO: LITERATURE REVIEW

Literature Review

In this literature review, I first define learning, specifically deep learning in relation to the overarching goals of education. Next, I analyze social constructivism as an educational theory to support deep learning. Then, I examine distance learning theoretical frameworks aligning with social constructivism. Finally, I situate social constructivist distance learning within the concept of a synergetic learning ecosystem.

Deep Learning

Driscoll (2005) defines learning as “a persisting change in human performance or performance potential” (p. 9) that is the result of a learning experience. Driscoll further notes the importance of the teacher’s role in finding good indicators of learning. Many researchers make a distinction between deep versus shallow learning (Fullan et al., 2017; Marto & Säljö, 1976; Offir et al, 2008).

Let us imagine three students who have just completed the same online lesson about the water cycle. Student #1 can repeat back to the teacher information about the water cycle that was presented in the lesson. This student shows their learning by paraphrasing the information presented. Student #2 can make predictions about how different environmental changes might affect the water cycle. This student shows their learning by making informed judgements with teacher provided scenarios. Finally, Student #3 can see how their actions and that of their community are negatively affecting the quality of ground water, in turn, affecting wildlife in the area. This student shows their understanding by creating a community action plan to persuade people to make improvements. These simplistic scenarios illustrate a continuum from surface learning, (student #1 showing a recall of basic facts), to deep learning (student #3 making meaning of new information and relating it to their life experience).

Through deep learning processes, students’ thinking skills (e.g., problem solving, critical analysis) are improved (Offir et al., 2008). Whereas “surface learning” does not necessitate changes to existing thought processes. Deep learning, therefore, becomes more than memorizing information. Rather, deep learning, according to Fullan et al. (2017),

develops the learning, creating and ‘doing’ dispositions that young people need to thrive now and in their futures...Deep learning is more natural to the human condition because it more clearly connects with our core motivations: to directly and deeply engage in learning; and to do things that truly make a difference to our lives and to the world. In the best examples, teachers and students are teaming up to make learning irresistibly engaging, and steeped in real-life problem-solving. (p. i)

Deep learning as an overarching goal of education (Fullan et al., 2017) can be realized through constructivist teaching and learning practices (e.g., collaboration, deep learning tasks) (Saskatchewan Ministry of Education, 2010; Storey, 2017). However, as deep learning is closely tied to increased dialogue (often in face-to-face contexts), the mode of asynchronous distance learning poses challenges with reduced teacher and peer interaction (Offir et al., 2008). Houghton (2004) summarizes deep learning as a process of “examining new facts and ideas critically and tying them into existing cognitive structures and making numerous links between ideas,” and surface learning as “accepting new facts and ideas uncritically and attempting to store them as isolated, unconnected items” (p. 11). Table 2.1 summarizes characteristics of students engaged in deep learning versus surface learning.

Table 2.1: Deep Versus Surface Learning

Deep Learning	Surface Learning
Looking for meaning. Focusing on the central argument or concepts needed to solve a problem. Actively interacting with information/concepts. Distinguishing between argument and evidence. Making cross curricular connections. Relating new and previous knowledge. Linking course content to real life.	Relying on rote learning. Focusing on outwards signs and the formulae needed to solve a problem. Receiving information passively. Not recognizing new material as building on previous work. Seeing course content simply as material to be learnt for the exam.

Adapted from Biggs (1999), Entwistle (1988), and Ramsden (1992) as cited in Houghton (2004)

Below I analyse social constructivism, as a means to support deep learning

Social Constructivism as an Education Theory

Johnson (2014) noted two purposes of educational theory. “First, it provides a vocabulary and a conceptual framework for interpreting observations of teaching and learning. Second, it suggests solutions to improve teaching and learning under a range of circumstances including,

recently, interactive online environments” (p. 298). Social Constructivism, as an educational theory, has its roots in the writings of seminal authors, namely Dewey (1859-1952), Piaget (1896-1980), Vygotsky (1896-1934), and Bruner (1915-2016). Social constructivist education theorists assert it is not enough to repeat and reproduce knowledge, but for meaningful learning to occur one needs to be actively involved in the learning process; one learns better through action versus repetitive, rote memorization (Salmons, 2009; UCD Teaching and Learning, n.d.). Learning in a social constructivist environment, is a process of “collaboratively making sense of theories, mentoring, and joint knowledge construction” (Verenikina, 2010, p. 23). Social constructivism can provide a foundation for distance learning teaching and learning strategies that elicit deep learning.

Consider for example, Student #3, as described previously, who is proposing an action plan to improve water quality. The student’s action plan can be created individually; however, the student may miss potential pitfalls of the plan without discussing the strengths and weaknesses of the plan with others. Through social interaction, new knowledge and increased viewpoints can be introduced that may strengthen the action plan. Table 2.2 briefly summarizes resurgent themes in social constructivism as an educational theory.

Table 2.2: Social Constructivism

Definition			
“An established educational theory based on the principle that learners and teachers co-construct knowledge through social processes” (Salmons, 2009, p. 280).			
Assertions			
“Designing, planning and teaching with collaborative e-learning activities based on principles of e-social constructivism will measurably improve learning outcomes as well as learner engagement and satisfaction” (Salmons, 2009, p. 292).			
Assumptions			
Students will learn more through interaction with others than they will individually (Barbour & Rich, 2007; Scardamalia & Bereiter, 2014).			
Social constructivist practices lead to deep versus surface level learning (Entwistle & Tait, 1993; Laal & Ghodsi, 2012).			
Learning processes cannot be separated from learning content (Siemens, 2007).			
Learning is about giving meaning to concepts (Hirtle, 1996; Zittoun & Brinkmann, 2012).			
SC Teaching/Education Characteristics:	Teaching processes:	Student Action:	SC Teaching Strategies:
<p>Student ownership of learning/student-led learning.</p> <p>Collaborative learning.</p> <p>Flexible learning.</p> <p>Reciprocity.</p> <p>Critical and creative thinking.</p> <p>Discussion.</p> <p>Creation.</p> <p>Exploration.</p> <p>Reflection.</p> <p>Communitarian thinking.</p>	<p>Active teacher presence.</p> <p>Scaffolding content and learning processes.</p> <p>Teacher as learning coach.</p> <p>Co-creating learning with students.</p> <p>Support a risk-taking culture.</p> <p>Attending to cultural context, student experience, and prior knowledge.</p> <p>Building trusting and safe learning communities.</p> <p>Strengthening community networks.</p>	<p>Posing inquiry questions.</p> <p>Showing interest in going beyond surface level learning.</p> <p>Application of concepts in unfamiliar situations.</p> <p>Showing social responsibility for community knowledge.</p>	<p>Inquiry based learning.</p> <p>Project Based Learning</p> <p>“Hands on” Experiences.</p> <p>Extending learning beyond the classroom. Group work, problem solving, reflective thought through writing.</p>

Amoah et al., 2018; Borup et al., 2014; Borup et al., 2020; Dewey, 1933; Hirtle, 1996; Moreillon, 2015; Moore, 1989; Moore, 1997; Salmons, 2009; Saskatchewan Ministry of Education, 2010; Ravitz et al., 2000; Siemens, 2007.

Previous research findings asserted that social interaction in formal education improves a) learning outcomes, b) learning enjoyment, c) opportunity to learn from diverse perspectives, d) opportunity to analyze knowledge constructs, e) cultural understanding, and f) interpersonal skills such as peer mentorship, communication, and cultural understanding (Goulet & Goulet, 2014; Kirkness & Barnhardt, 1991; Vygotsky, 1978). Vygotsky (1978) contended that learning is deeply affected by social interactions and that learning cannot be separated from the social context. Social constructivism, therefore, emphasizes the “collaborative nature of learning and the importance of cultural and social context” (UCD Teaching and Learning, n.d.). Furthermore, according to Beck and Kosnik (2006) negative outcomes from primarily relying on individual teacher-led learning include: a) smothering intellectual interest, b) little sense of autonomy and community, c) confrontational power dynamics between teachers and students, and d) reduced social interactions to deepen understanding.

Social constructivist practices have been shown to strengthen deep learning (Entwistle & Tait, 1993; Laal & Ghodsi, 2012). For example, a comparative qualitative study by Barbour and Rich (2007) found that distance learning student performance on an advanced placement History exam was noticeably better when students learned through social constructivist learning processes (e.g., collaborative learning tasks) compared to traditional instruction (e.g., teacher led “drill and practice”). A further qualitative study by Offir et al. (2008) compared interactions in asynchronous versus synchronous distance learning approaches and found that student achievement improved as social interactions increased. In both studies, the authors do not dismiss the value of surface learning (e.g., memorization of information) as it is necessary for learning new concepts. Rather, students demonstrated deeper learning (e.g., transferability of information, connection to existing experiences) through socially constructed processes.

As there is no one common definition for social constructivism, I have broken it down into four main constructs for clarity: collaborative learning, the student’s agentic role, flexible student-centred learning paths, and deep learning tasks.

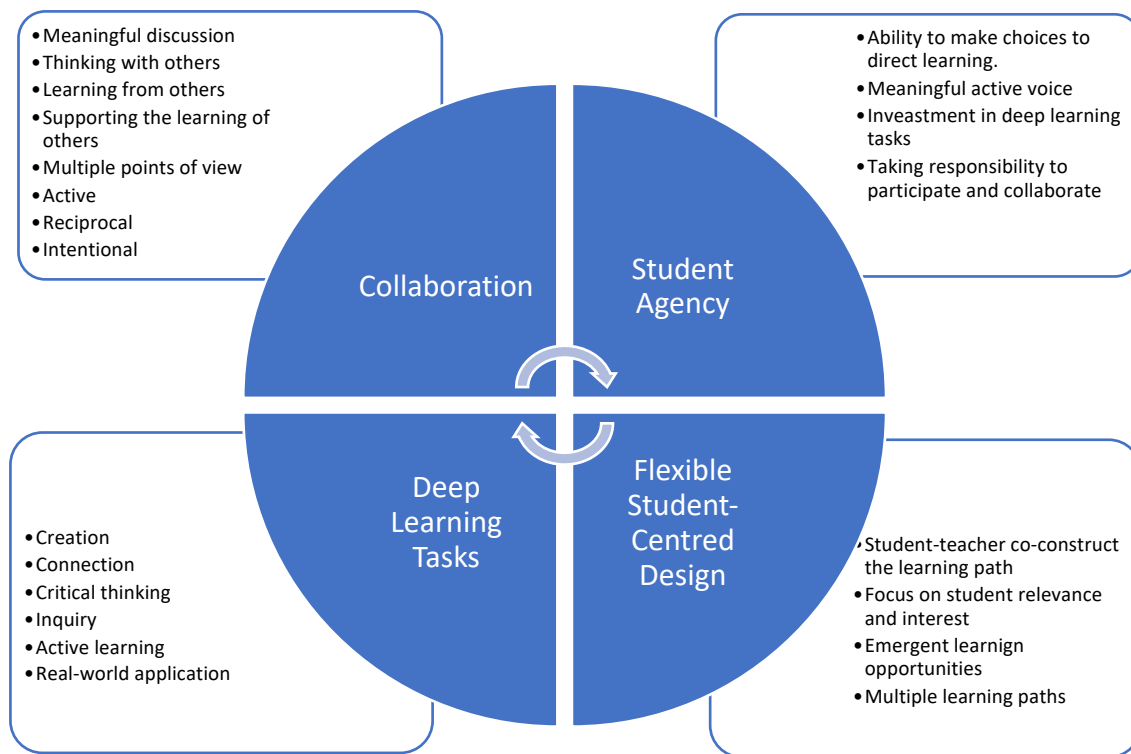


Figure 2.1: Four Aspects of Social Constructivism

Collaborative learning

The term collaborative learning has roots in social constructivist pedagogy with the “assumption that people make meaning together and that the process enriches and enlarges them” (Matthews, 1996, as cited in Barkley et al., 2014, p. 37). Collaborative learning is not a catch-all phrase for group work, where arguably, students can work independently on separate sections of a common task (i.e., a cooperative approach). Rather, collaborative learning is an intentionally designed strategy for students to actively engage in learning with and from others (Barkley et al., 2014) (e.g., critical discussions/debate). For collaborative learning to occur, Barkley et al. (2014) identified three essential elements “intentional design, co-laboring, and meaningful learning” (p. 42). Intentional design involves the instructor pre-planning collaborative learning opportunities. Co-laboring includes learner's equitable responsibility to contribute to the group through processes and product. Finally, meaningful learning “requires students to assume some authority and control over their learning” (Barkley, 2014, p. 42) as they meet the learning outcomes.

Collaborative learning is fostered through reciprocal interactions such as student-teacher, student-student, student-parent, and student-global community (Moore, 1997). Collaborative learning is a reciprocal responsibility which requires flexibility, responsiveness, cultural understanding, and space for multiple views and ways of knowing (Barkley et al., 2014). Student interactions, through collaborative learning, have the potential to increase visibility of alternate ideas enhancing depth of learning (Lamon et al., 2001).

Collaborative learning is directly linked to what Vygotsky (1978) coined as the “zone of proximal development” (ZPD). The ZPD represents the increased cognitive development the learner is capable of with the help of a “more knowledgeable other” (MKO), in contrast to what they would be capable of learning unaided. The MKO could be a teacher, peers, or a community supported through information and communication technology (e.g., online discussion board or chat room). An expanded version of the ZPD (Billings & Walqui, 2018) suggests that learning within the ZPD can also occur through, a) interaction with equal peers where shared ideas can advance learning, or b) less capable peers, as students often learn through teaching. Additionally, working in the ZPD can sometimes occur when working alone, when students use “learning strategies, inner speech, resources in their environment, and experimentation” (Walqui & van Lier, 2010, p. 31).

Student Agency

Rodriguez and Berryman (2002) use the term student “agency” to refer to students having a more active voice in their learning. When students have agency in their learning, they choose relevant assessments and learning activities that go beyond surface level learning (Borup et al., 2014). According to Offir et al. (2008), student agency results in an increase in content relevance, deeper understanding, content retention, and an increase in student achievement. Student agency is often used interchangeably with student ownership. Driscoll (2005) described student ownership as the student taking responsibility for their learning, including participation and contribution to collaborative learning.

Ensuring students have agency in their learning requires a shift in traditional teacher and student roles where the teacher becomes a “learning coach” (Driscoll, 2005, p. 392) facilitating and guiding the student to make learning decisions that lead to meaningful connections within curricula. Tait (2014), who studied the evolution of internal support in distance learning courses, further highlighted the significance of the need to move from distance learning as a means of

information giving, to “learning pathways where students are more responsible for finding and evaluating sources and creating resources” (p. 10). The author argued that student-led learning pathways are *necessary* for “personal, citizenship, and livelihood goals” (p. 10).

To support student agency, the course design needs to be flexible enough to allow the learning path to be adapted for diverse students, moving away from a linear static course design towards a flexible dynamic course design (Liu & Maddux, 2010).

Flexible Student-centred Learning Path

The term student-centred references putting the interests of the student at the forefront of learning experiences (Crumly et al., 2014). Student-centred learning considers the relevance of content (e.g., student interest and personal benefit) and student agency (O’Neill & McMahon, 2005). In other words, the student can make a clear connection for why knowing the content is important for them and has some choice in deciding meaningful learning processes. Student-centred course design does not just focus on meeting curricular outcomes; it also focuses on meeting the outcomes in a way that is relevant to the student.

Flexible learning paths allow students agency in choosing interesting, relevant learning experiences that support personal meaning-making (Moore, 1997). Flexible design must consider both emergent and prescriptive learning (Williams et al., 2011). Emergent learning occurs when the learning processes and, to some extent, learning outcomes are unpredictable (e.g., science fair projects, inquiry-based learning) (Williams et al., 2011). Prescriptive learning, on the other hand, is predictable and controlled; it is learning that is pre-determined and non-negotiable (e.g., the use of the scientific method). Planning for integration of emergent and prescriptive learning requires a complex-adaptable learning approach involving an “iterative feedback/feedforward loop...the planning and design should be as emergent as the learning” (Williams et al., 2011, p. 46).

Student-centred, flexible learning paths mirror what the Saskatchewan Ministry of Education (2018) call “Student First Imperative” to “unify, reorient and re-engage the provincial education system on what matters most — the student...In putting students first, it is important to ask, ‘*What difference does it make for the student?*’ and ‘*How can we work together to achieve this?*’” (p. 9).

Deep Learning Tasks

Fullan and Langworthy (2014) describe deep learning tasks as those that “engage students in practicing the process of deep learning through discovering and mastering existing knowledge and then creating and using new knowledge in the world” (p. 21). They assert that deep learning cannot happen without deep learning tasks. Deep learning tasks emphasize application to real-world problems, “hands on” experiences, and extending learning beyond the classroom (e.g., project-based learning) (Amoah et al., 2018; Ravitz et al., 2000).

Deep learning tasks are not a predetermined product; rather, they are intertwined with critical thinking skills required to make meaning of experiences (Barkley et al., 2014; Fullan & Langworthy, 2014; Lambert, 2016; Leithwood et al., 2006). Salmons (2009) and Fullan and Langworthy (2014) assert these critical thinking skills need to be intentionally “scaffolded” into the learning tasks. Without focusing on educational processes that foster critical thinking and collaborative skills, distance learning assessment risks reinforcing surface level learning through acceptance of unexamined and disconnected information (Houghton, 2004).

Summary of the Four Aspects of Social Constructivism

Although each aspect could exist independently, I regard the combination of each aspect to be where deep learning meets the overarching goals of education. The student can lead their own learning, but without deep learning tasks or collaboration learning could be shallow. Collaboration without deep learning tasks may lead to enjoyment but not deep learning. Finally, without a flexible course design, there will be limited opportunity for student agency and emergent learning (O’Neill & McMahon, 2005; Williams et al., 2011).

Wahlstedt et al. (2008) highlighted that a social learning shift in e-learning is possible if the course design focuses on social interaction and community building rather than solely focusing on the learning management system (LMS) (e.g., Canvas, Moodle). Teaching and learning environments differ, learners’ preferences differ, and subject matter differs. Therefore, instead of designing from technological foundations and homogenous pedagogy, the designers of distance learning environments should act as “architects” comprehending the shifting pedagogical environment as a “place/space for learning” rather than a collection of different technologies and systems (Nardi & O’Day, 1999).

Describing social constructivism through the categories of collaborative learning, student agency, student-centred flexible course design, and deep learning tasks provided a common

language conceptual framework to interpret teachers' experiences in actualizing social constructivist high school ADL. Without such a framework, the data collection and analysis risked reducing social constructivist practices to “group work” or minimizing the link to social constructivism and deep learning.

Critiques of Social Constructivism

Critiques of social constructivism contend that social interaction highly depends on the learning context, learner characteristics, and poses implementation challenges within asynchronous distance learning. Such critiques are elaborated on below.

Learning Context. Mandating an approach to distance learning that is highly reliant on social interaction may not be appropriate in certain contexts. For example, some students lack access to the internet and/or computers for online collaboration (e.g., many Hutterian schools in Saskatchewan). Similarly, paper courses can be well suited to students who need removal of extraneous distractions from the computer (e.g., web searches, social media) to support content focus. Toshalis and Nakkula (2012) cite that classroom engagement is as much about “selective disengagement... as it is about the decision to focus attention and apply effort” (p. 22).

Learner Characteristics. Some researchers suggest that not all students need or want socially constructed learning. Shin (2003) notably cautioned against a “one size fits all” model for student interaction, noting that learners' social needs are not adequately understood. For example, Offir et al. (2008) found that students with high cognitive abilities were better able to perform deep learning processes, even without interactive support, than were their peers with lower cognitive abilities.

Aside from cognitive maturity, high school students with low social maturity may not be ready to direct their own learning (Anderson & Dron, 2012; Brown et al., 2013). For example, students with a low social maturity may be unable to focus on a task in the face of distractions (Icenogle et al., 2019).

Attributing cognitive and social maturity to age is not widely agreed upon in literature. Icenogle et al. (2019) argued that cognitive maturity (logical thinking) can be reached by age 16, whereas social maturity is reached later, around 18. Conversely, Pavelich and Moore (1996) argued that cognitive maturity was “less a function of age than of educational experience” (p. 291). In other words, the more students are exposed to intellectually challenging tasks the more likely the student is to reach a higher level of intellectual maturity.

Helsper and Eynon (2010) note that not all students have readiness skills to participate in social constructivist practices (e.g., technological skills, online interpersonal skills, curating resources, critical thinking, and problem solving). In the absence of or without supporting online collaboration readiness skills, implementing social constructivist approaches may be difficult.

Implementation Challenges. Vadillo (2010) suggested that online course structures, despite pedagogical affordances of a variety of information and communication technologies, are still influenced by face-to-face design and often strive to mimic a traditional teacher-led school setting. She suggested that the “nostalgia from *the way we were* (and still are in many places)” (pg. 61) is preventing pedagogical advancements for distance learning. Given the previously cited research on the benefits of social constructivism, there is still a marked absence of explicit processes to implement this approach in asynchronous distance learning contexts (Saskatchewan Ministry of Education, 2010). Understanding the benefits of social constructivism is not the same as having the resources and knowledge to implement it within distance learning.

Distance Learning Frameworks Supporting Social Constructivism

Learner interaction (Moore, 1989), transactional distance theory (Moore, 1997), transactional presence (Shin, 2003), and the community of inquiry (Garrison et al., 1999) are dominant strands in literature that support social constructivist approaches to distance learning in higher education. The academic community of engagement framework (Borup et al., 2020) combines those dominant strands and is inclusive of high school online learning environments. I examine each framework below.

Learner Interaction

Moore (1989) labeled and defined three types of distance learning interaction: learner-content, learner-instructor, and learner-learner.

Learner-content interaction. Learner-content interaction occurs between the learner and the subject content. Moore (1989) described this as the defining characteristic of education where the learner interacts with and internalizes the content on some level. Historically, self-contained correspondence courses were primarily based on learner-content interaction with minimal social interactions to facilitate learning (Anderson & Dron, 2012). The initial context of delivering paper correspondence courses through the mail did not lend itself to socially constructed learning.

Learner-instructor interaction. Learner-instructor interaction is aptly named for the interactions between the teacher and student. Learner-instructor interactions allow the student to draw on the instructor's expertise and enable the teacher to attend to diverse student needs. The interaction focuses on teacher led interactions such as motivation, assessment, and feedback. Moore (1989) asserts that learner-instructor interaction increases learner-content interaction as the instructor can provide feedback to support the learner's application of new knowledge, whether through providing additional resources or correcting misconceptions.

Learner-learner interaction. Learner-learner interaction is the third type of interaction where students learn from each other with or without teacher presence. Moore (1989) cited benefits of learner-learner interaction, including building social and group work skills and increased intent to persist. Goulet and Goulet (2014) note that within face-to-face environments, peer interaction provides benefits such as reduced wait time for feedback, increased understanding, motivation, confidence in abilities, enjoyment, responsibility for personal learning, responsibility to others, and sustained participation.

Researchers Borup, et al. (2020) and Moore (1989) further asserted that teachers should invest more time in effectively incorporating each type of learner interaction into distance learning, suggesting there has been an over-reliance on learner-content interactions with correspondence courses and an overuse of pre-recorded video lectures with little to no learner-instructor interaction.

Learner interaction definitions provide practical guidance for instructors seeking to define learner interaction. However, these definitions do not provide evidence for how each type of interaction affects learning; Moore (1989) simply indicates that all three should be used with little elaboration. Additionally, Moore's definitions of learner interactions focus on higher education contexts, weakening practical applications in K-12 contexts.

Transactional Distance Theory

Transactional distance (TD) (Moore, 1997) is defined as "a psychological and communications space to be crossed, a space of potential misunderstanding between the inputs of instructor and those of the learner" (p. 22). Transactional distance theory asserts that the greater the transactional distance between the teacher and student, the more likely a student will struggle in distance learning and the less likely there will be student-teacher dialogue to support the

learning (Moore & Kearsley, 1996). Transactional distance consists of three factors: a) instructional dialogue, b) course structure, and c) learner autonomy.

Instructional Dialogue. Moore (1997) referenced instructional dialogue as reciprocal interactions (transactions) where both the teacher and student play an active role (e.g., respectful active listener, contribution to conversation). Factors that influence instructional dialogue include course design, the number of students per course, and the environmental factors (Moore & Kearsley, 1996). For example, students who are paced as a cohort will likely have more dialogue than students who pace themselves. Instructional dialogue parallels student-teacher relationships within the collaborative learning category within the social constructivist framework.

Course Structure. Course structure refers to “the extent to which an education programme can accommodate or be responsive to each learner’s needs” (Moore, 1997, p. 26). A flexible course structure allows the teacher to be responsive to individual learners’ needs, whereas a “set structure” can provide predictability and routine in an unfamiliar learning environment. Course structure parallels the category of student-centred, flexible course design within the social constructivist framework.

Learner Autonomy. Learner autonomy here corresponds to student agency described in the social constructivist framework. Learner autonomy is described as “the extent to which in the teaching/learning relationship it is the learner rather than the teacher who determines the goals, the learning experiences, and the evaluation decisions of the learning programme” (Moore, 1997, pp. 26-27). Rigid course designs reduce opportunity for learner autonomy (student agency), a foundational aspect of socially constructed learning (Mbatia, 2021).

However, as not all high school students may be ready to direct their own learning (Anderson & Dron, 2012; Brown et al., 2013), it is important for the instructor to understand the current level of student autonomy. A highly structured course with little dialogue requires high student autonomy, creating increased transactional distance (Moore, 1973). Understanding the level of student autonomy is key. If student autonomy is low, a highly structured program with increased instructional dialogue may be more supportive compared to one with low structure and low dialogue (Falconer, 2012; Hong et al., 2021).

Transactional Presence

Shin (2003) defined transactional presence (TP) as a student’s perception of their connectedness with, and availability of, the people in the distance learning environment.

“Connectedness” refers to student perceptions of reciprocal relationships between the teacher, peer, or institution (e.g., tutor). “Availability” refers to responsiveness, for example, how quickly a teacher responds to a student’s question or how quickly and personally peers respond in shared spaces.

Shin’s (2003) survey research assessed how TP with teachers, peers, and the school affected students’ learning experience. The most significant factor was the TP of the school support services (i.e., the on-site support person), which affected the students’ perceived learning achievement, course satisfaction, and persistence. Transactional presence with the teacher was only positively influenced perceived learning achievement, and TP with peers was only associated with course satisfaction and intent-to-persist. In further research by Bosetin et al. (2007) and Jacklin and Le Riche (2009), students consistently identified a need to be connected to someone they can talk to about their work or workload.

While Shin’s (2003) research provides implications for considering transactional presence with distance learning courses, her study does not provide clarity about what strategies increase transactional presence. From a teaching standpoint, the strategies are the “hidden processes” missing within distance learning literature and curricula to support social constructivist teaching and learning practices.

While transactional presence is not directly named within the social constructivist framework, it is part of collaboration and participation in deep learning tasks. I address further transactional presence in the learning ecology framework at the end of this chapter through reciprocal relationships (Bronfenbrenner & Evans, 2000).

Community of Inquiry

Garrison (2009) defines a community of inquiry as a group of learners who are “actively and collaboratively engaged in exploring, creating meaning, and confirming understanding” (p. 352). The community of inquiry (CoI) (Garrison et al., 1999) distance learning framework identified “crucial prerequisites” for such communities. These crucial prerequisites are what the authors call “cognitive presence,” “social presence,” and “teaching presence” (CoI Framework, 2018; Garrison et al., 1999; Stenbom, 2018).

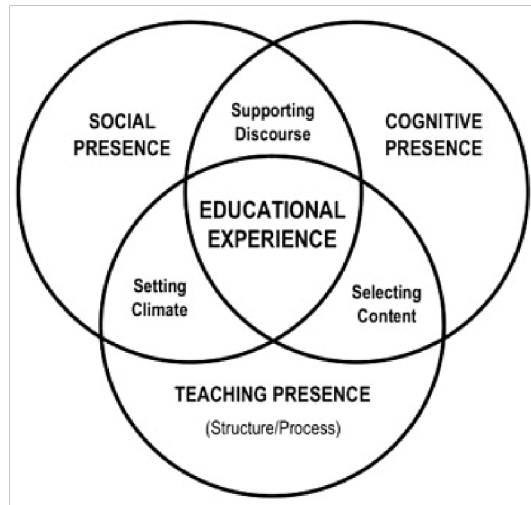


Figure 2.2: Community of Inquiry
Garrison et al., 1999

Cognitive Presence. Cognitive presence is the extent to which students can construct meaning through sustained communication (e.g., peer feedback, self-reflection, discussion boards). Sustained communication requires student discussion in an environment where students equally participate. For Garrison et al. (1999), “cognitive presence is a vital element in critical thinking, a process and outcome that is frequently presented as the ostensible goal of all higher education” (p. 89). Both social and teaching presence can positively influence cognitive presence through increasing engagement.

Social Presence. Social presence (Garrison et al., 1999) is defined as “the ability of the participants in the community of inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as ‘real people’” (p.89). For social presence to be effective, it is necessary to have a learning environment where participants feel safe to share and collaborate. Social presence does not necessitate cognitive presence; for example, students may build strong personal communications void of any content focus. However, Garrison et al. (1999) noted that social presence not only increases personal enjoyment and connection, but it can also facilitate critical thinking through dialogue. Students participating in online social discussions may be more likely to engage in formal online learning.

Teaching Presence. Teaching presence describes how the teacher designs and participates in the course (Garrison et al., 1999). There are two general functions of teaching presence: instructional design and facilitation, which parallel the teaching processes from TD theory (Moore, 1997). Garrison et al. (1999), posited that someone other than the teacher (e.g.,

peers) may undertake the facilitation role. The separation of learning *products* (e.g., the LMS course) and *processes* (e.g., facilitation) are important distinctions. In my experience, the teaching and learning processes are often “hidden,” undervalued, or under supported. Ideally, both course design and social facilitation are equally compelling; however, it is my view that teaching processes are often overlooked in high school ADL.

A critique of the CoI framework is that it was based on an analysis of text-based communication (i.e., discussion boards) (Archer, 2010). Through advances in technology, distance learning transactions have the potential to move past text-based communication (e.g., video web conferences, podcasts, and social media).

A recurring critique of all above distance learning theories is that they are drawn from investigations within higher education contexts, weakening confidence in their application to high school education environments, commonly using cohort paced models (Downes, 2008; Littlejohn, 2013; McAuley et al., 2010; Siemens, 2005). Therefore, this study intentionally sought teacher experiences with processes and strategies, beyond traditional discussion boards, to build learning communities within high school ADL environments.

Academic Community of Engagement

The academic community of engagement framework (ACE), proposed by Borup et al. (2020), presented a distance learning framework, inclusive of K-12 and higher education contexts. The framework is intended to guide blended and online teachers in designing courses for maximum student engagement through an online learning community. The ACE framework is based upon the previously described frameworks: learner interaction (Moore, 1989), transactional distance (Moore, 1997), and community of inquiry (Garrison et al., 1999) and a personal support network of family and friends (Borup et al., 2020).

Within the ACE framework (Borup et al., 2020), two types of communities are used to support student engagement: a) the course community (i.e., teachers, peers, admin) and b) the student's personal community (i.e., parents, friends, family). Borup et al. (2020) recognized the challenges students face in a learning environment that requires a higher level of autonomy. The ACE framework is rooted in Vygotsky's (1978) “zone of proximal development,” representing the increased cognitive development the learner is capable of with the help of someone more knowledgeable in contrast to what they would be capable of learning unaided. The student's

academic engagement is limited in contrast to what they can do with the support of others, in this case the support of both the course and personal community.

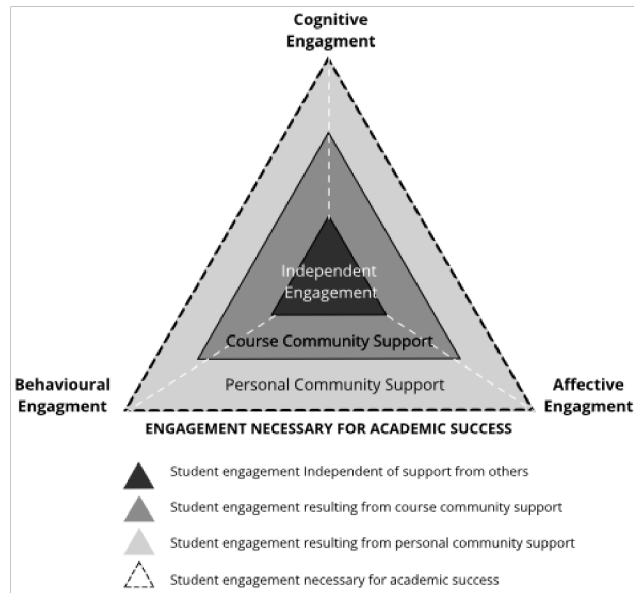


Figure 2.3: ACE Framework
Borup et al., 2020, p. 810

In the ACE framework, Borup et al. (2014, 2020) define engagement through three strands: behavioural, affective (emotional), and cognitive.

Behavioral Engagement. Borup et al. (2020) defined behavioural engagement as “the surface-level, physical behaviors required to complete course learning activities or tasks” (p. 812). Behavioral engagement is supported through a) trouble shooting and orienting (e.g., creating comfort with the course platform), b) organizing and managing (i.e., course design), and c) monitoring and encouraging progress (e.g., check-ins).

Affective (emotional) engagement. Emotional engagement is equated with “students’ emotional reactions to learning tasks and interactions with others” (Borup et al., 2014, p. 7), including an interest in tasks. The teacher supports emotional engagement through facilitating communication, developing relationships, and instilling excitement for learning (Borup et al., 2020).

Cognitive engagement. Cognitive engagement includes the student energy/effort that goes beyond surface learning to gain a deep understanding of the learning targets (Borup et al., 2020). The ACE framework asserted that the elements of instruction (e.g., providing feedback) and collaboration (e.g., peer discussion) support cognitive engagement. Instruction is primarily

the responsibility of the teacher; however, parents and peers who are knowledgeable in the content area can also support cognitive engagement through tasks such as confirming understanding and clarifying misconceptions (Anderson et al., 2019; Borup et al., 2020).

The ACE framework claimed that all three areas of engagement are required for students to achieve maximum academic success. Furthermore, emotional engagement, which may at first appear to be “something nice”, may be a bridge to both behavioural engagement and cognitive engagement (Borup et al., 2020). For example, if a student is interested in the course content, they are more likely to participate further and be motivated to go beyond surface level learning.

A strength of the ACE framework is that it focuses on specific targeted actions to support student’s academic success. For example, Oviatt et al. (2016) described specific functions for the teacher, parent, and peer (e.g., facilitating, organizing, encouraging, motivating). While the framework has a strong practical application to support student engagement, missing within this framework is the active role of the student. Given that student engagement is central to the framework and the clarification of the teacher, peer, and parent roles, the absence of the student role is puzzling. In my view, the framework could be strengthened by elucidating the student’s active role, lest the framework suggest the student is being “acted upon,” rather than being included as part of a reciprocal learning relationship. In the distance learning ecosystem framework, which I describe below, I have intentionally described the student’s role as one of assuming responsibility and having the opportunity to be a “part of” and “reciprocal partner in” the distance learning ecosystem, rather than a subject to be “talked about” or “acted upon” within the system.

In my view, the term academic success has not been sufficiently defined within the framework. I would argue that intellectual engagement rather than cognitive engagement would enrich the framework situating academic success within deep learning. According to Willms et al. (2009), intellectual engagement is defined as “a serious emotional and cognitive investment in learning, using higher order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge” (p. 7). While there is no widely agreed upon definition for either cognitive or intellectual engagement, intellectual engagement appears to be ingrained in how it meets deep learning outcomes, whereas cognitive engagement has a closer link to effort within the learning task (Anderson et al., 2019; Borup et

al., 2020). A factor I would argue is missing from the ACE framework (Borup et al., 2020) is the link between engagement strategies and how they met deep learning outcomes.

Distance Learning Ecosystem

In this research, I situate social constructivism within a “learning ecosystem” conceptual framework. I assert that learning through technology in the absence of a common physical space warrants a distinct conceptual understanding. Without a distinct conceptual understanding, distance learning risks attempting to mimic face-to-face classrooms, negating the unique attributes distance learning can provide (e.g., extended learning community, increased control of space and place, and remote teamwork).

Education has adopted the term “learning ecosystem” as a conceptual framework to understand the interactive and complex processes that support distance learning (Hecht & Crowley, 2020; Jackson, 2013; Lemke, 2000; Nardi & O’Day, 1999; Siemens, 2007). The emergence of the term “learning ecology” is, in part, due to the advances of information and communications technology (ICT) (i.e., email, cellular phones, video communication software, learning management systems) that have facilitated greater connections between participants who are learning from and with each other through technology.

The concept of a “learning ecosystem” is intended to evoke images of a biological ecosystem inhabited by living organisms. Inter/intra relationships within the environment support its growth and thriving. A distance learning ecosystem, likewise, depends on, and is supported by, a network of “connections” (e.g., policymakers, peers, parents, teachers, internet connectivity). However, within a learning ecology, the focus is not on tools or technologies, but on the *interactions* between people and elements within the learning environment (Nardi & O’Day, 1999). This focus aligns with this study to look beyond educational tools (e.g., the LMS) to uncover effective distance learning praxis to support deep learning.

Learning ecosystems move beyond student-teacher actions and activities (typical of a traditional face-to-face classroom) to encompass dynamic interactive systems beyond brick-and-mortar classroom walls (Jackson, 2013; Johnson & Cooke, 2016; Nardi & O’Day, 1999). Consistent themes across versions of learning ecosystem perspectives include: the reliance on *reciprocal interactions* for learning; complexity within the learning system; *learner-centred* approaches; *shared resources* within the learning system; and the recognition that systems are constantly *evolving* (Bronfenbrenner & Evans, 2000; Dewanti, 2016; Henning & Van der

Westhuizen, 2004; Jackson, 2013; Johnson & Cooke, 2016; Nardi & O’Day, 1999). Such themes are clearly consistent with social constructivist practices.

Visual heuristics used to represent learning ecologies range from the use of organic shapes representative of an amoeba (Jackson, 2013), suggesting a fluid, changing system that a student “co-creates”, to a more structured image of “nested” circles with the student in the centre (Bronfenbrenner & Evans, 2000; Johnson & Cooke, 2016).

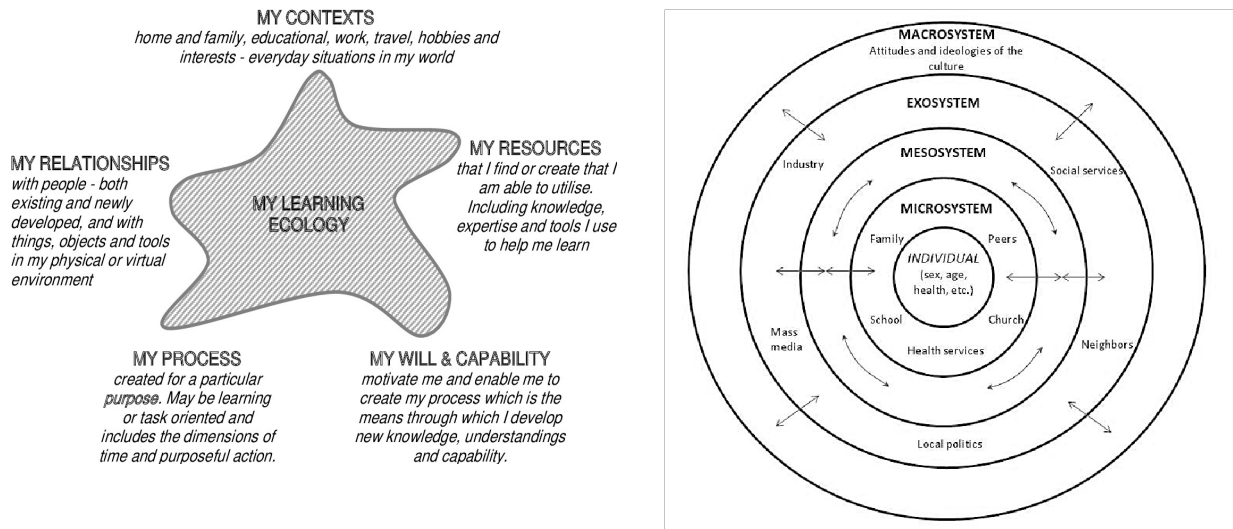


Figure 2.4: Sample Learning Ecology Heuristics

Figure 2.4 images from left to right: Key components of an individual’s learning ecology, Jackson, 2013; Bronfenbrenner’s Bioecological Ecosystem, Bronfenbrenner 1977.

In my view, Jackson’s heuristic has limitations for practical applications to improve instructional design as it focuses on student created learning ecosystems (unlike formal learning systems), while a “nested” circles heuristic (Bronfenbrenner & Evans, 2000; Johnson & Cooke, 2016) suggests the student is being “acted upon,” diminishing student agency within the system. Furthermore, Hecht and Crowley (2020) argue that the student in the centre undermines the potency of the ecosystem framework.

Individual children are not only influenced by elements of the learning ecosystem—they are inextricably connected to and part of those elements... an exclusive focus on individuals, or even groups of individuals, fail to recognize and account for larger cultural practices that co-evolve with and co-create learning and development. (p. 10)

Within this research, I use a distance learning ecosystem heuristic represented by a complex synergetic network of connections (e.g., reciprocal relationships) between elements in the environment (i.e., people, information and communication technology, socio-cultural values, customs, and norms) (Bronfenbrenner & Evans, 2000; Johnson & Cooke, 2016) that supports the construction of knowledge (Siemens, 2005). This learning ecosystem provides not only clarity of connections that support learning but also defines elements within the environment used to make connections.

Below, and in Figure 2.5, I describe the three aspects of distance learning ecosystem framework used in this study through the categories of environment, reciprocal relationships, and changes over time.

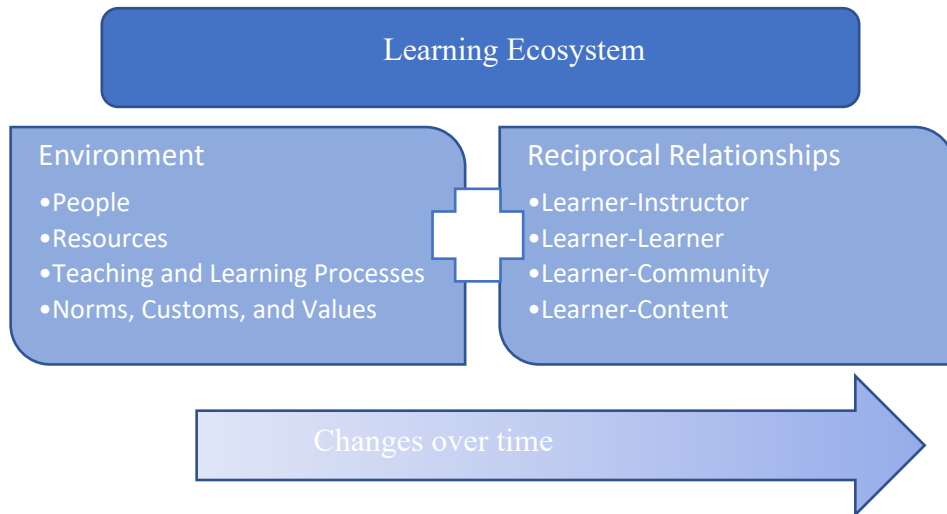


Figure 2.5: Categories of a Distance Learning Ecosystem

The Environment

Analysis of the learning environment is integral, as the environment will determine what type of learning can flourish (Siemens, 2007). For example, the notion that all teachers “should” build distance learning courses heavily relying on social interactions with peers may be, in some cases, an exercise in frustration if significant factors within the learning environment do not support such an approach (e.g., poor internet connection or unpredictable student schedules).

Elements within the learning environment include: a) people (students, teachers, community), b) resources (technology, teaching and learning processes, learning information and resources), and c) socio-cultural norms, customs, and values (Bronfenbrenner & Evans, 2000; Johnson & Cooke, 2016).

Primary People. There are several stakeholders within a distance learning ecosystem, such as policy makers, division directors, superintendents, and school administrators. Each of these stakeholders has a role to play in supporting the student. However, for the purpose of this research, I consider the *primary* people in the system to be the students (the reason the ecosystem exists), the teacher (the student's primary learning partner in K-12 education), and the direct learning community (e.g., classmates, parents, student services support).

Student. The ecological model is rooted in the belief that the environment influences the development of a student and, reciprocally, the student influences the environment (Bronfenbrenner et al., 1994). Important student characteristics include age, attitude, cognitive ability, digital experiences, gender, intellect, internalized learning strategies, and personality (Bronfenbrenner, 2005; Johnson & Cooke, 2016). Understanding how teachers adjust the learning environment based on the influence of the student is important to understand how socially constructed learning is achieved (if at all). For example, if students do not show willingness to engage in social activity, the teacher may adjust the course to include less social interaction.

The role of the student within the learning ecosystem was addressed in the literature review through learner-content, learner-instructor, and learner-learner interaction (Moore, 1989), learner autonomy within TDT (Moore, 1997), and cognitive and social presence within the CoI (Garrison et al., 1999).

Teacher. The teacher is an integral component of the learning environment, as they have the primary responsibility to facilitate learning, build the course, and bring together relevant resources to meet student needs (Bates, 2015). The importance of the teacher within the learning ecosystem was previously addressed through teacher engagement in the ACE framework (Borup et al., 2014); teacher presence in the CoI (Garrison et al., 1999); and learner-instructor interactions (Moore, 1989).

Learning Community. The learning environment includes the course community (i.e., teachers, peers, student services) and the student's personal community (i.e., parents, friends, family) (Borup et al., 2020). The learning community can be a powerful resource to aid in deep learning by infusing multiple viewpoints into the system and as a means for students to think and learn with and from others (Barbour & Rich, 2007; Saskatchewan Ministry of Education, 2010; Scardamalia & Bereiter, 2014). The learning community was previously addressed within the

ACE framework (Borup et al., 2020), and the ZPD (Vygotsky, 1978) where the community can support student learning.

Learning Resources. Within the learning environment are resources for learning (e.g., technology and content). The school institution, the teacher, and the student influence the availability of learning resources.

Technology Resources. Within a distance learning environment exists technology to support the learning. The dominant technology used to deliver information is the learning management system (LMS) (e.g., Blackboard, Canvas, Moodle) (Johnson & Cooke, 2016). Beyond a platform to deliver course content, an LMS supports communication between the student, teacher, and peers (e.g., discussion boards, text chat functions). The LMS is typically the entry point into a course for the student. However, multiple other technology resources exist to support student learning, such as computers, mobile devices, headphones, webcams, etc. and infrastructure (i.e., internet) needed to support communication through technology.

Through *social media technology* (e.g., internet, search tools, blogs, YouTube) students may share created content and connect much further than the class community. Walker (2015) emphasized the implications of student agency and global connections through technology where parents/carers and teachers may not necessarily even be aware of all the types of interactions that take place. This does not mean that digital interactions are necessarily inappropriate, simply that they go beyond the boundaries of parental influence and control. (para. 9)

It is not simply the availability of technology within a distance learning course (e.g., video meeting software, computers) that supports a synergetic distance learning ecosystem, but also how technology is used. For example, course assessments could be based on online quizzes that require little to no interaction with peers and the instructor. More in line with social constructivist practices, technology can increase communication with the instructor and peers (e.g., discussion boards, online text chat, video conferences).

Content Resources. Within a learning ecosystem are the learning information and materials relevant to the course outcomes. For example, within a physical horticulture class, appropriate information (e.g., text, video) and materials (e.g., soil, seeds, plants) would be available. However, within distance learning, resources can extend to anything accessible to the student outside of school. For example, a student whose parent is a botanist may have access to a

larger selection of learning resources and materials than are available in a face-to-face class. Learning information and materials are strengthened within a learning ecosystem where students can learn from and with others (e.g., parents, community).

Teaching and Learning Processes. Johnson and Cooke (2016) describe the teaching and learning processes within a distance learning environment as the *exosystem* which includes instructional design, course objectives, sequencing, assignments, and assessments. The teaching and learning processes (e.g., assessment design) establish the type of learning that will manifest in the system (e.g., deep versus shallow learning) (Siemens, 2005). For example, a static course design with assessments that rely more on rote memorization will better facilitate surface level learning, whereas courses that incorporate project-based inquiry projects will influence deep level learning (Ravitz et al., 2000).

To ensure a course design that meets diverse learner needs, flexibility in the learning path is required. However, the systemic reality of formal education is that many design choices need to be made prior to knowing who the students are. As a result, additional design choices (e.g., instructional strategies, additional resources) may need to be made *during* the course.

Socio-Cultural Norms, Customs, and Values. Within the learning environment exists local and/or system-wide cultural values, customs, and norms (e.g., the value and support that the community has for distance learning) (Bronfenbrenner et al., 1994). If a community values distance learning as an integral part of accessible quality education, resources and student support may be allocated to distance learning programs or courses, in turn affecting distance learning opportunities. However, external factors opposing cultural values, such as funding cuts to education, may reduce a division's ability to provide sufficient support to distance learning students. For example, many studies highlight the influence an onsite support person has on student learning (Besse, 2014; McMullen & Rohrbach, 2003; McMullen & Rohrbach, 2003; Ries, 1998). Consequently, if there are competing funding priorities in the education system, an on-site support person may not be allocated, in turn affecting student learning.

Student characteristics and the education culture strongly influence the teaching and learning processes (Hallinger & Leithwood, 1998). For example, a distance learning School designed to meet the needs of students in remote rural locations may have a different teaching pedagogy than a distance learning School designed to meet the needs of students at-risk of dropping out of school. One way that norms and values emerge and are activated is through

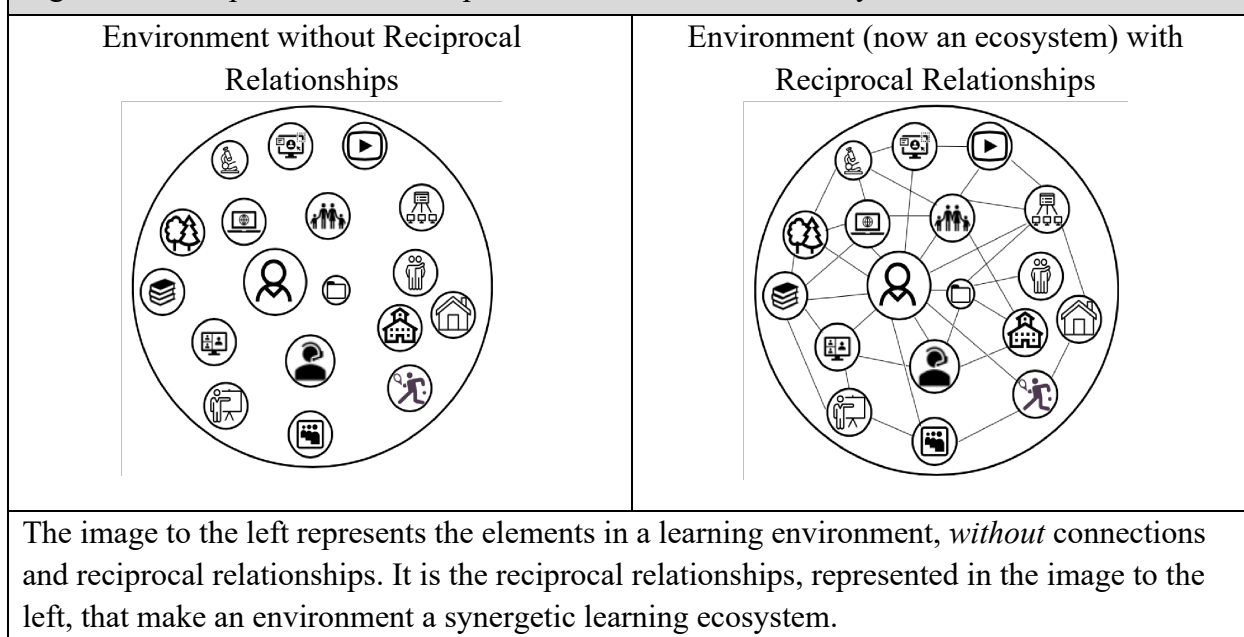
policy. For example, if school divisions perceive that collaborative learning is achievable and desired in distance learning, those beliefs will manifest in distance learning education policy.

Reciprocal Relationships

Reciprocal relationships comprise two-way interactions between people, objects, and symbols within the environment (e.g., dialogue between peers or between parents and teachers) (Bronfenbrenner & Evans, 2000). Reciprocal relationships are the social part of social constructivism. They are the discussions, connections, and inter/intra-personal interactions that exist within a learning ecosystem. Reciprocal relationships were addressed through instructor dialogue (Moore, 1997), transactional presence (Shin, 2003), teaching presence, Moore's (1989) description of learner interactions (i.e., learner-content, learner-instructor, and learner-learner), and what Garrison et al., (1999) presented as crucial prerequisites to quality distance learning, namely, cognitive presence, social presence, and teaching presence.

Reciprocal relationships transform an environment into a synergetic ecosystem (see Figure 2.6). The presence of information or resources does not mean learning will occur; rather, it is the reciprocal relationships which influence the learning environment and bring about individual potential (Bronfenbrenner et al., 1994). For example, for distance learning students who work from home, parent monitoring can influence the environment if parents co-create a stable time and place for learning. Conversely, the environment can influence relationships. For example, if the physical environment is filled with distractions, such as constant noise, and/or the student does not have easy access to necessary resources, such as a stable internet connection, a student's social interactions may be weakened and affect academic performance (Ng, 2021).

Figure 2.6: Reciprocal Relationships: From Environment to Ecosystem



Interestingly, reciprocity in relationships that support student learning but *do not* include the student (e.g., parent-teacher conferences) continue to strengthen the ecosystem (Bronfenbrenner & Evans, 2000). Such reciprocal relationships support student learning, especially in high school settings where the interactions between parents, teachers, and on-site support persons largely occur without involvement of the student. These relationships significantly influence the students' environment. For example, if the distance learning teacher does not communicate lack of student progress to parents, the student may miss out on additional support.

As asynchronous distance learning presents challenges in building relationships as students and teachers are separated by time and place, it follows that understanding how to strengthen reciprocal relationships, not just with students but also with elements in the student's environment (e.g., parents, technology), has significant implications for building dynamic distance learning communities to foster deep learning. After all, these relationships are integral to social constructivist praxis.

Change Over Time

Constant change is one of the defining factors of a dynamic learning ecosystem (Giattino & Stafford, 2019). New resources will be added, students will mature and gain more experience,

policy will continue to be improved, and the socio-cultural context of distance learning will evolve leading to increased competence and learning opportunities. As a teacher, school, community, or division gains experience with online courses, the value and realization of connection through distance learning may change.

Summary of Learning Ecosystem

This learning ecology framework aids in analyzing and understanding how or what environmental factors (e.g., people, resources, reciprocal relationships, and changes over time) and increases our understanding to improve distance learning praxis. For example, if teachers identify parent engagement as key for student persistence in a distance learning course, investment in any activities that will strengthen that relationship (e.g., increased parent-teacher interviews) may have a positive impact on student learning. Hecht and Crowley (2020) assert that understanding the learning environment is critical to support resilient learning ecosystems. For example, if teachers identify student that are not ready for the independence required of distance learning (e.g., working without direct supervision, setting goals, self-monitoring learning progress), they should be attentive to how student readiness can be improved within the system.

Summary of Literature Review

In summary, this research uses social constructivism as an educational theory situated within a learning ecosystem conceptual framework to explore how social constructivist approaches can be actualized within high school ADL. This framework provides a conceptually sound and robust set of concepts by which to examine, interpret, and understand the distance learning ecosystems under study. This will enhance the research by providing a detailed interpretive lens through which to provide targeted recommendations to support social constructivist high school ADL practices in Saskatchewan.

The next chapter provides an overview of the methodology that guided the study.

CHAPTER THREE: METHODOLOGY

Methodology

As previously stated, the purpose of the study was to explore how social constructivism is, if at all, actualized through high school asynchronous distance learning (ADL). The study was guided by the overarching research question, “How do teachers actualize socially constructed learning in high school ADL?” This section outlines the research methodology which uses a mixed methods sequential research design (Schoonenboom & Johnson, 2017) in a naturalistic setting to effectively answer the research question ensuring commensurability within a constructivist paradigm.

This study is grounded in a constructivist paradigm where reality is socially constructed, knowledge is gained through interaction, and the research is trustworthy if it faithfully represents the voices of the participants and implications from the findings can be implemented with probable success (Bryant & Charmaz, 2007; Merriam, 2009). The research paradigm aligns with Lincoln et al.’s (2018) constructivist description where:

we construct knowledge through our lived experiences and through our interactions with other members of society. As such, as researcher, we must participate in the research process with our subjects to ensure we are producing knowledge that is reflective of their reality. (p. 115)

Mixed Methods Design

The mixed methods sequential design included two distinct phases: quantitative, followed by qualitative (Creswell & Plano Clark, 2018; Schoonenboom & Johnson, 2017). In the first phase, I used a quantitative online survey to a) gain a contextual descriptive analysis of the general target population and b) to recruit participants for the qualitative phase (Creswell & Plano Clarke, 2018; Marshall, 1996). During the second phase, I completed in-depth semi-structured interviews with participants who self-selected from the online survey in Phase 1. The quantitative data enhanced the qualitative data by providing a broad understanding of what teachers believed and practiced, while the qualitative data provided an in-depth understanding of how teachers actualized social constructivist practices and why teachers made the instructional choices they did (Merriam & Tisdell, 2016). Although I used both quantitative and qualitative methods, the core theoretical drive was qualitative (Morgan, 2014; Morse & Niehaus, 2016). I

analyzed the quantitative and qualitative data separately, then merged the quantitative into the discussion phase of the qualitative research (Schoonenboom & Johnson, 2017).

A qualitative theoretical drive was necessary to answer the research question and construct meaning of teachers' experiences. The qualitative drive enabled my experiences and standpoint to be "visible" within the research design, increasing trustworthiness through deliberate transparency of any biases throughout all stages of the research (Lincoln et al., 2018). As a member of the distance learning community, recognition and incorporation of my internal researcher role is *necessary* to avoid research where "the researcher easily slips into an objective description in which their own investment is marginalized in order to preserve a facade of objective neutrality" (Bolam et al., 2003, p. 5).

Participant Selection

I limited participants to high school ADL teachers within divisions where the superintendent in charge of research, or designate, provided written approval.

I followed the following participant recruitment process: I contacted superintendents with Cyber Schools or high school ADL programs through email seeking to contact potential participants in their division to participate (Appendix A). I emailed seventeen school divisions; eight provided approval to proceed, three declined, and six did not respond.

- Within the eight divisions where approval was granted, I emailed Cyber School principals to: (a) explain the research, (b) provide the opportunity to ask questions, and (c) request that they forward my email request to high school ADL teachers participation in the online survey and/or semi-structured interview (see Appendix B for the letter sent to principals). In two divisions a co-ordinator or designate sent out the e-mail to principals and all distance learning teachers.
- In three divisions, the Cyber School principal or designate forwarded an email on my behalf that explained the purpose, time commitment, and benefits of the study (Appendix C) and include a link to the online survey. I included a consent form at the beginning of the survey. The final survey question allowed participants to self-select to participate in a follow up semi-structured interview.
- Twenty survey participants indicated willingness to follow-up with an interview. I followed up with a phone call or email (as per participants' request) to schedule a time and place for a semi-structured interview (in-person or by telephone). I

successfully completed eighteen of those twenty; one did not follow up after I reached out, and the second experienced unforeseen circumstances and had to cancel the interview.

Data Collection

I collected data from an online survey (Appendix D) and semi-structured interviews (Appendix E). The survey preceded and then complemented the semi-structured interviews which were intended to provide a richer description and “sense-making” of localized experiences. Table 3.1 summarizes the data and participant selection used to meet the purpose of the study and answer the research question.

Table 3.1: Purpose, Research Questions, and Data Sources.

Overarching Research Question:		
How do teachers actualize socially constructed learning in high school ADL?		
Sub-questions:	Data Sources	Data Analysis
Sub-question 1: What are teachers’ experiences with creating social constructivist learning opportunities?	Online Survey (n=35)	Descriptive Statistics
	Semi-structured interviews (n=18)	Thematic Analysis
Sub-question 2: What strategies and/or processes do high school ADL teachers identify as best practices (for deep learning)?	Online Survey (n=35)	Descriptive Statistics
	Semi-structured interviews (n=18)	Thematic Analysis
Sub-question 3: Why do teachers make the instructional choices they do?	Semi-structured interviews (n=18)	Thematic Analysis
Sub-question 4: How might the current system be strengthened to support social constructivist learning?	Semi-structured interviews (n=18)	Thematic Analysis

Surveys

I created an online survey with the University of Saskatchewan (U of S) Enterprise SurveyMonkey account, for a descriptive analysis (e.g., dominant teaching philosophies and practices, identified barriers to collaborative learning) of the selected participant population (high

school ADL teachers in Saskatchewan) and as a tool to recruit participants for the semi-structured interview. The survey provided a descriptive analysis from a larger participant sampling (n=35), providing information in response to “what” questions (e.g., What strategies? What barriers?).

To establish validity of the survey, I referenced previous research surveys studying social constructivism (Ravitz et al., 2000; Williams, 2006), sought feedback from my supervisor to ensure content validity, and pilot tested the survey with three of my teacher colleagues. Each colleague was sent the pilot survey using SurveyMonkey so they could provide feedback on the online navigation as well as the survey questions. Their feedback prompted me to adjust the survey for clarity. For example, separating larger questions into two smaller more focused questions, adding a Likert scale to some questions that did not resonate as either/or questions, and adding open responses below each closed response question for elaboration. No adjustments to the SurveyMonkey navigation were needed, as the participants indicated the platform was easy to navigate from both a computer and a cell phone.

The final online survey included 26 questions and took approximately 15 minutes to complete (Appendix D). *Section one* included closed ended questions clarifying the participant’s context (e.g., years of teaching, subjects taught, course pacing). *Section two* asked questions related to participants comfort level with different aspects of social constructivist pedagogy (e.g., student-led learning and collaboration). *Section three* asked about collaborative tools used and their effectiveness. *Section four* asked about barriers and supports necessary for social constructivist practices to be successful.

The online survey consisted mainly of closed form questions (e.g., Likert scale and checklist items) that easily create a descriptive analysis of the sample population contexts, beliefs, and practices. The survey explored perspectives from a broader participant sampling, in contrast to the in-depth analysis sought through the smaller sample of participants for semi-structured interviews.

No identifying data was collected from the Enterprise SurveyMonkey account, except from participants who indicated they would like to participate in the semi-structured interview. Survey data from each participant selected for the semi-structured interview was used for further exploratory and/or explanatory questions. For example, if a participant indicated use of a unique

method for supporting social constructivist learning, I inquired about this aspect further during the interview.

Semi-Structured Interviews

The purpose of the semi-structured interviews was to gain an in-depth understanding of high school ADL teachers' experience with social constructivist learning. The interview method allowed an in-depth investigation that moved beyond *what* teachers do and explored *how* and *why* teachers implement specific strategies and make the design choices they do. The interview protocols below were influenced by Oakley's (1981) feminist approach to interviewing where "the goal of finding out about people through interviewing is best achieved when the relationship of interviewer and interviewee is non-hierarchical and when the interviewer is prepared to invest his or her own personal identity into the relationship" (p. 41). The aim of using semi-structured interviews was that through conversation (i.e., semi-structured interview) the participants and I could contribute to an understanding of how socially constructed practices can be actualized in high school ADL.

To enrich the constructivist dialogue in the interviews, it was important that I, as an "insider" to the community, not be incorrectly perceived as an "objective observer." To ensure a "non-hierarchical, non-manipulative research relationships which have the potential to overcome the separation between the researcher and the researched" (Cotterill, 1992, p. 594), I used the following protocols.

Prior to the interview, I explained:

- My personal positioning to the participant (e.g., teaching experience, context of teaching, personal struggles in distance learning, curiosities that led me to this research, possible biases, and curiosities about alternate or opposing experiences).
- That at any time the participant may ask me questions, whether about my own practice, the research process, or any other questions of interest.
- That if at any time we got "side-tracked" in the interview (e.g., talking about family external to the research), that part of the interview would not be included in the interview data for further analysis.
- The anticipated benefits of the study and how the participants' interview/data will be meaningful to the research and the high school ADL community.

- The consent form (e.g., only answer questions you are comfortable with, your participation is voluntary, I will keep your personal data in strict confidence). (Appendix F)
- That they would have the opportunity for two member checking stages after the interview (see member checking section below).

During the interview I avoided jargon/slang and maintained a conversational tone.

With written permission from the participants, the interviews were recorded and transcribed verbatim for further analysis.

Data Analysis

Glanz (1999) noted three purposes for analyzing data: “to describe or summarize data clearly; to search for consistent patterns or themes among the data; and to enable you to answer your research questions and hypotheses” (p. 302). Using simple descriptive statistics from the survey and thematic analysis of the interviews and policy documents ensured I met Glanz’s purposes.

Surveys - Descriptive Analysis

The survey analysis used descriptive statistics to describe context, practices, philosophies, and identified contributors and barriers to successful high school ADL from the participants (n=35) (McMillan & Schumacher, 2010; O’Leary, 2017). Descriptive statistics included frequency distribution, percentages, and basic graphic analysis (e.g., bar graphs, pie charts). The descriptive analysis from the survey was used to enhance the exploration of high school ADL teachers’ experiences and, where appropriate, to investigate responses further during the semi-structured interview. The open-ended responses from the survey were included in the thematic analysis with the interview data.

Interviews and Open-Ended Responses in Surveys - Thematic Data Analysis.

I used reflexive thematic data analysis as “a method for identifying, analysing, and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). Reflexive thematic analysis “emphasises the importance of the researcher’s subjectivity as an analytic resource, and their reflexive engagement with theory, data and interpretation” (Braun & Clarke, 2020, p. 330). Strengths in thematic analysis of data lie in its flexibility, ease of use for novice researchers, and use in identifying patterns across an entire data set (Braun & Clarke, 2006). I used reflexive thematic analysis *deductively*, where I explored patterns through the lens of social constructivism

and learning ecologies. I was continually self-reflective to ensure the themes were constructed *through* coding and were not domain summaries or an attempt to support pre-conceptualized themes. Throughout the thematic analysis, I used both theoretical coding (e.g., exploring patterns within social constructivist categories) and emergent coding (e.g., codes drawn from the data) (Braun & Clarke, 2020).

I followed Braun and Clarke’s (2020) six phase analysis of the data, “1) data familiarisation and writing familiarisation notes; 2) systematic data coding; 3) generating initial themes from coded and collated data; 4) developing and reviewing themes; 5) refining, defining and naming themes; and 6) writing the report” (p. 331). Additionally, I applied Braun and Clarke’s (2006, p. 96) checklist of criteria for good thematic analysis (Figure 3.1)

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for ‘accuracy’.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
Analysis	6	Themes are internally coherent, consistent, and distinctive.
	7	Data have been analysed – interpreted, made sense of – rather than just paraphrased or described.
	8	Analysis and data match each other – the extracts illustrate the analytic claims.
Overall	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done – ie, described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as <i>active</i> in the research process; themes do not just ‘emerge’.

Figure 3.1: Checklist for Thematic Analysis

Data Management

All digital files, including audio recordings, are stored with Dr. Morrison within the secure U of S cloud storage system (i.e., Microsoft OneDrive). Dr. Morrison has shared the data through his Usask DataStore or OneDrive account with me so I can access the data remotely without the need to store it on my own computer. To ensure anonymity of participants, consent forms are stored separately from the surveys and transcripts, and I gave the participants pseudonyms to protect anonymity. Once the research is completed, all data from the U of S

SurveyMonkey Enterprise account will be deleted. All audio files, transcripts, and survey results will be deleted five years from the completion of the study. Participants have been made aware of the procedures for storage and deletion of data through the consent form.

Ethical Considerations

To ensure I did the research in an ethical manner, I followed these steps: (a) approval by my supervisory committee, the University of Saskatchewan Institutional Review Board, and the School Division; (b) completion of consent forms by all participants within the survey; (c) I sent interview participants the interview consent form ahead of time and gained verbal consent prior to each interview; and (d) I complied with the research ethics from the U of S SurveyMonkey Enterprise account.

Trustworthiness

Lincoln and Guba (2000, as cited in Merriam, 2009) address trustworthiness in qualitative research through asking whether the findings are “sufficiently authentic...that I may trust myself in acting on their implications? ... would I feel sufficiently secure about these findings to construct social policy or legislation based on them?” (p. 210). Merriam (2009) addressed trustworthiness through how closely the research findings match reality and whether the results are consistent with the data collected (Merriam, 2009, p. 221). I addressed trustworthiness through:

1. Two separate member checks to ensure the results reflect the participants' voice (explained in Chapter Four).
2. Adequate engagement in data collection through reflexive journaling (Halldorsdottir, 2000; Lincoln & Guba, 1985) and continual reference to the data on a daily, or as needed basis, to reflect on the decisions regarding methodology choices, internal conflict, preconceptions, values, and interests.
3. Committee feedback.
4. Being clear and consistent with how I gathered and analysed the data.
5. Maintaining a clear “audit trail” (Merriam, 2009) whereby interview transcription and data coding were transparent.

To minimize the effects of my own preconceived ideas on the analysis of findings, I completed extensive memoing (Corbin & Strauss, 2015) within 24 hours after each interview and referenced the memos throughout the data analysis. Additionally, I had discussions with my

research supervisor to ensure the data collection and data analysis were being done in such a way as to promote trustworthiness and confidence in the findings.

Summary

This mixed-methods study explored distance learning teachers' experiences with implementing socially constructed learning. In alignment with constructivist philosophy, a collaborative approach to knowledge construction was obtained through representation of the participants' voices, realized through participant relationship, ethical rigor, and member checking. Findings include both a descriptive and thematic representation of teachers' experiences, identified strategies and practices that work (or not) to elicit deep learning, and recommendations for implementing socially constructed learning in distance learning. The research methodology is structured such that readers can be confident that implications from the data, if put into practice, will influence learning within distance learning course design, context, and practice. The next chapter presents the data analysis and findings from the study.

CHAPTER FOUR: FINDINGS

Survey Data Analysis: Descriptive Findings

As previously addressed, I used the online survey for two purposes: a) to gain wider descriptive statistics of high school ADL teacher contexts, practices, and beliefs, and b) to recruit participants for in-depth interviews to explore high school ADL teachers' practices that support social constructivist approaches and deep learning. After most questions in the survey, participants had an opportunity to add additional comments. I analyzed the additional comments with the qualitative data analysis.

The first section of the online survey included participant demographics (e.g., years of experience, roles within school, gender). There were 35 survey participants from eight different divisions across Saskatchewan, with one participant that did not answer. Survey responses included nineteen males (n=19), fifteen females (n=15), and one other participant (n=1). Participant's years of experience teaching distance learning ranged from less than two years to sixteen plus years. All core subject areas (i.e., English, Mathematics, Science, Social Science) as well as Practical and Applied Arts, Visual Arts, Physical Education, and English as an Additional Language were represented within the participants teaching experiences.

The second section of the survey gathered information about the participant distance learning context regarding student start times, course pacing, and asynchronous/synchronous communication.

Table 4.1: Time Schedule: Primarily Asynchronous or Synchronous

Synchronous (the students have a regularly scheduled online class, similar to a face-to-face class schedule)	9%
Half asynchronous and half synchronous (there are mandatory weekly scheduled class times as well as independent learning)	20%
Asynchronous (Students have flexibility in their day to work on the course. The students and teacher are not scheduled together in the same time slot each day)	71%

Of the 29% who teach distance learning courses using primarily a synchronous delivery or a blend of synchronous and asynchronous delivery, 90% were from online schools that have

existed for five years or less. This suggests a trend with newer schools moving away from distance learning asynchronous individual learning practices.

Table 4.2: Student Start Times and Pacing

Students start at various times throughout the year.	29%
Most students start together at the same time each year. Typically at the beginning of each semester or school year.	41%
I teach courses that have both types of start times.	30%

All teachers who indicated they had students starting at both start times used an asynchronous pacing model, suggesting that once teachers needed an asynchronous approach to meet some student’s needs, they used it for all students.

For courses where students start at the same time, 36% were teacher paced cohorts with due dates (in many cases the students could work faster if they wanted), 44% were student paced, and pacing for 20% of teachers depended on the course and/or whether the student was a fulltime home-school student or taking distance learning to supplement their face-to-face courses. In these cases, Mathematics courses were self-paced while English courses were teacher cohort paced. Homeschool students had more flexibility with due dates than did the students who were taking face-to-face and distance learning courses.

Sixty percent of participants indicated that their teaching approach differed significantly depending on the course subject, for 37% their approach was not significantly different depending on the subject, and three percent were unsure.

Fifty-six percent of participants indicated that their delivery practices had not changed with the increase of students enrolled in distance learning due to COVID-19 physical distancing requirements. These 56% of participants were from schools or programs that had an individual self-paced delivery model in place prior to the pandemic. Forty-four percent of teachers indicated their course delivery had changed with the increase of students due to COVID-19 physical distancing requirements. Reasons cited for the delivery change included:

- “Creating more optional assignments and working with many different schedules”
- Moving to a four- or five-week term (compared to two semesters per year)
- Adjusting activities that can no longer take place face-to-face (e.g., work experience)
- Less structured pace for students working from home.

The third section of the survey included questions about participants' distance learning stance regarding social constructed learning practices.

In the paired comparison questions, three pairs of comparison questions were presented. The first pair contrasted student directed learning versus teacher directed learning. The second pair contrasted a student-centered versus content centred approaches. The third pair contrasted deep content versus broad content coverage.

Figure 4.1: Paired Comparisons Measuring Contrasting Teacher Beliefs

Social Constructivist Perspective		Traditional Perspective
Learning is enhanced when students are given the choice to direct their learning (e.g., choosing content, processes, assessments, etc.). Students tend to be more interested and make more learning connections when provided opportunity to direct their learning.	Versus	Many students struggle with directing their learning. Often students choose the option perceived as the "easiest." I feel student learning is enhanced if I choose most of the content, processes, assessments, etc. for the student.
Student interest and ability to make personal connections to concepts is necessary for deep understanding. Concepts should be adjusted to ensure students are intrinsically motivated to learn.	Versus	While student interest and personal connections are certainly useful, adjusting concepts simply for intrinsic motivation is not necessary for deeper understanding.
Deep learning and critical thinking skills are the most important goals. It is better to go deeper on fewer concepts, even if students are exposed to a narrower body of knowledge.	Versus	Having students engage with a wide variety of concepts in the curriculum is the most important goal. We may not be able to go deep on everything but at least the students will be exposed to a wider body of knowledge.

Table 4.3: Teachers' Agreement with Contrasting Statements of Distance Learning Approaches

Social Constructivist Practices	Favoured the More Social Constructivist Statement	Unsure	Favoured the More Traditional Position
Student directed versus Teacher directed	49%	15%	36%
Student interest versus Curriculum content	52%	9%	39%
Deep learning versus Content coverage	27%	21%	53%

Generally, teachers comfort level aligned with a social constructivist approach regarding student agency and student-centred learning (i.e., providing student choice and adjusting course design for student interest). However, teachers' comfort level favoured content coverage/exposure over deep learning. Within the comment section for student versus teacher led learning, 16% indicated that student-led learning depended on the course and/or the student (e.g., experience with distance learning, content interest, maturity, grade level). Within the

comment section for designing courses focusing on depth versus breadth of learning, almost one-third of participants (27%) indicated they would choose a mixed approach, broadly covering many concepts, followed by student choice to go deeper on what interested them, again depending on the subject and grade level.

The fourth section questioned teachers' experience and beliefs about interaction (Figures 4.2 and 4.3).

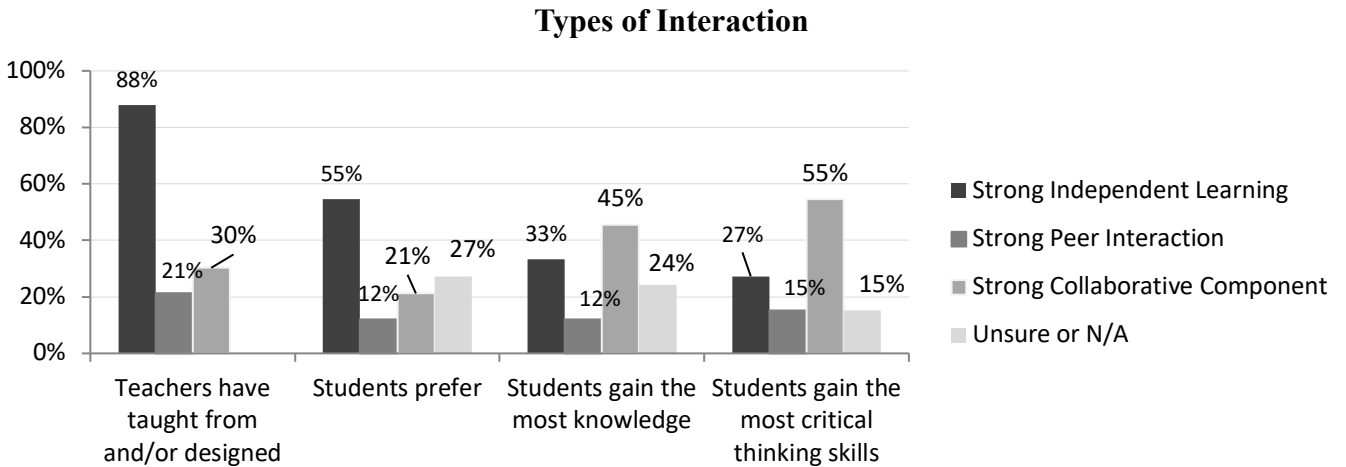


Figure 4.2: Types of Interaction

Most teachers (87%) have taught and/or designed courses with strong independent learning as well as indicate that most students prefer this approach (55%). However, many teachers indicated that a strong collaborative component allows the students to gain the most knowledge (45%) and critical thinking skills (55%). The survey data suggested a disconnect between value and practice, as teachers found value in collaborative learning while still choosing independent learning approaches for distance learning.

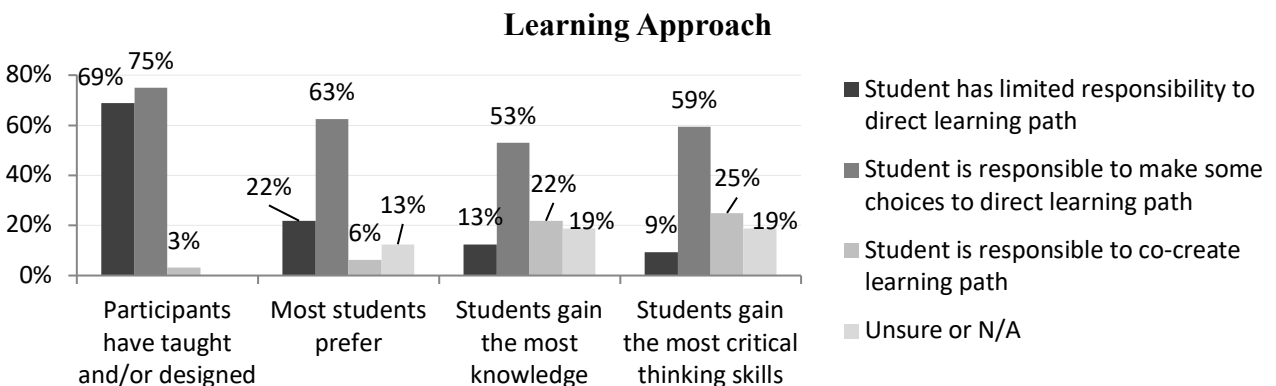


Figure 4.3: Learning Approach Assessment

Most teachers (75%) have taught and/or designed courses where the student is responsible to make some choices to direct their learning path. This approach aligns with teachers' beliefs about the best approach for student preference (55%), increased knowledge (53%), and gaining critical thinking skills (59%). Additionally, 68% of teachers have designed and taught courses where students have a limited ability to direct their learning path. Not only was this approach indicated as a low preference for students (29%), but they also rated this approach as the lowest for gaining knowledge and critical thinking skills. Overall, the responses indicated that teacher beliefs aligned with their approach (providing some choice), but there may still be many courses where students have minimal responsibility to make choices in directing their learning path, even though they recognized other approaches were better for knowledge attainment and critical thinking skills.

Table 4.4: Beliefs about Collaborative Learning

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Online high school students need to collaborate with others to gain deep understanding.	15%	39%	30%	3%	12%
Collaborative online instructional strategies increase deep understanding compared to independent online learning.	21%	36%	27%	9%	6%
High school students have the necessary skills to successfully collaborate with others online.	6%	24%	21%	36%	12%
Heavily relying on collaborative learning in asynchronous online courses is a realistic goal.	0%	12%	15%	30%	42%
Most students are capable of being successful in distance learning when primarily working from home	15%	45%	21%	12%	6%

Fifty-four percent of teachers agreed or somewhat agreed that high school students need to collaborate with others to gain deep understanding compared to only 15% who disagreed or somewhat disagreed with this statement. The high percent of teachers who were neutral (30%) suggests a possible lack of experience with both approaches to make an informed decision.

Fifty-seven percent of teachers indicated that collaborative online instructional strategies increase deep understanding compared to independent online learning. However, 49% of teachers indicated that high school students do not have the necessary skills to successfully collaborate with others online, suggesting without collaborative skills, deep learning is limited. Additionally, 73% of teachers disagreed or somewhat disagreed that heavily relying on

collaborative learning in asynchronous online courses is a realistic goal. The semi-structured interviews further examined why and when collaborative learning may not be achievable in asynchronous distance learning.

The next survey section included a matrix question asking about teachers' experience with specific tools. Figures 4.4 to 4.7 summarize the responses.

Teaching Tools: Use and Effectiveness

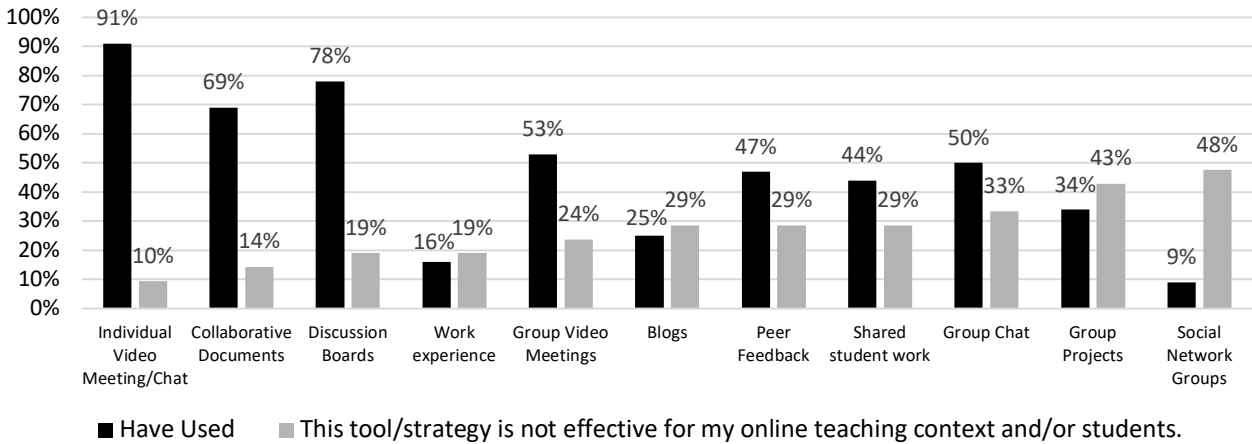


Figure 4.4: Teachers Use of and Interpretations of Effectiveness

Effective for Developing Critical Thinking Skills

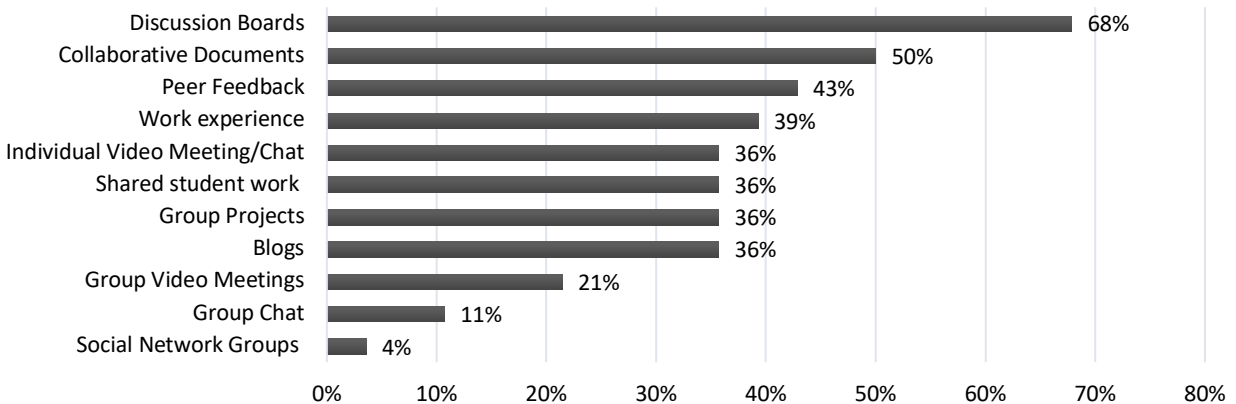


Figure 4.5: Tools and Critical Thinking Skills

Effective for Building a Learning Community

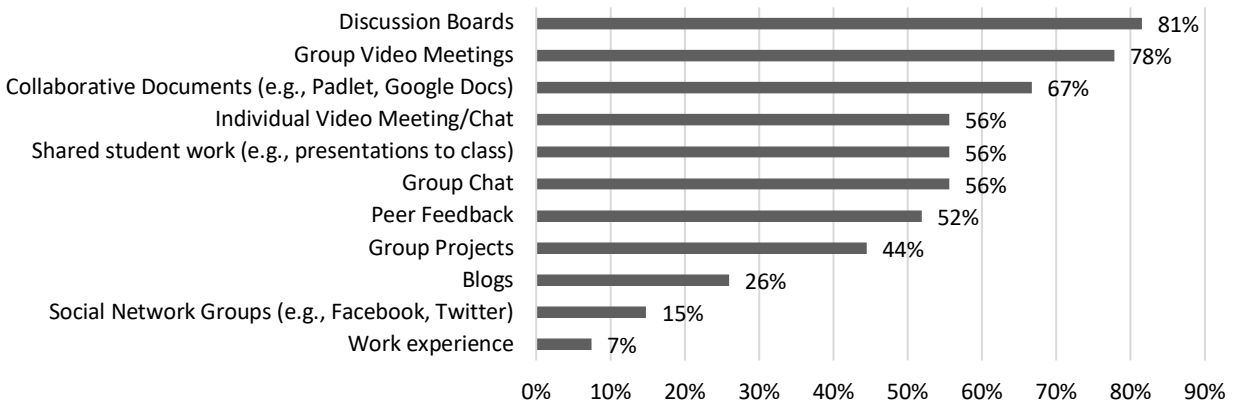


Figure 4.6: Tools and Building Community

Teachers ranked social networking and group projects ranked as the least effective for their teaching context (Figure 4.7).

Effective for Supporting Student Ownership

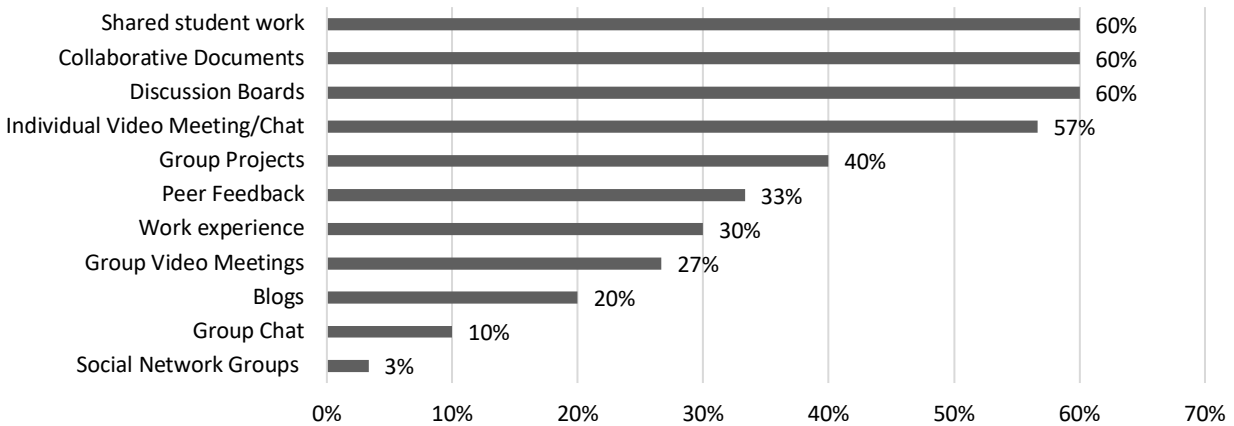


Figure 4.7: Tools and Effectiveness Supporting Student Ownership of Learning

Most teachers used individual video meetings, discussion boards, and collaborative documents. Discussion boards were ranked the highest in terms of developing critical thinking skills, building a learning community, student ownership of learning (the latter was tied with collaborative documents and shared student work).

The last section of the survey asked about what factors contributed to or were barriers to socially constructed distance learning practices.

Teachers were ranked as having the highest influence on student learning, followed by the onsite support person, students' independent research, parents and guardians, and, finally, classmates/friends.

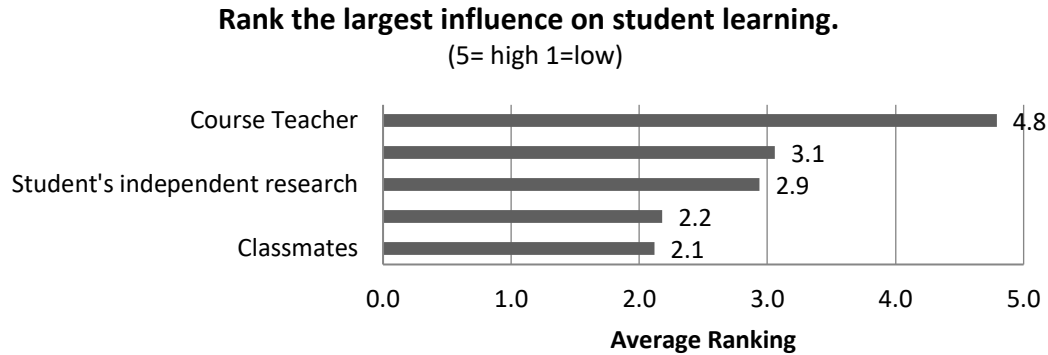


Figure 4.8: Largest Influence on Student Learning

Teacher responses varied for the onsite support person, students' independent research, parents and guardians, and classmates/friends, ranging from being the most important to the least important. Teacher influence had the least range in responses, with no one ranking it lower than third.

Participants were asked to rank their top three teaching barriers from a provided list (Figure 4.9).

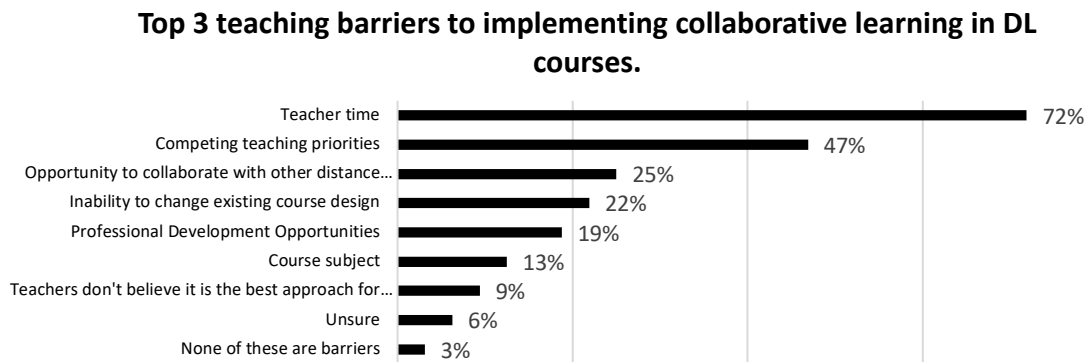


Figure 4.9: Teacher Barriers to Collaborative Learning

Teacher time (72%) and competing teaching priorities (47%) were ranked the highest. All other barriers listed had a 25% or less top three ranking.

Participants were asked to rank the top three student barriers students to successful collaborative distance learning from a provided list (Figure 4.10).

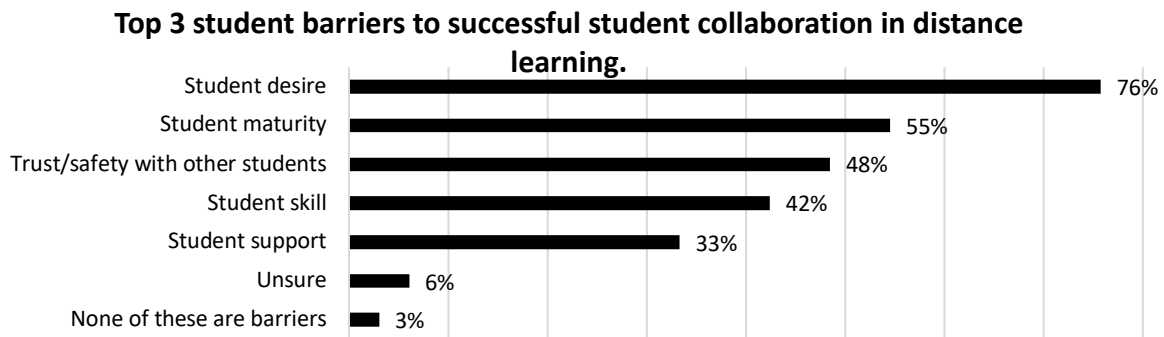


Figure 4.10: Student Barriers to Collaborative Learning

Student desire (76%), student maturity (55%) and trust and safety with other students (48%) were ranked as the top three barriers. Student skill and student support came in with 42% and 33% of teachers ranking them among the top three barriers, respectively. Student maturity is the only characteristic from the list that is arguably a fixed characteristic within the length of one course; there is not an immediate intervention for student maturity. The rest of the barriers could plausibly have an action plan implemented for improvements.

Participants were asked to rank the top three environmental/context barriers to successful collaborative distance learning (Figure 4.11).

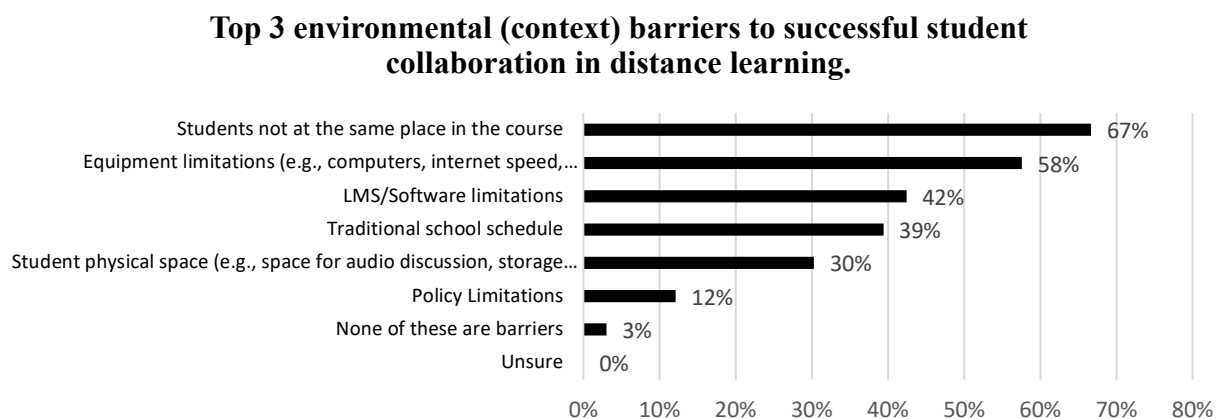


Figure 4.11: Environment/Context Barriers to Collaborative Learning

Students not being at the same place in the course (67%), equipment limitations (58%), and LMS/software limitations were ranked as the top three context barriers.

Participants were asked whether specific supports, cited in relevant literature about distance learning, were integral to distance learning success (Figure 4.12).

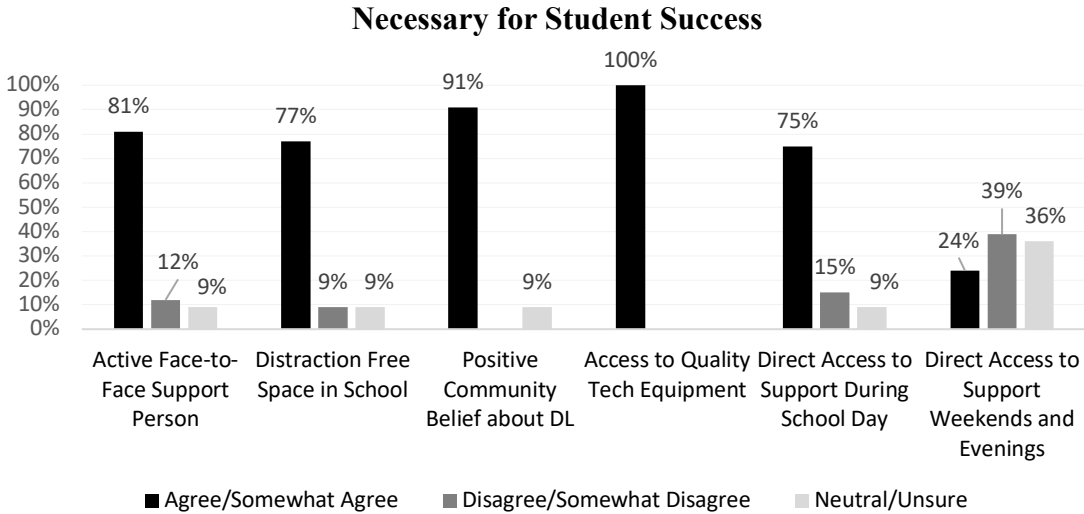


Figure 4.12: Necessary for Distance Learning Success

The lowest ranking was for direct access to human support on the weekends and evenings, with only 24% participants agreeing or somewhat agreeing that this was necessary for success. Open comments for this question referenced that they designed many of their courses for students working from home; therefore, the designated physical space was not applicable to their situation.

Summary of Survey Analysis

Key findings from the survey results indicate that 55% of teachers believe that collaborative learning is needed for deep understanding. Yet 73% of teachers indicated it is not a realistic goal in distance learning. If 73% indicate collaborative learning is not realistic, yet 55% indicate that is necessary for deep learning, it follows that students' ability to gain deep learning (and associated skills) is limited in distance learning. The survey data also suggests social constructivist approaches may be subject dependent, as over 60% of participants indicated use of different approaches for different subjects.

Interview Analysis

Through a qualitative thematic analysis of the interview findings, I constructed three themes that address how social constructivist strategies are actualized in high school ADL.

Namely, *The Teacher as Catalyst, Student Agency, and Alignment of the Purpose, Pedagogy, and Person*.

As outlined in Chapter three, interview analysis began after each interview using the six phases as described by Braun and Clarke (2006).

Phase 1: Familiarizing yourself with your data

This phase involved “transcribing data, reading and rereading the data, noting down initial ideas” (Braun & Clarke, 2006, p. 87). This stage used three steps: reflexive journaling, interview transcription including the first member check, and importing the data into the qualitative software program NVivo.

Step 1: Reflexive Journaling

Immediately following each recorded semi-structured interview, I engaged in reflexive journaling about things that were surprising, intriguing, or puzzling during the interview. This step allowed documentation of my internal thought processes aiding in the transparency of data analysis and allowed for “an initial list of ideas about what is in the data and what is interesting about them” (Braun & Clarke, 2006). A brief summary of my initial reflexive journaling is included below.

Student Interest and Relevance. Many participants commented on student interest or relevance of the content being connected to academic success or engagement. I questioned whether student interest might be an overlooked factor in course design. Do teachers underestimate their ability to influence student interest? Or, is the curricula irrelevant to many students?

Focus on communication and engagement versus deep understanding. I wondered why questions within the interview about deep versus surface level learning seemed to leave a pause in the conversation. Was it that to focus on deep learning, teachers first had to motivate the student to be active in the course? Was focusing on deep learning before focusing on getting the students active analogous to putting the cart before the horse?

Course design based on the assumption of basic skills in technology use. My reflective journal showed initial patterns in teachers identifying students' lack of technological skills as a barrier to success in distance learning. I noted to follow up in further data analysis phases to look for signs of how teachers interpreted students' lack of technology skill (e.g., as a student deficit or as an area to be improved within the education system).

Why students choose distance learning. Initial reflections indicated that teachers spoke of the diverse reasons students choose distance learning over face-to-face courses: student mental health, credit recovery, scheduling conflict, student interest, and responsibilities outside of school (e.g., parenting, sports). Many teachers were concerned about the increase in students with anxiety. Trying to meet diverse student needs seemed to weigh on teachers. Examples included meeting with students outside of the school day, tracking inactive students who were not prepared for online learning, and experiencing frustration with students not reaching out for help. I noted the need to analyse strategies used to meet diverse student needs.

Dichotomous views of advantages and disadvantages of asynchronous distance learning. Some interview participants spoke of the advantages of asynchronous courses (e.g., flexibility in meeting student needs) whereas other participants spoke of the disadvantages of asynchronous courses (e.g., tracking students, inability to collaborate). I used these reflections in the data analysis to interpret why teachers would have such dichotomous views of the same approach to distance learning.

Dynamic teacher role. My reflective journaling included the active role of the teacher. I wondered if in a learning ecosystem the teacher should be in the centre rather than the student. I reflected on whether the nested systems of an ecological framework were sufficient to account for the activities or roles the teacher takes on to support student success. To understand how socially constructed high school ADL is actualized, I noted it was necessary to consider the role of the teacher in the ecosystem.

Step 2: Interview transcription and first member checking

I recorded the interviews and later the same day, sent the audio files to a transcription service. Once each audio transcription was returned (usually within 48 hours), I reviewed and compared it with the original audio to ensure a “clean” transcription free of grammatical errors and repeated phrases. No coding was done at this time. I then emailed each participant's transcript to them for member checking (usually within a week of the initial interview). Of the eighteen interviews completed, three participants responded with additional information or clarification, five participants responded indicating the transcription was good, and ten did not reply.

Step 3: Import into NVivo

The next step in familiarising myself with the data was to import the transcripts into NVivo, a qualitative data analysis software available through the University of Saskatchewan. I organized the participant transcripts into individual “cases” within the program.

Prior to coding the data, I re-read each interview and created a “memo” file for each participant within NVivo. The memos included my initial summary from each interview, including my initial handwritten notes during and directly after each interview.

Phase 2: Generating initial codes

Generating initial codes involved “coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code” (Braun & Clarke, 2006, p. 87).

I completed my initial data-driven descriptive coding following Braun and Clarke’s (2006) advice to “(a) code for as many potential themes/patterns as possible (time permitting) - you never know what might be interesting later; (b) code extracts of data inclusively - i.e., keep a little of the surrounding data if relevant” (p. 89). I did this initial coding using general descriptive codes for sentences or paragraphs (e.g., technology, strategies). I then used a priori coding to “chunk” the data referring directly to the broad categories of social constructivism: collaborative learning, student agency, student-centred flexible design, and deep learning tasks. Additional a priori coding included indexing chunks of data referring directly to the research questions (Elliott, 2018) (i.e., strategies, barriers, supports for success, and improvements). At the end of this stage, I created roughly 130 codes, including sub codes.

Phase 3: Searching for themes

Searching for themes included “collating codes into potential themes, gathering all data relevant to each potential theme” (Braun & Clarke, 2006, p. 87).

I looked for overlap within codes to identify where they could be merged or rearranged into subcodes. I collated the codes into categories for potential themes. I began to “play” with the data and create multiple visual representations connecting the data (i.e., concept maps, drawings). The visual representations were used to ensure categories had not been created superficially, answered the research questions, and that I created a strong audit trail elucidating decision making throughout the analysis (Braun & Clarke, 2006).

At the end of this phase, I constructed four candidate themes from the data; a) the teacher as the catalyst, b) nice ~~but not~~ and necessary (a response to adjusting for student interest), c) perceptions of student readiness: fixed or flexible, and d) (dis)connect between purpose, pedagogy, and person.

Phase 4: Reviewing themes

Reviewing themes involved “checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of the analysis” (Braun & Clarke, 2006, p. 87).

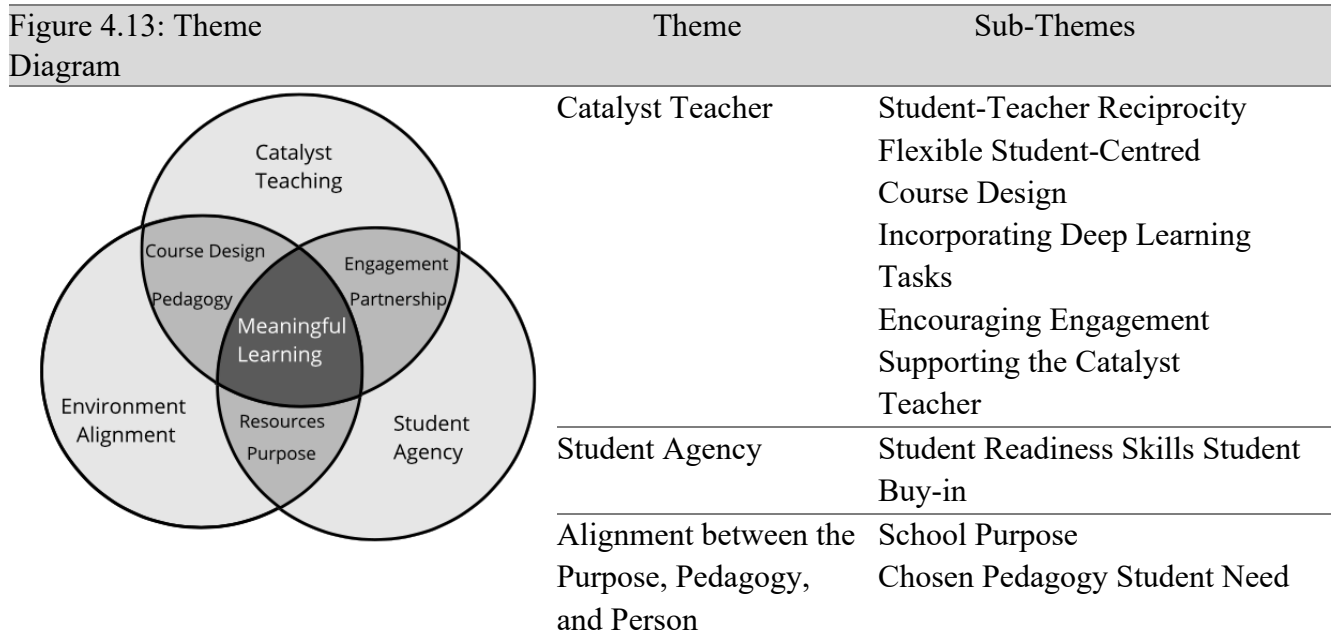
To review the themes, I emailed out a one-page summary of each candidate theme to all eighteen interview participants. At the bottom of each page, I included the questions: Does this theme resonate with you? Is there anything you would change or add to enhance the interpretation? Of the eighteen participants, I received one reply. The responding participant indicated that the theme of connection between purpose, pedagogy, and person resonated the most, although they connected with each theme. They further added that focusing on connection, rather than (dis)connect, might be a stronger way to connect all themes. Based on the feedback, I adjusted the word (dis)connection in the final theme to Alignment.

I then posted a concept map of each theme on my office wall, looking for connections and overlaps between each theme. Using different colored highlighter pens, I circled common topics occurring among each theme. It became clear that the candidate themes *Teacher as Catalyst* and *Nice ~~but not~~ and Necessary* largely overlapped. As a result, I reviewed and refined the coding and created a new concept map where *Nice ~~but not~~ and Necessary* was renamed *Encouraging Engagement* and was included as a subtheme of the teacher as catalyst.

During this stage, coding for *Perceptions of Student Readiness: Fixed or Flexible* became problematic. Upon further analysis, the initial interpretation of the theme connecting teachers who viewed student readiness as fixed (i.e., unable to be influenced within one semester) as using less socially constructed learning opportunities than those who viewed student readiness as flexible, was not consistent among all data excerpts. I re-analyzed the coded text and created a new candidate theme, *Student Agency* addressing both student readiness and student buy-in.

This phase ended once I determined that further analysis was not adding anything substantial to the re-worked themes (Braun & Clarke, 2006). The three themes were distinct, interconnected, and represented participant data beyond a domain summary of their responses.

At the end of this phase, I refined the themes and subthemes to; a) Teacher as Catalyst, b) Student Agency, c) Alignment between the Purpose, Pedagogy, and Person.



Phase 5: Defining and naming themes

Defining and naming themes was an “ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme” (Braun & Clarke, 2006, p. 87).

At this stage, I began a detailed write-up of each theme, clarifying my thoughts through writing and critical discussions with my supervisor. At times, I recorded my conversations with my supervisor so I could revisit our discussions later. I continuously referenced my reflexive journal, memos within NVivo, hand drawn diagrams, concepts maps, photographs of whiteboard thinking processes, codes, and raw data to “transform this mass of (messy) information into a complex, nuanced yet streamlined analysis that tells a clear, coherent, and compelling story about the data and what they mean” (Clarke & Braun, 2013).

By the end of this phase I was able to clearly define the themes using titles that were “concise, punchy, and immediately give the reader a sense of what the theme is about” (Braun & Clarke, 2006). Additionally, to test the clarity of themes, as suggested by Clarke and Braun (2013), I ensured I could describe each theme using a few short sentences to clearly define and create boundaries for each theme (Clarke & Braun, 2013).

Phase 6: Producing the report

Producing the report was “the final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back [to] the analysis [of] the research question and literature, producing a scholarly report of the analysis” (Braun & Clarke, 2006, p. 87).

During this final phase, I constructed an analysis/discussion section and a conclusion section. I combined the analysis and discussion section so I could use existing research and theoretical concepts to deepen the analysis of the data (Clarke & Braun, 2013, p. 308). The conclusion section contains a summary of the main findings, recommendations for future practice, and suggestions for future research.

In the analysis and discussion, I used the abbreviation SP to identify data excerpts that came from any of the thirty-five anonymous survey participants. In some cases, I use the abbreviation IP to indicate data excerpts that came from interview participants that, for increased confidentiality, I did not want linked back to the participants’ pseudonym. Where there are multiple vivid data excerpts to illustrate my interpretive analysis, I place the participant quotes below my analysis. However, for ease of reading, if a data excerpt was short and needed context for clarity of analysis, I incorporated participant quotes directly into my writing.

I combined the analysis and discussion sections below, in line with Clarke and Braun’s (2013) recommendation, to avoid repetition and to allow me to develop the analysis “more fully, as it happens” (p. 258).

Below, I describe the analysis of the three themes *Teacher as Catalyst*, *Student Agency*, and *Alignment between the Purpose, Pedagogy, and Person*.

Teacher as Catalyst

I determined the theme *Teacher as Catalyst* in response to making meaning of the teachers’ dynamic and generative role within the learning ecosystem. It was clear that teachers had a very active role in the ecosystem, more than that of a “guide on the side” (King, 1993) or of a learning “coach” (Driscoll, 2005). They actively supported students through advocating for more resources, continually making videos to individualize the learning, meeting with students outside of school hours, and spending countless hours trying to contact students, parents, and administration, all of this with little to no formal training as distance learning teachers. As one

teacher expressed, it was “sink or swim.” I interpreted the term *catalyst* to be more reflective of how social constructivist practices are actualized in high school ADL.

Rogerson and Chomicz (2014) likened teachers to “a catalyst, lowering the amount of energy required for the reaction to take place by simplifying content and communication for students to learn and develop within the classroom” (p.6). Segerstrale (2018) described the catalyst teacher as one who supports communication, problem solving, and creative thinking skills because he/she designs activities for students to interact with. Interestingly, Horsley (2012) found that teachers who take a passive observer role may actually inhibit student success. Much of the research and literature has a foundation in face-to-face technology-rich classrooms; however, there are strong similarities within this study to suggest the above characteristics (e.g., scaffolding content, supporting communication) equally apply to distance learning.

I provide the following three figures as visual representations of the *Teacher as Catalyst*, supporting deep learning within the distance learning ecosystem.

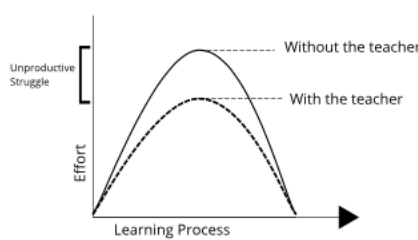


Figure 4.14: Reducing Unproductive Learning Struggle

Through student-teacher relationships, clear course design, scaffolding content, and providing exemplars, the teacher is a catalyst by reducing the unproductive struggle that may initially occur as a student attempts to navigate the distance learning environment (e.g., course navigation and expectations).

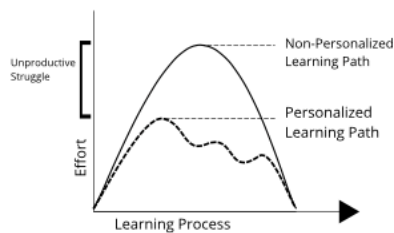


Figure 4.15: Personalized More Efficient Pathway

The teacher is also a catalyst by designing a personalized learning path for the student that is more efficient as it relates to the student's interests and applies to their lives.

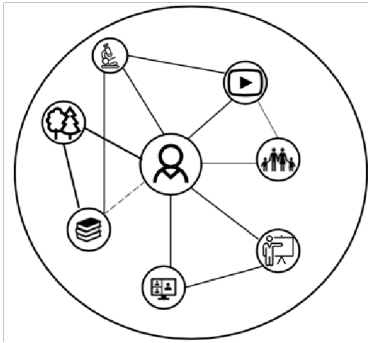


Figure 4.16: Facilitating Deep Learning Through Strengthening the Environment

Finally, the teacher is also a catalyst by facilitating deep learning by strengthening reciprocal relationships in the environment. The teacher as catalyst might add in additional resources or content to the learning environment, incorporate relevant deep learning tasks, support student skills, or create opportunities for dialogue. These connections may be different for each student to ensure a personalized learning path.

Rather than referencing the term “social constructivism” per se, teachers highlighted teaching processes for student academic success and deep learning. The sections *Deep Learning Tasks* and *Creating a Flexible Student-Centred Course Design*, describe *what* strategies teachers use to support social constructivist learning. The sections *Building Student-Teacher Relationships*, *Strengthening the Learning Environment*, and *Supporting Student Engagement* describe *how* teachers supported such strategies. It is within these categories that I interpreted the role of the teacher as a catalyst to actualizing socially constructed learning in high school ADL.

Deep Learning Tasks

The sub-section *Deep Learning Tasks* collate the strategies that teachers identify as best practices for deep learning.

The strategies teachers identified had confluence with deep learning tasks referenced in the literature review. Namely, application to real-world problems, “hands on” learning, and critical thinking skills (Amoah et al., 2018; Beck & Kosnik, 2006; Fullan & Langworthy, 2014). Table 4.5 provides examples of deep learning tasks teachers incorporated into their high school ADL courses.

Table 4.5: Deep Learning Tasks

Metacognitive Tasks Linked to Collaborative Experiences	
Crystal	Crystal commented that deep learning happens through meta-cognitive tasks. It is not sufficient to complete volunteer hours, but rather a student must reflect on their learning. “What did you learn? What roadblocks did you have?...It’s one thing to get them to create some sort of collaborative experience outside the norms of educational fields [such as volunteer hours]. It’s another thing to get them to share [their learning]...The kids are way more willing to share online, deeper feelings about what they experienced.”
Critical Discussions in a Discussion Board	
Beth	We also talk a lot about ethics [in the discussion board]... They have to critically look at a specific case and then talk [in the discussion board] about why they would do it.
Portfolios	
Emily	I get them to do a lot of journal work in English, and they get multiple chances, too. They submit it on OneNote, I give them corrections, and if they want to re-submit they can, and then all the journals they work on through their entire English course, they pick a portfolio of their best work.
Rene	One of my students has put together a portfolio that she’s done as a website. She’s put together her own Google site, she has all of the notes she’s put together on the various outcomes [together with] a practice test, and then a reflection ...on the practice.
Self-Assessment	
Emily	Having a piece of assessment at the end, that takes all of their pieces and then they have a reflection...They’re assessing and reflecting their own learning... once you connect to them on a personal level, where it’s a journal or an assignment or a reflection, then they go to that deeper meaning of learning ... asking questions ... wanting to do better, and getting to that deeper understanding.
Student Created Assignment that Other Students can Complete	
Jane	“I had fitness leadership, where they actually had to lead a class. So I had [them] ...come up with an activity or game, practice it, do it with their family or someone they trust, and then they had to give me a PDF or handout.” Jane would then post the PDF for other students to complete during the course
Online Simulations	
John	Anytime the students can access an online simulation...where they can essentially do online lab experiments [where] they can control the parameters by just adjusting a bar, pressing the button... those are generally successful, and they are helpful in giving kids a frame of reference for understanding problems.
Inquiry Projects	

Leah At the end of the unit project, is more of an inquiry learning project where they're picking the topic...Anything that is of their interest [connected to the content], and then they really just guide their own learning, and come up with some research questions using a Q-matrix chart to help guide their research in that they control their learning and what they want to get out of it.

Hands on Experiments/Activities

Ruth In our learning kit, we send them soil, clay, seeds, different seeds.... Once spring comes, they [plant them]...and then they have to do some follow-up with talking about different farming practices.

Markedly, teachers noted that not all curricula required deep learning tasks or deep learning. For example, Beth noted that “I wouldn’t say necessarily that I’ve a lot of students who are doing deep learning...but you can get away with not a lot of content and still get credit for the course.”

Student-teacher Relationships

The sub-theme *student-teacher relationships* addressed the overarching research question “How do teachers achieve socially constructed learning in high school ADL?” and the sub-question “What strategies do high school ADL teachers identify as supporting deep learning?” To support socially constructed learning, teachers needed to build student-teacher relationships.

Student-teacher relationships are not unique to distance learning. Indeed, they are a foundational aspect of social constructivist face-to-face practices that support deep learning (Barkley et al., 2014; Freire, 1974; Goulet & Goulet, 2014). However, the strategies that teachers used to build such relationships in distance learning are more elusive in the literature. These research findings illuminated practical strategies such as synchronous meetings, online surveys, consistent check-ins, online text chat functions, and communication with parents and school support persons.

Throughout the interviews, teachers described how student-teacher relationships helped them build knowledge about their students, which was then used to support students’ academic success. The findings highlight strategies to build such relationships through, a) synchronous meetings and site visits, b) online surveys, and c) consistent check-ins.

Synchronous meetings and site visits. Teachers commonly cited using synchronous online meetings to build and maintain student-teacher relationships. Steve found that meeting students at events in the community (e.g., volleyball tournaments) combined with supporting synchronous meetings, when possible, was beneficial.

Many teachers also cited the benefit of connecting with students through site visits.

Brian I would go and do site visits...I would teach mainly in Town 2. But I would try to go to each one of the communities maybe once a month to teach remotely... they started to get engaged quite a bit more after that initial meet.

Online surveys. To build an understanding of each student's needs, teachers often asked students about themselves through online questionnaires/surveys. The online surveys asked students to share information about themselves as a starting point to build a relationship. For example, Leah sent out surveys to her students asking questions about their personal interests, which she used in further communication with them.

Leah I try to remember a few of those things... [when we're] connecting back and forth...to build that relationship piece.

Surveys were also used to gain information needed to create a student-centred course. As Jane explained, she sent out a survey at the beginning of each semester asking students about what helps them be comfortable with online learning. Questions she asks include: "Why are you taking this class? Is there anything you're excited or interested about? How best do you learn?...Is there anything you want to tell me that would help me as your teacher?" She then adjusted her course accordingly. For example, if students indicated they enjoyed having an opportunity to "hang out or discuss" she tried to incorporate "Friday hangout sessions."

Check-ins. As part of student-teacher relationships, teachers indicated the necessity to make more intentional check-ins with students. Teacher check-ins correspond with Toshalis and Nakkula's (2012) findings that students may need teachers to be the first to initiate student-teacher relationships. As one teacher indicated:

Beth Some kids, they sit and struggle. And so, you have to be much more cognizant of that and you have to do more check-ins.

Check-ins often included the use of chat software, such as Google Chat or Microsoft Teams chat and communication within collaborative documents (e.g., Google Docs).

Emily There are constant check-ins through Team's chat, and then if I see them active in the documents they're supposed to be [in].

Leah I mention where they should be in the week to be on track for finishing at the end of semester, just a weekly check-in email is always at the beginning of the week

Student-teacher relationships supported a dialogue where students asked clarifying questions. Through student questioning, students gained a deeper understanding of the concepts, as the teacher provided additional information and clarification.

Once teachers built student-teacher relationships, they were able to understand specific student needs and strengthen the learning environment.

Strengthen learning environment

Here, I take a few liberties with the teacher as catalyst theme to include the teacher more as a biologist who is enriching the environment (e.g., adding resources). Teachers frequently spoke of the benefits of building *student-teacher relationships* to understand the student's learning needs. Once teachers understood a student's learning needs, they could strengthen the learning environment (e.g., add additional learning resources) to meet diverse learner needs. The catalyst teacher strengthened the learning environment through incorporating software support, advocating for additional human resources, strengthening the student's support team, and using a pedagogy supportive of student needs.

Software support. Software support included meeting cognitive learning needs and accessibility challenges. When referencing students who experience reading challenges, one teacher ensured the student had appropriate online reading software available; she noted the importance of online reading software because "If reading is an issue for a child, then distance learning becomes even more [difficult]" (due to the amount of reading).

Another teacher noted some students *dislike* specific software for a variety of reasons, including user-experience: "There is a limitation that they have to use their division log in credentials to use it. And a lot of them who are not in a school don't want to deal with tracking that stuff down." This teacher went on to describe that they found and used more accessible software (other than what the division approved) as it was more supportive of student learning. "We use a different program that I can just send a link to, and it opens it up for them [without a separate login]." Notably, this opens issues regarding security concerns. However, the teacher deemed the security issues to be less of an issue than access to conversations and/or content.

Advocating for Additional Human Resources. Some teachers needed to advocate for the additional staffing for a student services teacher (SST), a ubiquitous position serving a critical role in face-to-face schools. Interestingly, despite the pressures of the COVID-19 pandemic, one participant indicated that "It took a *lot* of persuasion to get [an SST]" [IP]. Teachers attributed the resistance to implementing an SST to senior administration staff not understanding how distance learning works. I would further suggest, prior to COVID-19, distance learning courses often focused on individual learning with students who were able to

direct their learning without the supervision of a teacher. Teacher’s experiences suggest the support system in distance learning may not have caught up to the shift towards a social constructivist approach and shifting student demographic (e.g., *all* students versus a *niche* student capable of self-directed independent learning).

Strengthening the Student’s Support System. Teachers discussed strengthening the students' support system through supporting parents. As one teacher noted, they get a lot of calls from parents who are “terrified or worried” about their child’s ability to learn online. Another teacher noted that parent engagement supports student engagement: “When there is strong parent engagement and involvement, everything seems to go really good, and they keep each other on track” [Ruth]. Participants’ sentiments regarding the importance of including parents as part of the distance learning community to support student learning are further supported in literature (Borup et al., 2014; 2020; Kong, 2018) where the parents take on roles to support and motivate distance learning student engagement.

Examples of how teachers encouraged and supported parent engagement included sending emails with strategies to support their children (e.g., videos explaining how to set up a distraction free environment at home). Another teacher used video calls with students and families at the beginning of a semester “to build a personal connection...so that it wasn’t just an email but a [personal] conversation” [John].

Beyond strengthening parent connections, Beth made a point of contacting the student’s support person (e.g., an educational assistant within a face-to-face school) because “they typically have a better sense of a kid.”

Pedagogy. Where teachers had agency in influencing course design (e.g., where divisions did not mandate a specific approach to distance learning), teachers spoke of shifting their pedagogy to match distance learning students’ needs. For one teacher, that meant advocating for “more of a flex model” [Emily], where they incorporated some synchronous sessions (e.g., once a week) within a primarily asynchronous course. For another teacher, that meant ensuring an individual model was available for their large Canadian newcomer population.

Crystal	We’ve got a kid going back to Iraq, or the Philippines, for six weeks, and they’re going to miss a huge chunk of time... [the school will] parachute him in. So that’s a huge advantage with asynchronous
---------	---

Diversity and choice of pedagogy approaches are addressed in the last theme Alignment between the Purpose, Pedagogy, and Person.

Flexible Student-centred Course Design

Flexible student-centred design includes relevance of content and some student agency to choose the learning path (Moore, 1997; Rodriguez & Berryman, 2002; Williams et al., 2011). Commonly cited strategies to create a flexible student-centred course design include scaffolding challenging tasks, creating flexible learning paths, and providing multiple ways to engage with the content. Table 4.6 summarizes flexible student-centred course design and strategies identified by teachers.

Table 4.6: Flexible Student-Centred Course Design Elements

Course Design Elements	Strategies
Flexible Assessment	Incorporating student experiences into assessments. Adjust assessment based on student advocacy.
Flexible Learning Path	Teacher-curated student-choice of content/assessments.
Flexible Pacing	Student-led pacing (e.g., absence of due dates or flexible due dates).
Multiple Modes of Receiving Content	Incorporating text, video, diagrams, and online simulations.
Scaffolding	Breaking larger project into smaller sections.
Challenging Tasks	Create pause points within a module. “Chunking” videos and learning tasks.

Flexible Assessment, Learning Path, and Pacing. Teachers cited the necessity for flexibility in a student-centred course design.

Flexibility in course assessment was one avenue for flexibility. For example, Crystal spoke of the flexibility she used when teaching a Wellness 10 course, where twenty-five percent of the content focusses on *physical* wellness.

Crystal I’ve had kids in wheelchairs complete [Wellness 10] ...So what we do is we use their physio... that they do in their rehab of whether they’ve had knee surgeries, their back surgeries, that’s part of their plan

Crystal notes that in face-to-face classes, students with physical challenges would have difficulty taking part in classroom physical activities. Flexibility in course assessment ensured greater inclusion.

Flexibility in the Learning Path. Student-centred course design included providing opportunity for student agency in choosing the learning path through student choice. Teachers

offered a broad range of topics for exposure to content, followed by student choice to go further in depth with topics that were relevant or interesting to them. For example, Beth indicated students may not have enough life experience to know what they are interested in going deeper with. As a result, she curates sets of relevant resources and provides student choice. “I give them scenarios where there’s like six different cases. They have to pick a case and then they have to talk about that particular case.” One of the survey participants indicated a similar strategy.

SP Most of my courses allow for some freedom with selection of assignments...
Choose one of the following three options.

Opportunity for student agency was often teacher-curated to support and guide the student without overwhelming them. Teacher-curated student-choice appears to be an effective strategy to reduce distractions within course design by removing “superfluous information” not required.

Flexibility in course pacing. Many teachers provided student agency in how students paced themselves through the course.

Beth I think in typically the way I run my courses because I do give them the flexibility
of working mostly at their own speed within certain deadlines.

Jane We want to allow the flexibility, and for me it’s okay, we’re all at different paces,
I’ve got a kid that’s already done- they prefer to focus on only two courses so they
go hardcore.

Although teachers cited many positives for allowing student agency in pacing, some teachers cited student-led pacing as a barrier to deep learning, as many do not have sufficient time management skills.

John I really have the issue with the pacing of the course and students having the option
of procrastinating and then hammering out a course in 3 weeks or 2 months or
whatever it is. It totally interrupts the natural teaching and learning cycle.

I address this barrier further in the themes Student Agency and Alignment Between Purpose, Pedagogy, and Person.

Multiple ways to engage with content. Participants noted that student-centred courses needed multiple ways for students to engage with content; the course could not rely solely on text-based information.

To ensure a student-centred course design, Jason made sure he presented students with multiple ways to interact with the course concepts.

Jason We try to give all the students... videos, websites, textbooks, as many different kinds of resources as we can, to hope that one sticks with them.

Some teachers highlighted that online learning can be difficult for students who need to verbalize.

Brian You can learn as much as you can from reading and watching and viewing, but until you get a chance to discuss it or apply it you can't synthesize that information.

Meyer et al. (2014) supported similar student-led strategies (i.e., providing student choice, scaffolding challenging tasks). They found if schools "leveraged the flexibility of digital technology to design learning environments that from the outset offered options for diverse learner needs" (p. 3), then fewer students would require additional support programs.

Scaffolding challenging tasks. In alignment with social constructivism (Vygotsky, 1978), teachers regularly cited scaffolding and breaking down content in smaller chunks as a necessity. Steve found it effective to use 20-minute videos, followed by a pause for the student to work. "[I] put up twenty-minute videos, a little bit of work, another twenty-minute video, and I'd organize it day by day."

Brian noted that when students needed additional help beyond what he scaffolded in the course, he would create and post an additional "screencast video of how to do something." The creation of additional videos for scaffolding is an additional task unique to distance learning. In face-to-face learning, a student could ask questions and get an immediate response in class.

Supporting Student Engagement

The teacher as catalyst theme is further evidenced through *encouraging student engagement*. Here the teacher is a catalyst by bringing elements in the learning environment together not only in meaningful ways (e.g., emotionally and intellectually engaging), but also in ways that lower the unproductive learning struggle (e.g., clear course navigation) required for behaviour engagement. Teachers used diverse strategies targeting three categories of engagement,

- a) behavioural engagement (e.g., logging in regularly, meeting due dates)
- b) emotional engagement (e.g., course interest), and
- c) intellectual engagement (e.g., critical and creative thinking, decision making).

Although teachers did not specifically use the terms behavioural, emotional, or intellectual engagement, I interpreted their strategies supporting social constructivist learning to

align with literature on these engagement strategies (Borup et al., 2020; Toshalis & Nakkula, 2012; Willms et al., 2009).

The data suggested that engagement strategies, when coupled with strong student-teacher relationships, have a powerful catalyst for deep learning (Fullan et al., 2017). Table 4.7 lists the engagement categories, their intended purpose, and strategies teachers used.

Table 4.7: Engagement Categories, Purposes, and Strategies

Engagement Category	Engagement Purpose	Strategies
Behavioural Engagement	Support student-led learning. Build comfort in DL routines Required for assignment submission and maintained enrollment in course.	Support student time management and technological skills. Clear consistent, communication. Model online interaction. Clear course navigation.
Emotional Engagement	Support student-led learning. Support collaboration Support intellectual engagement. Build student sense of belonging in DL environment. Support learning enjoyment.	Incorporate students' interest and prior experiences into concepts. Support student advocacy. Field trips. Encourage collaboration and informal learning communities.
Intellectual Engagement	Support student-led learning Support collaboration Support deep learning Support deep learning skills Support meaningful learning Support lifelong learning	Creating pause points for feedback incorporation and improvement. Support student advocacy Shared digital spaces to learn from others. Scaffolding collaboration. Assessments that include peer feedback, student content creation, and critical self-reflection.

Behavioural engagement. The behaviour engagement strategies identified in this study align with Borup et al.'s (2014, 2020) strategies: a) troubleshooting and orienting (e.g., adding additional clarification and resources), b) monitoring progress (e.g., continuous check-ins), and c) organizing and managing (e.g., clear course design). Adding additional clarification and resources along with continuous check-ins were previously addressed in student-teacher relationships and strengthening the learning environment. As such, I will only address clear course design here.

Behaviour engagement (e.g., logging in regularly and submitting assignments on time) did not by itself lead to deep learning; indeed, teachers noted students handed in low quality work on time. However, without behaviour engagement, the teacher was limited in what they could assess for learning. Furthermore, when behaviour engagement was low, distance learning teachers spent a significant amount of time tracking inactive students; a task that was identified as an administrator’s role in face-to-face schools. Brittany’s excerpt provides greater understanding of the, sometimes futile, role distance learning teachers take on when tracking students.

Brittany I’m making twenty phone calls that never get answered, my voice mails are never returned, my emails are never answered.... that constant repeating of trying to get in touch with someone was a major, major, major part of my job.

It is then necessary to understand how teachers supported behaviour engagement (generally considered a low-level of engagement) as a first step toward deep learning.

I equate teachers’ descriptions of their course design strategies to ensuring the student has a clear sightline to the learning goals and a clear path to get there. Brittany used the metaphor of a “hedge maze” to describe the frustration students experience in navigating unclear course designs. “It’s like if you made people walk through a hedge maze to get to the door of their school every day, where do I turn, this is frustrating!” Another teacher further described “feeling bad” for students navigating multiple platforms such as “Social Studies on Zoom but then Math class on Google Meet.” No participant indicated a preference for one platform over another, only that learning to navigate multiple platforms was an unnecessary struggle for students. David described what he noticed with the varied course designs.

David The look, the assessment, everything, could be drastically different [for the students]... not just subject to subject, but even an English A to an English B, where a different person develops and a different person teaches it.

To mitigate confusion between either multiple platforms or multiple course designs, teachers were ensuring their courses had “ease of navigation” for students.

David	Courses, in my mind, look nice and function the way they should, and there’s user friendly in the design pull
-------	---

Jason	Every chapter, every section of every chapter, is set up the same way, just to give that consistency.
-------	---

SP	Since COVID-19, one survey participant noted it was more effective to “structure toward week-by-week design versus unit design.”
----	--

Beyond consistent, clear navigation, teachers noted clear due dates, scaffolding content, and including exemplars as further strategies to create clarity in the learning path and goals.

Table 4.8: Scaffolding Content, Clear Due Dates, and Adding Exemplars.

Scaffolding Content	
Brittany	Brittany learned that simply posting face-to-face materials (e.g., handouts with instructions) was not effective. “It’s such a poor way of doing things, it doesn’t work.” She has since identified incorporating multiple learning paths, breaking down assignments into small chunks, and incorporating videos that are six minutes or less.
SP	Rather than doing a whole big project, I might have eight little tiny assignments that lead up to one big project
Clear Due Dates	
Emily	There is a digital calendar that I show my students every single time we meet live and be like ‘here’s where we’re at, and here’s what’s next- look how much time we have before the final exam, you have to get going!’
Adding Exemplars	
Crystal	You go in, and you put either some sort of exemplar, or some sort of expanded explanation-whatever is needed to help clarify.

Limitations to Behavioural Engagement. Teachers noted that incorporating the above behaviour engagement strategies reduced student procedural questions (e.g., How do I do this assignment?). They did not, however, link it to deep learning. I note here that ease of navigation and scaffolding content does not mean making an “easy” course with shallow learning. John cited such distance learning course designs used in SK, with ease of navigation that lead to shallow learning. Below, he is comparing some distance learning courses to shallow learning that he sees in online certifications.

John	Are those deep learning activities where you go online and you watch some slides and you click the next button and while you’re [multitasking]...You write the [multiple choice] test at the end and all of a sudden, you have a certificate...that says, you’ve got this knowledge now. Do I really have that knowledge? ... Yet, that is essentially what we are doing with distance learning. For some students, they are just giving you what is required, kind of the minimum and at the end of the day they’re coming out with a credit [not deep learning].
-------------	--

John’s frustration suggested there may be an underlying attitude that distance learning is not intended for deep learning, perpetuating the notion that distance learning is a “lesser” education (Vadillo, 2010).

The lack of association between behaviour engagement and deep learning was further noted through superficial participation in discussion boards. “I have many students comment that discussion boards are boring and that they just read them and sometimes reword what someone above said to get marks for them.” [SP] Another teacher, who noted similar results, questioned whether it was the discussion boards that were the problem or how she designed them. I further elaborate on superficial participation within the Student Agency sub-theme, *Student Buy-in*.

Another sentiment expressed by many teachers was the benefit of incorporating some synchronous learning to increase behaviour engagement. “If [DL] can somehow be partially synchronous, though it is not convenient, it would create a certain level of accountability that would likely lead to more success. Not necessarily deeper learning, but certainly more successful credit achievement” [John].

Emotional Engagement. Even though teachers in the study did not explicitly use the term *emotional engagement*, participants used teaching strategies they predicted would increase emotional engagement (e.g., interest, enjoyment of task, etc.), noting such strategies also increased behavioural engagement (e.g., logging in regularly, submitting assignments).

Many teachers claimed that intentionally designing courses to target emotional engagement (e.g., connecting content to student interests) was beneficial, especially when no pre-existing intrinsic interest existed.

Leah	We have to make those, personal or more connections...and reach out, whether it be a book club, or something like that, that might engage some of those students that maybe are having a harder time.
------	---

Emotional Engagement Strategies. Strategies teachers used to increase emotional engagement included:

- a) tailoring the course to student interests,
- b) ensuring content relevance,
- c) encouraging autonomy, and
- d) encouraging interaction.

Table 4.9 includes teacher excerpts describing examples of these strategies.

Table 4.9: Emotional Engagement Strategies

Content interest	
Creative Assignments	When assignments are creative and spark student interest, “they have so much fun with it...it’s very rare that I get stuff that’s just phoned in, they’re really putting in time and effort.” [Brittany]
Student Choice	My ‘go to’ is giving the students choice.... I have them do a project on climate change and I have 5 different topics related to climate change. They can pick 2 to talk about and then it’s what they’re interested in. They will research more in depth and get that deeper learning. [Mikalya]
Field Trip	[We put] on events for our students and then incorporating that into the curriculum...We did an outdoor... winter camping trip. [Ruth]
Content Relevance	
Personal Connection to Concepts	That unit had a real personal connection for some of the students, they really got into it and they were interested in it because they were talking about people from their country, or people from their same racial background, or...it opened up a lot of discussion, and because I think that it spiked that interest, they wanted to talk about it. [Nancy]
Encourage Autonomy	
Provide opportunity for student suggestions	Ruth would share with students, “The outcome is to do this. If you can provide me a different way to showcase that you have met the outcome in any other way, I am all open to it.” [Ruth]
Encourage Interaction	
Encourage questions	I keep reminding my students to ask questions, send me emails, let’s figure things out, or join the live session and I’ll help you work things out. [Jason]
Encourage connection with others	I would tell the students. Even though these assignments were being handed in for marks, if you can work together, not to produce the same product but to be talking about it your learning will go up significantly if you are working on a solution. If you’re not talking about it with anybody, it’s a lot more of a challenge. [John]

Not all teachers embraced the necessity of designing a course to enhance student emotional engagement, per se. Approximately 40% of survey respondents indicated student emotional engagement (e.g., interest in the topic) was “nice” but not necessary for deep learning. Furthermore, teachers sometimes noted that they had limited influence on student interest in a course.

SP A lot of it comes from home and their parents desire for their kids to do well. I can make engaging material, but it doesn't guarantee motivated learning. Connections and interests that are relatable can help, but it shouldn't be the focus.

John They generally do really well because they are doing it for a purpose whether it be...I want to go into engineering or some kids [just] love science... I don't know if that's something you can teach.

The excerpts above suggest that teachers may interpret that they have limited influence over student interest or relevance in content. Additionally, many teachers cited lack of student interest as a barrier to deep learning.

Beth Some kids are just, they're not there, I think have had a long line of not success and are just not buying into the whole school system.

Beth noted that some students are disenfranchised with the education system citing that "a lot of our education is still geared to...the industrial era" with content that is not relevant to them. She referenced that much of what the students are learning "they're never going to see again." Beth did not suggest this was specific to distance learning, rather, lack of emotional engagement in distance learning was intensified without face-to-face interaction. Beth's statement should be cause for reflection on how distance learning can distinguish itself from the traditional system, which a student might reject.

Students' lack of interest in education makes engagement strategies ever more important. Similarly, Toshalis and Nakkula (2012) assert that students may need teachers to initiate engagement, especially as many have become disconnected from school.

Students who have grown disconnected from school and who are leery of its intentions may not possess the necessary motivations to achieve. Starting with an alienated orientation, such students may wait for educators to draw them in, to feel invited, needed, interested, and even inspired before motivation rises to a level that propels achievement-oriented activity. For these students, engagement may need to precede motivation. (p. 4)

Limitations to Emotional Engagement Strategies. Like behaviour engagement, participants also noted emotional engagement strategies did not guarantee deep learning (e.g., an assignment could be fun, but the student may not engage with the deep-thinking processes). Teachers noted some courses lent themselves to being more intrinsically interesting for some students compared to

others. “They are intrinsically motivated to take the class because they chose it. It’s something that they’re passionate about” [Ruth]. Furthermore, choice may not be sufficient for student motivation if the student does not see practical applications to the course or if the enjoyment of learning does not motivate them. In other words, content interest is not needed “if the child sees learning itself as a goal” [SP].

I suggest teachers may underestimate their ability to influence student interest. When teachers spoke of student interest as being an internal student characteristic (e.g., it depends on the student), they described it as something that was a great benefit to students' deeper understanding, but it was not always clear that teachers associated it as something that was within their influence. Conversely, when teachers spoke of student interest as being attached to the activities or assessments in the course, teachers were much more likely to see their role in shaping the course design.

Brittany If I’m bored, and I’m cringing [when I have to mark an assignment], imagine how those kids must feel. That’s a big sign that I need to change something [to make it interesting].

In this regard, teachers who saw student motivation as something within their influence took more active steps to adjust the course design.

Intellectual Engagement. As previously mentioned, I liken behaviour engagement to the student having a clear outcome of the learning path and goal and emotional engagement with the student enthusiastically wanting to go on the learning journey. Finally, I liken intellectual engagement, to a student who is engaged with all the learning activities along the path, stopping to explore (but not lollygag), chat, and learn from others, all the while heading toward the learning goal and making the learning journey richer for themselves and others through their interaction.

Teachers intertwined intellectual engagement strategies with the deep learning tasks described earlier. Notably, the intellectual engagement strategies focused on a reflective learning cycle, using feedback for improvement in the learning process. Teachers identified that receiving and using feedback on larger projects was integral to deep learning.

Willms et al. (2009) defined intellectual engagement as “a serious emotional and cognitive investment in learning, using higher-order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge” (p. 43). Intellectual engagement is rooted in social constructivist strategies (i.e., focus on higher order thinking, collaboration, student-led learning, flexible learning paths) (Lambert, 2016).

Intellectual Engagement Strategies. I interpreted teachers’ intellectual engagement strategies to increasing the meaningful critical and creative engagement with the learning resources. Participants described the instructional strategies they used to encourage intellectual engagement, including providing stopping points, using peer feedback, scaffolding collaboration, peer learning, and supporting metacognitive tasks.

Table 4.10: Intellectual Engagement Strategies

Providing Stopping Points	
Brittany	My grade twelves, they have a final project that’s worth twenty-five percent of their grade, so it’s locked. They can’t just go ahead and do everything. First, they have to submit a proposal and get that approved, and we talk about it... It makes them think through everything. Then they have to show me checkpoints, so they have to show me progress pictures...or are you stuck, do you need help? By slowing them down and forcing them to stop, it gives me a chance to see what’s going on before they hand in the final thing.
Peer Feedback	
Brian	We did a lot of graphic organizing, or we did a lot of writing of drafts, and editing and peer editing, so we would use a lot of Google Drive, shared docs, or a shared slide
Scaffolding Collaboration	
Emily	I would confer with them one-on-one. I would call them, try to contact them once a week, and talk about the books they were reading.... Then they got a partner, and they worked on an inquiry presentation one-on-one in a Google Doc, and they had to chat...Then they started calling each other...So it was small steps all the way through of being like, this new digital environment isn’t scary, and really encouraging them to talk to each other in the chat
Student Created Activities for Peer Learning	
Jane	Students lead a class physical activity where they come up with fitness plans for other students to do. “They had to give me a PDF or handout, or a PowerPoint to lead the class. It has to be self-directed... Each week I’ll be giving four or five lessons that the students gave. They can mix and match it.” Once students had completed the activity, they posted a “thank you for the opportunity to..” within the discussion board
Metacognitive Tasks	
Rene	Rene used portfolios for metacognitive tasks: “They’re supposed to take pictures of their corrected quiz, and then identify... for yellow they’re supposed to identify a strategy, not to make the mistake again, for

pink they're supposed to figure out which lessons do they need to go back to and re-watch the videos, or go over the notes, or maybe read some of the text or talk to a teacher or friend." Finally, there was a self-reflection portion to the portfolio, where they are "writing a note to your...stressed-out January self ... you're going to be fine...as long as you focus on this.'... It becomes an exam review for January that they can refer back to, to what they were struggling with."

Critical and Creative Assessment

Brittany When assignments have a critical and creative component, "they have so much fun with it...it's very rare that I get stuff that's just phoned in, they're really putting in time and effort."

Community Spaces for Shared Learning

Rene I can share with students what other students are responding... We can look at what different people have responded and discuss correct answers and mistakes and what's going on and what the thinking is... You can see people change their answers based on what other people have answered, or a few of them putting answers up once they see what other people have answered.

In each example, teachers supported students to move beyond rote memorization of content, to collaborate and co-create with other students, to support deep learning

Limitations to intellectual engagement. Incorporation of intellectual engagement strategies did not guarantee engagement in deep learning tasks, as the student still had to be motivated, have readiness skills, and value or buy-in to the learning process. I examine the role of the student in social constructivist learning in the theme Student Advocacy.

Teachers noted students were more likely to set deep learning as their goal when the content applied to students' future use.

Jason If their next step is 'well I need chemistry to start it, but I don't need chemistry in it, then I'm just going to get whatever magic number I need to get into that program and be done.' And then there's the other set, 'I know I'm going to need chemistry, so I'm going to learn every ounce that I can take out of this so that I can be better at that next step'.

Levi In a class that's getting you ready for university. And if you're wanting to go down that track, then I think you see more value in going to class and working hard daily instead of taking a day off and not showing for class or something.

Similar to others who advocated for some synchronous learning to improve behaviour engagement, Emily advocated for some synchronous learning to improve intellectual engagement.

Emily If [online learning] remains past COVID, we don't want to just be a purely asynchronous model....We need to really look at this and make a new way, where I can do group discussions with my students, I can get them to interact with each other and work live with each other in a shared digital space, those are really cool things... in the curriculum, and I need to assess [those skills]...it's part of the social connection they need.

Limitations to the Teacher as Catalyst to Support Deep Learning. Although the data supports the role of the teacher as catalyst (i.e., incorporating deep-learning tasks, student-teacher relationships, student-centred course design, and encouraging student engagement), teachers did not suggest these roles guaranteed deep learning. While Brittany expressed her enthusiasm to support students, she also noted the following.

Brittany It's difficult, it honestly is, and I wish that I had a perfect answer, I wish that I could say 'oh I do this and this, and all of my students get back on track!' No, the reality is that some kids get phased out of the courses because they never do anything.

Teachers clarified three possible misconceptions regarding deep learning. First, we cannot assume that deep learning is always attainable within the curricula, nor is it realistic in every situation.

John That is a pretty big assumption that deep learning can happen in all subject areas because I don't know if that's realistic.

Second, we cannot assume that all students are motivated to engage in deep learning.

Crystal You're not going to always get those really deep experiences, some kids are just going to do it to check the box... or [say] 'give me my fifty percent' and tap out.

Finally, many teachers found that the learning goal can shift from deep understanding to credit attainment. For example, when it came down to the end of the course and the student's credit attainment was at risk, encouraging students' behavioural engagement, "Help me help you," "I'll take anything, just submit something," often overshadowed deep understanding.

Another teacher viewed that their specific course curriculum was not designed for the higher level of thinking as might be seen in Bloom's Taxonomy (i.e., generating, planning, producing) (Anderson & Krathwohl, 2001).

Jason These are concepts [the student is] seeing for the first time. I need [the student] to understand these [very basic] concepts before you can ever delve any deeper, which to me is what university becomes for my courses. So for me, it's 'are they understanding these basic concepts?' not going too much deeper into that.

As suggested by participants in this study, deep learning in all outcomes is not required for credit attainment.

Beth	I wouldn't say necessarily that I've a lot of students who are doing deep learning and have a connection to the [course content], but you can get away with not a lot of content and still get credit for the course."
------	--

As a result, some students opt to intellectually engage in the course only so far. Some students jump to the departmental exam when their work completed to date was sufficient for a pass. Similarly, teachers indicated some students put in as much effort as was required to gain a predetermined end mark. On the one hand, this may invoke frustration for a teacher by the lack of students "showing their true potential." On the other hand, if we are to advocate for student voice and choice, there might be freedom for them to release themselves from the power struggle that might occur.

One teacher described the freedom they had in being able to issue a course credit as long as the student had a mark above fifty. Not "forcing" the students to complete every assignment in a course to receive a credit has "removed that battle from both sides." The teacher went on to explain that removing that power struggle was huge, as it reduced the exhaustion of the power struggle and having to defend oneself from parents.

Supporting the Catalyst Teacher

A key part of the definition of a catalyst in chemistry is the catalyst doesn't get used up in the reaction. Teachers noted areas where they or their peers were getting burned out, reducing their ability to be a catalyst. Much of the burnout was coming from the increase in students because of COVID-19 physical restrictions and lack of understanding from administrators or school leaders of the time it takes to communicate with students.

John	I think our administrators, myself and school leaders really have to be careful to support their teachers right now because people are really struggling with trying to continue the high quality of meeting kids and helping kids and then balancing all this procedure and regulation and keeping their sanity.
------	---

Jane	This year I had way too much in that I had lots of students coming in. [I was] just flooded with marking, and I was developing two courses I'd never taught before, and I was just struggling. Because as the marking's coming in, I'm responding to questions, I'm trying to build two courses as they're going because at the time... I had three days to start the course I've never taught before.
------	--

Sometimes, teachers felt people making the policies “had no idea” of what distance learning teachers did, leading to their classes getting larger and larger, increasing the workload while decreasing communication time with students.

Matthew Having 47 kids in one class is acceptable to them [policy makers] in an online class because, quote ‘you’re not managing them in a classroom’.

Participants commonly referenced the need for automated communication, policies to support inactive students, and a provincial resource hub to reduce their workload.

Automated Communication. Where there was an automated communication system and clear practices in place to support inactive students, it freed teacher time to work with students who needed additional help. Teachers who had no automated notifications or administrative policies in place often felt overwhelmed with trying to reach out to students and parents with often no response. One participant noted that in her division, parents and students received a biweekly report card. “So, every two weeks, it gives them what they’ve done, and their overall grade right now” Another division implemented similar automated communication, which one teacher noted gave her increased time to “focus on the kids who really need that encouragement or even, occasionally I’ll just call someone who’s doing really well.”

Policies to Support Inactive Students. A number of divisions had administrative policies in place to support inactive students. Policies from at least two school divisions included a “temporary suspension” of students who were inactive after approximately two weeks. The temporary suspension was in place to reduce teacher time spent tracking inactive students “with no reply” and so that all parties (e.g., parents, student, administrators, school councillor, support person) could meet to create a support plan for student success. The administration would reactivate the student in the course once they had a meeting with their support team (e.g., councillor, admin, parent).

Provincial Resource Hub. One of the most significant recurring suggestions from teachers to support improvements to their courses and practices was through creating an online resource hub so that teachers are not “reinventing the wheel” with similar online resources in the same subjects (e.g., each Math 10 teacher re-creating similar instructional videos). As teachers were building courses and learning how to become online teachers, there was a feeling that everyone was “building the boat while in the water.” One teacher noted that if the province had a formal process to build and share resources, teachers could be “guided by some of those exemplary practices, exemplary resources, exemplary projects, and project-based... So that each teacher isn’t spending thousands of

dollars in Teachers Pay Teachers buying their own resources, sharing amongst ourselves in a closet, or Google Drive secretly” [Jane].

Teachers from long-established Cyber Schools often had an open sharing of courses. One teacher noted that all the courses used in their division were “pre-made [and] custom-built by our teachers for us” [Jason]. Similarly, in another division, all teachers, face-to-face or distance learning, had access to “an editable version of whatever course exists in their cyber school [to use] in your classroom” [David].

Teachers without such resources who were creating and teaching simultaneously noted additional stress where their workload was affecting student learning.

Rene	It’s a ridiculous prep load... and I don’t have resources, and these students are going to have to be able to work entirely independently... you know, what do I do with that? And I hand them the workbook and tell them to go, and that’s a disservice to them.
------	---

Importance of Viewing the Teacher as a Catalyst

Viewing the teacher as a catalyst aids understanding of how teachers achieve socially constructed learning by illuminating underlying, often hidden, distance learning practices that support deep learning. I suggest that without a clear understanding of distance learning teaching processes, the education system will provide insufficient resources creating an ecosystem unable to sustainable social constructivist practices. The reciprocal relationships, integral to a synergetic learning ecosystem, do not just happen. The active teacher role is vital to catalyzing reciprocal relationships, through incorporating deep learning tasks, building student-teacher relationships, building a flexible student-centred course structure, encouraging student engagement, and strengthening the resources in the environment.

Viewing the distance learning teacher as a catalyst has the potential to disrupt perceptions of a *static* distance learning system where teachers act simply as assignment markers (Burns, 2011; Demaria & Bongiovanni, 2012). Within literature, teachers have expressed concern that once teachers create an online course, low-paid paraprofessionals may take over their jobs (Bayne et al., 2020; Bryant, 2016; Burns, 2011; Quillen, 2012) (Note: illuminating the dynamic complex role of a catalyst teacher should create a pause for any organization considering hiring paraprofessionals in place of trained teachers). This sentiment was expressed, particularly in asynchronous distance learning, through Amy’s concern.

Amy	My confidence is going down because I don't want anyone, I don't want any of the parents at home to be like 'she's not doing anything!' But it's asynchronous, this is- I was trying to give them what they wanted!
-----	---

Her concern suggested teachers are still wrestling with the underlying notion that asynchronous distance learning does not require continuous work by the teacher. I suggest this fear of being perceived as “not doing anything,” unnecessarily drains teachers’ energy, energy that can be better spent transforming static distance learning practices and/or culture into a synergetic distance learning ecosystem.

If the synergetic role of the distance learning teacher is hidden, divisions may inadvertently create an unsustainable teacher workload leading to teacher burnout. The teacher can only be a catalyst as far as they maintain their own energy to continue. Recent studies have shown, teacher burnout (e.g., overwhelming workload, unreasonable time pressures, and lack of communication and support) not only affects teacher health and wellness but also affects student achievement (Herman et al., 2018; Lowe, 2020; Saloviita & Pakarinen, 2021; Wigert & Agrawal, 2018). Toshalis and Nakkula (2012) noted that increased teacher workload reduces the ability to actualize student-centred learning as “these challenges create pressure to homogenize one’s pedagogy by ‘teaching to the middle’ or lumping all students together as if all their motivations and desires were the same.” (p. 1). Certainly, a homogeneous teaching practice is more efficient. If teacher workload is overwhelming, it is understandable that they will look for areas for efficiency in the system, even at the expense of deep learning. Therefore, to support deep learning, it is necessary to support teacher capacity.

I end the discussion of the theme Catalyst Teacher with a quote from bell hooks (1994) to illustrate the teacher’s role as a catalyst in actualizing the intent and stance of social constructivist curricula. Note, hooks (1994) is not referencing distance learning, however, the theme of catalyst teacher within this research is well represented in her writing.

Teaching is a performative act. And it is that aspect of our work that offers the space for change, invention, spontaneous shifts, that can serve as a catalyst drawing out the unique elements in each classroom. To embrace the performative aspect of teaching we are compelled to engage “audiences,” to consider issues of reciprocity. Teachers are not performers in the traditional sense of the word in that our work is not meant to be a spectacle. Yet it is meant to serve as a catalyst that calls everyone to become more and more engaged, to become active participants in learning. (p.11)

The strategies teachers identify within asynchronous distance learning show that distance learning is a viable option to meet Saskatchewan curricular goals (e.g., develop multiple literacies, increase depth of knowledge, and gain a range of twenty-first century skills and abilities). However, it cannot be overlooked that, while the teacher *supports* the student, the student maintains agency within the system.

Student Agency

The theme “Student Agency” resulted from analysis of teacher responses about strategies that support deep learning and their experiences implementing socially constructed learning. This theme aids in an understanding of the sub-question, “Why do teachers make the instructional choices they do?”

As previously addressed in the literature review, student agency refers to students taking responsibility for and having an active voice in their learning (Driscoll, 2005; Rodriguez & Berryman, 2002). For collaborative learning to take place, students need to assume some responsibility to contribute to collaborative processes (Barkley et al., 2014). What presented as problematic within this data was that students often advocated for self-directed individual learning and expressed dislike towards peer collaboration. This advocacy or preference for self-directed individual learning, strongly influenced teachers’ instructional choices. Upon further analysis, I determined that teachers’ perceptions of student agency were influenced by student readiness for distance learning and buy-in to social constructivist practices.

Teachers cited that students required, but did not always have, readiness skills for distance learning success. Furthermore, teachers often experienced student resistance when collaborative learning was incorporated. I interpreted students’ agency (e.g., willingness and advocacy for socially constructed learning) to be affected by students’ skillset and their buy-in to socially constructed learning. Without student readiness skills, students were not likely to advocate for or willingly participate in collaborative learning. Without *buy-in* to the benefits of collaborative learning, students did not fully engage in such practices. Within the sections below I describe both student readiness skills and student buy-in grounded in teachers experiences and perceptions of what influences student agency toward (or away from) collaborative learning.

Student Readiness Skills

Below, I describe student skills identified as necessary for student readiness for distance learning generally, and social constructivist practices specifically. Notably, teachers often cited student independence skills as a fixed student characteristic, something beyond the influence of the teacher or course design. However, where indicated within the data, I have illuminated how teachers, and in some cases the school programing, supported students who did not yet have independence skills.

Nearly half (49%) of survey participants indicated that high school students do not have the necessary skills to collaborate with others online. Interview participants elaborated on specific student skills necessary for distance learning success; namely, independence skills, technological skills, interpersonal skills, and communication through technology.

Independence skills. Many teachers noted that students who did not have independence skills struggled with distance learning. Independence, as described by the teachers, paralleled Livingston’s (2012) definition; namely, an independent student “is able to set goals, make choices, and decisions about how to meet his learning needs, take responsibility for constructing and carrying out his own learning, monitor his progress toward achieving his learning goals, and self-assess the learning outcomes” (p. 89). By and large, here, teachers referenced independent students as those who self-regulated their behaviour such that they could access, understand, and complete learning tasks on time without supervision, and communicate with the teacher if they had questions.

Brian	You need to have that “independent-ness,” you need to have the ability to take responsibility for your own education, and also you need to have a relationship with the instructor.
-------	---

Teachers reported that there was little they could do to support students who had an overreliance on their classroom teacher to prompt them to work. As one teacher noted, the face-to-face teacher can nudge students “every hour to help them get things done” [Brittany]. However, she went on to say, “when you’re home alone with the computer, good luck.” Matthew suggested the removal of a face-to-face support system is problematic.

Matthew	They’re not ready for that step in independence where we don’t have a classroom teacher continually extending the hand and say this is what you need to do.... A lot of these kids have had that [face-to-face] support yanked from them and now they’re thrown into an environment where, if you’re not independent, there is very little we can do as distance learning teachers to help them.
---------	--

However, some schools designed a distance learning classroom within the school to support student who may not yet be independent learners. Ruth described one such space.

Ruth It's a small room or a classroom and they've kind of divided it off with like some study carrels, you know the technology that they need at each location... You're going to the DL room...and there is a teacher in there and I'm on the other end and I feel like that's really good for students.

The strategies teachers described to support independence skills strongly correlated with the self-regulated learning approach used by Carter et al. (2020). Carter et al.'s study found that effective strategies to foster independence included “asking students to consider how they learn online, providing pacing support, monitoring engagement and supporting families” (p. 321). Carter et al.'s (2020) findings, particularly pacing support, suggest that full student autonomy over course pacing may limit students' learning potential if they are not ready for the self-directed independent learning that distance learning requires. The excerpts below highlight alignment with strategies identified in Carter et al.'s study. Note that some of these strategies overlap with engagement strategies previously mentioned. I interpret this overlap as an indication that skills and engagement are intertwined.

Table 4.11: Supporting Student Self-Regulation

Asking Students How They Learn	
Jane	Jane sends out questionnaires at the beginning of each semester asking the students how they learn: “Is there anything you want me to know?...How best do you learn? Is there anything you want me to know as a teacher, in the way that you're learning? Is there anything you want me to know in your activity? And do you have any goals for your [class] this year?”
Providing Pacing Support	
Steve	I put dates down for them, I put rough dates, I say approximately, and when I tell them in my videos, I say “approximately means within three days.” If you're within three days of that, you're good. And then if you're not, you have to contact me or I'll be contacting you eventually.
Monitoring Engagement	
Crystal	The kids get biweekly report cards, and the parents are cc'd on them, so there's the accountability piece... So if a kid doesn't go in and do some work in fifteen days, they're temporarily suspended. And in order for them to get back into the course, they have to contact-our guidance counsellor, either through email or phone call.
Supporting Families	

Emily Emily noted she communicates with parents about their progress and tried to educate parents on how to support their students. “I think as a school, we need to be a lot more clear with our parents what their role is [to help parents] be more engaged.”

Technological skills. Approximately 42% of survey participants indicated students did not have sufficient technological skills to collaborate online. Within the interviews, teachers suggested that technological skills were not only a barrier to collaborative learning, but to general success in distance learning. Brittany elaborated on the frustrations that students experience.

Brittany Some people don’t even have the basics of saving a PDF...It’s pretty hard to do well when you’re so frustrated with your lack of tech skills that you don’t know how to do the things that you need to do to even learn.

The additional effort to learn technological skills in addition to the course content may cause cognitive overload for many students (Carter et al., 2020) limiting students’ positive learning experiences (Rodriguez et al., 2005).

Matthew further suggested that students have been “inhibited by not ...learning how to use computers and technology and emails effectively within their curricular outcomes.” His statement implies that integrating technological skills as part of face-to-face strategies, rather than including them as an add-on when students take distance learning, could benefit student learning.

Teachers viewed technological skills as a “learnable” skill within a distance learning course; however, students taking distance learning who already had technological skills required less help from the teacher. Strategies the catalyst teachers and/or school divisions used to support technological skills included having a slow start to the semester and having students complete a pre-course.

Brian We’ll make sure that we’re going to do a slow start. My first two weeks is all about procedures, like your assignment is to write a paragraph, but you’re not being graded on the paragraph, you’re graded on downloading this paragraph.

Some distance learning school divisions supported student skill acquisition and mastery *prior to* taking a distance learning course through offering a short pre-course (approximately three hours). The pre-courses, generally included how to navigate the course platform, how to submit documents, and how to email. However, existing pre-courses were not consistently implemented or were being shortened (i.e., from three hours to one). Where pre-courses were used intermittently, or were shortened, teachers noted students had a lower level of skill or readiness. “The kids aren’t as prepared this year as they were in other years [with the longer course].” Teachers would spend more

time at the beginning of the semester helping students with technology issues (e.g., how to submit an assignment, where to store their work online).

Even though the findings suggested that technological skills may be supported through a pre-course, Tait's (2014) research suggested that a pre-course may not be sufficient. Tait (2014) asserted that quality courses need to shift from external support systems (e.g., pre-course) to internal support systems (e.g., skill building support built into the course design). I suggest that both external and internal support systems are needed. An external pre-course would allow students to become comfortable with distance learning environments (as shown by the value of the pre-course) while explicit skill building within the course will further enhance such skills (as shown by teacher strategies to support engagement).

Online Interpersonal Skills. Connected to technological skills, teachers also cited interpersonal skills (often referenced in interviews as meaningful communication with others) as integral to social constructivist learning. Interpersonal skills are about a person's ability to meaningfully interact with others, including establishing relationships and initiating conversations (Spitzberg & Cupach, 2002). As one teacher noted, "they are experts on items of technology that they're interested in like... YouTube...Snapchat...Instagram" but that they are "not experts in twenty-first century communication with email and setting up meetings online and collaborating online" [Matthew]. These results parallel the findings of Helsper and Eynon (2010) who concluded that while students are increasingly using technology, that does not mean they are using it for deep learning tasks (e.g., critical discussions).

Interpersonal skills are embedded within existing distance learning frameworks through learner-instructor and learner-learner interaction (Moore, 1989), and the CoI (Garrison et al., 1999). In formal education, students need interpersonal skills to ask for help from the teacher to address any misunderstandings (Martin, 2014) and for effective group collaboration (Cheruvilil et al., 2014). Furthermore, it cannot be assumed that face-to-face interpersonal skills are the same as online interpersonal skills (Lindsey & Rice, 2015).

I have distinguished interpersonal skills for student-teacher interaction and for student-student interaction within the data.

Interpersonal Skills for Student-Teacher Interaction. As previously mentioned, student-teacher interaction benefits distance learning students as they gain further access to the teacher's

expertise, increased content dialogue, and increased perception of learning achievement (Moore, 1989; Shin, 2003). Teachers suggest that interpersonal skills, specifically responding to teacher communication (e.g., emails) and initiating conversations (e.g., asking questions when they are unsure) are integral to student success in distance learning. One participant, David, suggested that without the ability to initiate a conversation with the teacher, students' learning will suffer as they will not receive needed help.

David It's so easy to communicate online, but I find lots of students don't. Like I'm online, and they can see my little icon in the corner, and students will submit an entire assignment, and then... it's like [sighs] I feel really bad, because [they] didn't really get the concept or get the idea, but they didn't ask questions along the way.

Matthew offered the following explanation for why students may not reach out.

Matthew I suspect that it is just a shame of not admitting they don't know how to use the technology ...they're embarrassed that they don't know how to navigate a web page for example.

Matthew's experiences parallel Madjar et al.'s (2011) assertions that learners who feel that they lack the skills to complete a task may avoid it. Not contacting the teacher may be a way to avoid admitting they do not know how to navigate the technology or do not understand the content (Ryan et al., 1998).

Interpersonal skills are important to foster deep learning as those students who ask more questions receive added communication, clarification, and possible additional resources. Within literature, Toshalis and Nakkula (2012) address this through the phrase "the rich get richer" (p. 16-17), suggesting that those students who are already comfortable reaching out will have a richer learning experience than those who are hesitant. It follows that intentionally teaching interpersonal skills alongside teaching content is a necessary step in supporting deep learning opportunities for all students. Those students who lack interpersonal skills may in turn be limited in their ability to demonstrate agency (Anderson et al., 2019). It becomes even more important to stress the findings in the Catalyst Teacher theme that the teacher, most often, needs to reach out to students first (Toshalis & Nakkula, 2012).

Interpersonal Skills for Learner-Learner Interaction. As previously mentioned in the literature review, benefits of learner-learner interaction include building group work skills and increased intent to persist (Moore, 1989; Shin, 2003). Teachers have identified that students need

some level of comfort and skill to engage in learner-learner interaction. For example, participants noted that students rarely start out with the ability to meaningfully interact with others online but, over time, with teacher support and persistence, they can build such skills.

SP I don't believe that my students have the necessary skills to successfully collaborate with others online YET. However, every day I see them opening up little by little to each other. When there is a text chat option, they seem very comfortable and familiar with this. I'm hoping we continue to improve collaboration as the semester goes on.

Brian Collaborative work can be very intimidating for students. However, I have found that when students get past the initial transition or uncomfortableness of interacting online, they can quickly move forward.

Similarly, Emily noted interpersonal skills were something that could be gained with persistence. She described how she supported her students to through scaffolding meaningful interaction with others, noting that it was unsuccessful on the first attempt.

Emily I started out with them just meeting randomly [with each other] to talk about something, and then I asked how it went. They went 'it was terrible! So-and-so didn't talk, so-and-so didn't-'...We had a talk about how in the real world will this work. What if you had to transfer into a digital job interview or something? I said 'okay, we're going to try again!' And I said 'eventually this is going to be assessed'...[At first] I was present for it as a moderator...but by the end I had some of these groups...arranged a group meeting without me...because they felt they wanted to talk more outside what I was doing.

These excerpts indicate that online collaborative work may not come naturally for students, but with persistence and continued support, social constructivist learning is possible.

Student Buy-in

I determined the sub-theme *Student Buy-in* in response to making meaning of teachers' experiences about why socially constructed learning was limited or omitted. Even if students had sufficient distance learning skills, students still had to *buy-in* to social constructivist practices. I interpreted student buy-in as something that teachers largely perceived as a fixed characteristic.

Student buy-in does not have a set definition across education literature. However, common themes include a student's judgment as to whether new activities are valuable, enjoyable, or meaningful (Cavanagh et al., 2016). Additionally, teachers often referenced student buy-in in connection with student support, motivation, and previous experience (Burke, 2007; Pinkelman et al., 2015; Tanner, 2013). Here, teachers described factors that influence student buy-in to social

constructivist practices. Namely, motivation, maturity, perceived value, previous experience, expectations, and trust and safety.

Motivation. Student motivation, according to Zimmerman (2008) involves a student's willingness to sustain participation in learning. A student can be extrinsically motivated (e.g., they want a high mark) or intrinsically motivated (e.g., they are interested learning with and from others) to learn. Approximately 76% of survey participants ranked lack of student motivation as a barrier to collaborative learning. One survey participant offered further insight into how student motivation influenced implementation of social constructivist practices.

SP	Students have expressed a strong dislike for the group projects and collaborative elements, to where many students either dropped the course or asked for alternative assignments. Moving away from group projects has increased enrollment and positive feedback from the students.
----	--

This sentiment opposes findings by Shin (2003) who found that relationships with peers in distance learning increases the student's intent to persist. Rather, in this study, teachers cited when students had to build a relationship with peers (e.g., collaborative work) they often avoided course participation to the point that they might drop the course.

John noted student skills and motivation may overlap, affecting distance learning collaboration and general academic success.

John	Most of the students that distance learning generally doesn't work for, they don't have the skills, they don't have the independence. They don't have the internal motivation or drive.
------	---

The excerpt above suggests that teachers may perceive student independence and internal motivation may as a fixed characteristic.

Strategies noted in the Catalyst Teacher theme to increase student motivation included incorporating students' interest and prior experiences into concepts, supporting student agency, and field trips.

Maturity. Maturity is the ability to make informed decisions and take responsibility for the consequences (Pavelich & Moore, 1996). Often maturity is separated into intellectual maturity (logical thinking) and social maturity (the ability to focus on a task in the face of distraction) (Icenogle et al., 2019). The intellectually mature student does not seek to memorize content presented by the instructor; rather, they critically integrate multiple sources of information and

determine its relevance in their lives (Perry, 1970). The social mature student will choose to engage in learning activities, even in the face of distractions (e.g., availability to watch T.V.)

Approximately 55% of survey participants ranked student maturity as a barrier to social constructivist learning; students making choices to direct their learning “depends to some degree on the maturity of the learner” [SP].

The following data excerpts from participants highlight teachers’ perception of student readiness as being a fixed attribute linked to maturity.

Amy	I’m not sure about [students readiness for] asynchronous... technically I’m supposed to be able to say “just get this done by this date, this is the course and I’m the facilitator to help you,” but they haven’t started...they don’t log on...These kids are in Grade 10 and I know that their brains aren’t developed enough to know consequences, and what’s around the corner...[Not getting the credit] is such a harsh consequence.
SP	Grade 12s who have been online for a number of years seem to be able to direct their learning better. Grade 10 needs a lot of structure with less options.
SP	Senior learners can make meaningful choices. Younger learners need guidance to get to that independence

Participants also connected social maturity and motivation. For example, Emily connects lack of self-motivation to being distracted by digital media.

Emily	Some of these students that get distracted by video games, or they come to the class late and are like “Oh, I was watching Netflix, I forgot,” those aren’t the kids that might be very successful.
-------	---

This “maturity gap” has implications for educational practices, as it becomes increasingly important to reduce distractions within the learning environment. For example, as Toshalis and Nakkula (2012) cite, “if opportunities to reduce distraction and sustain focus are not provided (or enforced) for children and adolescents, the phenomenon of ‘continuous partial attention’ (Stone 2007) ... can literally rewire the brain in ways that make higher-order thinking, impulse control, and focus difficult” (p. 22).

A physical space within a school, previously mentioned to support student independence, may also benefit students who have not yet reached psychosocial maturity. However, it was not broadly agreed that a distraction free space had to be within a school.

SP	The important part is having a designated space that minimizes distractions, not that it is within a school.
----	--

Matthew Where they fall in the category of Adult 12 students, no [an in school place is] not necessary as long as they have a spot somewhere. But in the K-12 sector, it's far better for them to have a space and a base support person [in a school] checking in on them.

Perceived Value. Teachers identified that students' perceived value, or lack thereof, influenced their implementation of collaborative learning.

A survey respondent suggested students may view collaboration as time-consuming and inconvenient.

SP Students told me they would rather get down to work, than have to meet with/work with others, particularly since the meetings often occurred outside of the time they set aside to work on the course.

SP [Students] believe they learned more from the non-collaborative projects than from the collaborative ones.

Perry (1970) suggested that students who indicate that they learn more from working individually than they do from working collaboratively may be a sign of a student who is not yet intellectually mature. However, Entwistle and Tait (1990), cited in Entwistle (1991) suggested that adjusting collaborative learning approaches based on student disinterest may be problematic, particularly if students are used to a teacher-led approach.

Students who are consistently relying on a surface approach actively prefer, and rate more highly, lecturers who provide pre-digested information ready for 'learning', while students with a deep approach prefer lecturers who challenge and stimulate. (p. 202)

Teachers often used discussion boards as a collaborative learning strategy. However, teachers indicated that not all students perceived value in participating in discussion boards. Furthermore, superficial participation has limited their use for some.

Brittany The idea was to get them communicating back and forth and meeting people and collaborating in some small way. That was the hope. We thought it sounded great. It doesn't work. The kids just pick a random thing. They type their response quickly so that they can get it over and done with quickly.

SP [Students] have told me that when they have done courses with discussion boards, they just did it to get it done and did not really care what the discussion was about, especially when it was on an article they had to read. This is why I have not implemented discussion boards.

Other, teachers suggested discussion boards worked well for low-risk collaboration when students could take part regardless of what unit they were working on and if they did not need an extensive amount of background knowledge (e.g., share a personal experience about...).

As previously addressed in the Catalyst Teacher theme, it was unclear whether a change to how discussion boards were designed (e.g., increased teacher presence, change of questions, weighting in summative mark) could have obviated superficial participation. Douglas et al. (2020) noted similar findings regarding lack of student engagement in discussion boards and further added that both students and teachers needed training to reap the benefits of dynamic discussion boards (e.g., higher order thinking).

Previous Negative Experience. Teachers cited students' previous negative experience with collaborative learning has influenced student buy-in. Struggling with collaborative work is not something unique to distance learning. However, as one survey participant noted, frustration can be intensified online.

SP Face-to-face students struggle with collaborative projects as ultimately a few students do the work. This is even worse online.

Interestingly, Ruth discussed similar experiences with collaborative work in university, suggesting it is even worse in high school.

Ruth I would never want to put students in group projects and then, you know, what happens to all of us in university, is one person does it because the other person isn't there. It's different when they're in high school. I think maturity isn't there for all of our students yet.

Another survey participant noted that "many students go online because they want to be independent and not rely on others" [SP]. Indeed, if a student's mark is affected by the performance (or lack thereof) of another student, it is reasonable to expect resistance to this approach. Distance learning, then, becomes a self-perpetuating independent and individual mode of learning, even when a collaborative approach may yield deeper learning and increased online skills (e.g., interpersonal skills) (Barbour & Rich, 2007; Salmons, 2009).

The data suggests previous negative experience with peer collaboration has influenced the extent that teachers incorporate collaborative work. Students may not gravitate towards, and indeed may have a strong dislike for, collaborative approaches if they have not experienced the value in them, particularly when ineffectively implemented (Malamah-Thomas, 1991). The research findings

suggest that further research is needed on the design of collaborative learning, both face-to-face and online.

Expectation of Self-Paced Independent Learning. Participants indicated that not only do students prefer self-paced independent learning, but also may expect distance learning to be independent. Amy felt many distance learning courses implemented during the COVID-19 pandemic were independent, leading to similar expectations post-pandemic.

Amy When they came into virtual learning this fall, they thought it'd be the exact thing [independent learning] and it wasn't...they're disappointed when I say 'this is group work.'

The findings also suggest teachers' association with distance learning through the legacy correspondence school pre-packaged courses, known for lack of interaction, may also hamper implementation of collaborative learning activities.

John From the [Education] Ministry's point of view, if they would like [DL] to be in alignment with...the goals of the curriculum, then we can't be going to the model of almost the old correspondence school model.

Trust and Safety. Approximately 48% of survey participants indicated that lack of trust and safety with other students is a barrier to socially constructed learning. Within the interviews, Jason elaborated on this barrier.

Jason Working together with people whom you have never met is an intimidating thing...It's really someone unknown and that can be intimidating to ask a stranger (not a teacher) for help and to admit they may not understand.

Similarly, Amy suggested that if they knew each other in person, collaboration would likely increase.

Amy I think they'd be [communicating] back and forth totally normal if they knew each other in person... I really think that the prior relationship is what would cause collaboration to work.

It follows that if without trust and safety, students will struggle to connect with others and present themselves as real people, both attributes associated with strong distance learning communities supporting deep learning (Garrison et al., 1999; Shin, 2003).

Along with trust and safety, I connect the increase in students with anxiety taking distance learning (previously addressed). Amichai-Hamburger and Furnham (2007, as cited in Lindsey & Rice, 2015), suggest that this may be because distance learning offers "the perception of decreased social threats and increase the tendency to escape from face-to-face interactions" (p.128). I suggest

distance learning offers a beneficial experience for students with social anxiety in face-to-face classes *and* that traditional schools need to reflect on how they are creating safe spaces for all students.

Teacher strategies to overcome trust and safety barriers included getting to know students in person (e.g., field trips, school visits), scaffolding communication, and including low risk socially constructed learning. I have addressed getting to know students and scaffolding communication within the Catalyst Teacher theme; as such, only low risk collaborative strategies are addressed here.

Low risk collaborative strategies were those where collective class learning was not greatly affected if some students did not participate. Examples of low risk socially constructed learning included using shared online learning spaces, collaboration with family or community, and class field trips. Low risk socially constructed learning did not address students with “attendance” issues (e.g., those that did not login). Although I have listed low risk collaborative activities under trust and safety, I suggest such strategies may also support students who may avoid tasks where they perceive they do not have the necessary skills, similarly noted by Madjar et al. (2011) and cited in the student readiness section.

Table 4.12: Low Risk Collaborative Strategies

Shared Class Work	
Brittany	Brittany shares class work in a collaborative class gallery: They like to see what other kids are doing, because they get ideas from that...they're realizing 'oh, that person did this and it's really creative,' or they look at how someone else performed this skill, and they try to model that in their own work. So I think they get benefits from it, even if the benefit is just enjoyment.
Using shared online spaces (commonly discussion boards)	
Mikayla	In most of my classes I do discussion boards [where] I use current events. So, it doesn't matter where they are in the course.
Brittany	They want to share with others, and it could be something they did that they think is really awesome, it can be a new skill that they tried, they can show off a way they messed up and let other people know why it didn't work out, but they get a voice, they get to choose what they share with other people. And although the kids aren't commenting on each other's posts or anything like that, I have gotten very regular feedback from students that they love that, and they look forward to it at the end of each unit.
Collaboration with the community or parents	

Ruth	Our ‘bread and butter’ is putting on events for our students and then incorporating that into the curriculum. [e.g., camping trip, field trip]
Jane	[Students] did a family scavenger hunt, so they had a list of all the things you have to do, one in your home, one at a local park, and so you had to take your family.

Student Readiness: Fixed or Flexible

Teachers often spoke of student readiness as a fixed internal characteristic — “it depends on the student” — either the student had it or not. Teachers’ perception of influence on student readiness and buy-in is a significant determining factor for instructional decisions. Teachers weigh the investment and continued effort it would take to create a sustainable collaborative ecosystem compared to the potential outcomes (e.g., deeper learning or students dropping the course). Comments such as “most of the time you’re setting yourself up for a real headache” suggest that the teacher’s time and effort would be better spent elsewhere (e.g., scaffolding content, creating short instructional videos).

Brittany suggested some students are predisposed and/or more prepared to be an online learner.

Brittany [DL] doesn’t suit everybody...it’s not a good fit for every kid.” She further explained that “the kids who are really good self-starters, and have good organization skills, good focus...those attributes that make them naturally predisposed to self-directed [independent?] learning.

Additionally, many teachers cited student readiness as a fixed characteristic attributed to “strong” students (either academically or with independence).

Beth I think it’s your strong academic students who probably are most likely to take those risks and challenge themselves... I think your more average student tends to just go, okay, what’s the easiest thing I can do here...So, it really depends on the kid.

SP The following is an open survey response about which distance learning approaches work best.

“[It] depends on the learners. Strong independent learners are the ones who should be in [DL] courses... their nature is independence and being outside the peer interaction of the classroom.”

Teachers’ perception of influence on student readiness and buy-in is a significant determining factor for instructional decisions. Teachers weigh the investment and continued effort it would take to create a sustainable collaborative ecosystem compared to the potential outcomes (e.g.,

deeper learning or students dropping the course). Comments such as “most of the time you’re setting yourself up for a real headache” suggest that the teacher's time and effort would be better spent elsewhere (e.g., scaffolding content, creating short instructional videos). Many teachers in this study indicated that students did not positively respond to peer collaboration, to the point where, as previously mentioned, students would drop the course if there was collaborative learning. These findings contrast literature referencing the positive effects of peer collaboration in learning, such as enjoyment, motivation, and sustained participation (Goulet & Goulet, 2014; Moore, 1989).

Alignment of Purpose, Pedagogy, and Person

The theme *Alignment of Purpose, Pedagogy, and Person* was constructed in response to finding shared meaning among the strategies teachers used to demonstrate deep learning. Teachers often had differing perspectives for best instructional approaches to distance learning. Some advocated for an student-paced independent learning approach, while others advocated for a cohort-paced collaborative approach. I interpreted the advocacy of such dichotomous approaches to an alignment of the school purpose, pedagogy, and person (i.e., the student). The theme also provides an understanding of why teachers make the instructional choices they do and sheds light on where there may be a disconnect in the system; a disconnect with meeting student needs and a disconnect with the intent and stance of social constructivist curricula.

I begin by describing the intended purposes of Cyber Schools, pedagogies used, and individual student needs. Then, I examine distance learning systems having an alignment and misalignment of the purpose, pedagogy, and person (student). Finally, I interpret implications of misaligned systems.

Purpose

Teachers’ descriptions of the purpose of their Cyber schools varied. Purposes included meeting the needs of homeschool students, rural students, students who need student-led pacing, students who need a credit recovery option, and most recently, to meet the physical distancing requirements from the COVID-19 pandemic. Table 4.13 highlights the diverse purposes of distance learning programs as identified by the participants.

Table 4.13: Purposes of Distance Learning Programs

To meet the needs of:	Teacher Quote
Homeschool Students and Students Needing Electives	
Leah	I have a fairly good mix of traditional homeschool students, and then we of course have quite a few [students] taking our elective classes. But I would say I've always been a pretty good, almost fifty-fifty mix.
Rural Students	
Jane	Our school division started with our school ...originally to address rural schools...Do you have a teacher just for three kids, or you put three grades all together?... Since then it's grown...Now we're trying to meet the needs of more diverse students.
Students Who Need Student-Led Pacing	
Jason	I would always have a lot of adults taking my courses. Well, that's because work and whatever else, this is what they can fit into a schedule. For a number of our students, especially some of the high-caliber athletes, or high-caliber extracurricular activities, that only go to school for the morning because they're training all afternoon, again this allows them the flexibility to take a course and fit it into their schedule.
Students Who Need Credit Recovery Options	
John	In my opinion one of the unfortunate directions that I am seeing in distance learning or at least in our school division is we are looking at it as an opportunity for credit recovery.
Students Learning from Home Because of COVID-19	
Brian	We started a new online school [because of COVID-19].

Pedagogy

Viewed from a learning ecosystem perspective, pedagogy is part of not only the teacher's praxis but also part of the distance learning socio-cultural norms, values, and customs of a school division. Legacy practices often shape and inform future practices. Interestingly, within this study, teachers from the newest Cyber Schools were largely resisting the legacy self-paced independent cyber school practices. The teacher quotes below provide examples of the diverse pedagogies used throughout the province.

Table 4.14: Diverse Pedagogies

Pedagogy	Teacher Quote
Independent	
Crystal	We built it with the idea that it was a standalone... This is not for everybody. So we just want to make [the student] aware, you're doing this on your own. It's like- you were a bit of a homeschooler, part-time homeschooler. This [self-paced learning] is for that kid- that hockey kid that comes home after hockey practice. In the morning he was at his home school, in the afternoon, he was at the academy, and in the evening, he was supplementing his education with whatever subjects he's missing out on face-to-face.
Collaborative	
Levi	We want to have kids talk to each other in part because of all the Covid stuff and sometimes they didn't see friends, or they didn't meet people. They didn't talk to people for a long time, and so we wanted that to be a component of what we incorporated for sure. But I think just in our division too we value that personal connection.
Flexible and Shifting	
Levi	[Most of the units are synchronous with collaboration, however, sometimes] the unit could be asynchronous...Like the unit I'm doing right now...They have all the skills in order to do well in this unit [so it is designed to be asynchronous].
Brian	[Our school aims to] maximize the synchronous interaction and make the asynchronous part as relevant as possible...Even if there's no synchronous group, you try to make sure you have those routine check-ins where each student can do a virtual side-by-side [with the teacher].

At times the school purpose and pedagogy dictated the students who were enrolled in distance learning. In other words, for some divisions distance learning was never designed to be a viable option for *every* student. For example, “[The] implicit stance was if you want that face-to-face interaction, that’s what the [face-to-face] school’s for.” As referenced in the survey findings, if a self-paced asynchronous approach was needed to meet *some* students needs it was used for *all* students. Amy describes one such situation. “I got told there was two, maybe three students, that wanted to go back to their home school, and their homeschool was doing a block system.” In other words, the students needed to complete the course before the end of the semester. As a result, she switched to a self-paced independent course for everyone. The self-paced independent approach was problematic for her as many students were not able to self-regulate their learning: “I still have kids that haven’t started.” According to teachers’ responses, student-led pacing drastically reduces the ability to use social constructivist learning.

However, teaching the same course with two different pedagogies may also be problematic and time consuming. As previously mentioned in the Teacher as Catalyst theme, time constraints reduce the ability to actualize student-centred learning, leading to the use of a homogeneous pedagogy for all (Toshalis & Nakkula, 2012). In the conclusion, suggestions are made to free up teacher time to support diverse student needs.

The next section describes diverse student characteristics and needs within the system.

Person (The Student)

There were diverse reasons students were enrolled in distance learning over face-to-face learning. Some students *chose* distance learning over face-to-face, whereas others were *required* to take distance learning. The following quotes articulate diverse student reasons and needs for enrollment in distance learning.

Table 4.15: Reasons Students Take Distance Learning

Anxiety from face-to-face programming	
Crystal	Seventy-five percent of the kids who take [Wellness 10] -are intimidated in their face-to-face. I've had a dozen transgender-identified kids, kids that just... it would make their life miserable. And it's sad that that is what's holding them back in their education, they're fearful of being in the change room.
Emily	Lots of kids have mental health issues like anxiety around being in a school building, [DL] is really good for them. Or kids who have been bullied in the past, we have a lot of students who are optioning or opting to come with us because of that.
Increased Content Choice	
Jason	There are other classes ... that I teach, not a lot of schools actually offer that due to limitations of the staff, so for some of our courses online this is the only option for those schools, is to take an online course to get that credit.
John	The purpose of distance learning at least in our school division which is partially to give kids who don't have the opportunity a chance to explore areas of interest to them.
Need Additional Language Support	
Nancy *note, Nancy is speaking about a synchronous DL course	There's a whole bunch of students [who need additional English language support] all over the division, so this was the easiest way to bring them all together and teach them all at once, and to help them get that leg up so that they're not completely freaked out in their [face-to-face] classes...It was the best way we could think of, to connect all those students together.
Unforeseen Circumstances	
Crystal	We've had kids that are hospitalized, whether they've gone for surgery, or they've got cancer, or in some way they are unable to attend their face-to-face or

there's something tragic that's interrupted their life.... This is one of the ways educationally, we can support a kid.

Unsuccessful in Face-to-Face Classes

Emily I think a lot of schools enrolled kids with us that weren't successful [face-to-face] ... They never showed up at their other school, but they [were] given to us because maybe [DL will] work for them.

These diverse reasons suggest that, for some, face-to-face environments may inhibit learning (e.g., social safety, lack of autonomy, power struggles). Given the diverse reasons students take distance learning, I interpret that distance learning no longer meets a “niche” student need (e.g., those who need a self-paced option); rather, distance learning may be a distinguished yet integrated mode of learning within the larger education system. Distance learning can offer enriched learning connections through technology, learning materials (connected to students’ home resources), and learning processes (e.g., asynchronous learning). Singh et al. (2005, as cited in Coldwell et al., 2007) also supported this claim: “Online learning offers students a different type of learning experience. It can ‘provide an educationally superior alternative to traditional lectures’ and it can ‘also provide a model for students on how to become self-directed independent learners, which may assist them to become lifelong learners.’” However, I would argue this “different type” of learning experience is the most beneficial when there is an alignment with the purpose, pedagogy, and person.

Alignment or Disconnect

So far, I have discussed Cyber School purposes, pedagogies, and students. Next, I discuss teachers’ experiences when these three categories align or are misaligned. Teachers spoke positively about distance learning education experiences when all three aligned and expressed teacher and student frustration when they were disconnected.

Alignment. I interpreted teachers’ descriptions of positive teaching and learning experiences to be those where the purpose, pedagogy and person were aligned. The following scenarios describe such situations.

Aligned Environment 1.

School Purpose	Pedagogy Used	Student Need
Meet the needs of students who need control over course pacing and are independent	→ Independent self-paced	→ Student-led pacing

Crystal explained this alignment where she described that “asynchronous...continuous intake is a huge advantage” for situations where students are absent for extended periods of time.

Crystal There’s a large immigration population, in our city. And so, when a kid goes back to their home country for say about six weeks, it’s a nightmare for their homeroom teacher. [We can] help supplement...Their home school, says “Johnny’s going to be missing module three with us.” So, what they do is, they parachute him in [to complete the third module with us].

Aligned Environment 2.

School Purpose	Pedagogy Used	Students Need
Student learning from home because of pandemic restrictions	→ Collaborative cohort paced	→ Connection with peers and sense of belonging in the environment Supportive environment to learn DL skills

Amy explained this alignment, where she used some synchronous meetings to support students who may struggle with self-regulating their learning.

Amy [The class will] meet as a whole group on Mondays and Fridays, and that’s just for me to see who’s showing up... who seems to be engaged... Then Tuesday-Wednesday-Thursday, I’m usually reaching out to kids I know are not doing anything, or if they’ve asked a question and we try to do these small group meetings for whoever needs it.

Note that within Amy’s description, there is flexibility in offering some autonomy (i.e., asynchronous for most of the week) along with incorporating of some synchronous sessions, supportive of students’ needs. However, the synchronous sessions would not be possible in a self-paced course with varied student schedules.

Aligned Environment 3.

School Purpose	Pedagogy Used	Student Need
Meet the needs of homeschool students	→ Activity based	→ Connection to community and family context

Another example of a connected environment was described when the primary purpose of the course was to meet the needs of homeschool students (pre-COVID-19). Teachers used an activity-based approach to learning with focused efforts on field trips, volunteerism, or work placement. In this context, teachers actively looked to create opportunities for peer interactions to give students as “normal a high school experience” as possible. Ruth shared her experiences in such an environment.

Ruth [We organize] events for our students and then incorporating that into the curriculum...I organized an outdoor...winter camping trip and it was

fantastic...Those opportunities going forward I think are similar to our community of students feeling connected with other people in their [face-to-face] school.

In the case described by Ruth cohort pacing was not needed for collaborative learning, but students had to prioritize attendance at the field trips (noting they were optional).

In each case above, the purpose, pedagogy, and person aligned and teachers spoke positively about how distance learning met students' needs.

Disconnect. Teachers who discussed situations that did not lead to student success (e.g., course completion or meeting curricula outcomes) had a notable disconnect with the purpose, pedagogy, or person. Teachers often attributed this disconnect to a mismatch between student readiness and student support. For example, if a student reliant on a face-to-face teacher for motivation was enrolled in a course where they needed independence skills, both teachers and students experienced frustration. The following scenarios describe such situations.

Disconnected Environment 1.

School Purpose	Pedagogy Used	Need of Student Enrolled
Meet the needs of students who need additional course credits without learning challenges	Independent self-paced	≠ Students enrolled need significant academic and or readiness support

Many teachers described an increase in enrollment of students experiencing significant learning challenges and/or attendance concerns, without the equitable support students would receive in face-to-face classrooms. One teacher suggested that face-to-face schools that enrolled students “thought that this was just a dumping ground” [IP]. As a result, she highlighted one course with thirty-nine students where “only twenty-three were active.” She went on to say that tracking those students was “stressful for a while,” especially when students were inaccurately communicating to their parents that they were working. Relying on student communication of progress for parent support may not be sufficient.

Teachers often attributed the lack of distance learning support to senior administration staff misinterpreting that distance learning requires less teacher time and student support. In turn, teachers often expressed that high student enrollment and/or lack of student support affected their ability to support students.

IP If they [senior division staff] had a better idea, we wouldn't be in the boat that particularly my school is in right now with an unreal amount of students and up until two weeks ago, we didn't have a [student support teacher].

I previously addressed the addition of a student support teacher in the Catalyst Teacher theme where teacher advocacy strengthened the students support system.

Without a plan in place for students who need significant supports for distance learning readiness (e.g., technology skills, self-regulation), socially constructed learning was not realistic for teachers given the additional time needed to support students.

John The desire of every teacher at heart would love to be doing problem-based learning and collaboration and deep learning. All of us would love that...but the current workload that at least I am experiencing...It would not be possible. It's just too much.

John's statement implies that not only can pedagogy be influenced by the student or directed by the school, but also it can be indirectly influenced by the environment (e.g., high student enrollment). It was not clear what "high student enrollment was" although the following excerpts provide some context. "Our school division ...goes with, around sixty [students for] half-time. And then a hundred and twenty-five would be [considered a] full-time [teaching position]." Another teacher indicated she was teaching over her half-time designation with close to 90 students (≈ 50% more students than is the standard).

Disconnected Environment 2.

School Purpose	Pedagogy Used		Need of Student Enrolled
Meet the needs of diverse students (e.g., students who need independent learning and other students who need personal connection)	Independent self-paced	≠	Student needs social connection for motivation and interest. Student needs DL self-regulation support
Note here the need for two separate approaches, yet only one pedagogical approach is used, leading to a disconnect for <i>some</i> students.			

Another example of a disconnect in the environment was cited when an independent self-paced pedagogy was used for all students, when a collaborative approach would be better suited for some students. In the example below, I interpret the administration to feel that credit attainment by the deadline takes precedent over deep learning.

IP Students [have] the option of procrastinating and then hammering out a course in 3 weeks...When you've got an administrator breathing down your neck, saying this needs to be marked by the end of June, so the student can get their credit. You just don't have the option then to even give the kids feedback for meaningful learning.

The interview participant did not suggest that credit attainment was not important, only that deeper learning may have been possible with early intervention policies for inactive students.

Conversely, a teacher in a different situation (e.g., where the student was independent) might view self-paced independent learning as an advantage (e.g., can finish a course quicker and at their own pace). However, here, where a student cannot, or does not, self-regulate, procrastination can affect the “teaching and learning cycle,” creating a mismatch between the pedagogy, or support associated with the pedagogy (Anderson & Dron, 2012), and the student’s learning needs. Simply put, a homogeneous pedagogy may be problematic in meeting every student’s needs.

Disconnected Environment 3.

School Purpose	Pedagogy Used		Need of Student Enrolled
Meet the needs of Rural Students needing additional credits	Cohort Paced Collaborative	≠	Independent Self-paced

This situation describes a learning environment where a student needs a self-paced learning due to extenuating circumstances (e.g., family responsibilities, mental health, or addictions) but the course is paced as a collaborative cohort. For example, course expectations will be unattainable for students who, due to extenuating circumstances, cannot commit to collaborative work where their peers are relying on them to complete a collaborative project.

Note, this situation is *not* describing environments where students advocate for an individual approach to avoid collaborative work. In that case, student resistance should be viewed as an opportunity to “coach” the student and challenge them to grow intellectually through collaborative learning, even though, at first, it might seem hard (Driscoll, 2005; Perry, 1970).

Summary Alignment between the Purpose, Pedagogy, and Person

For most schools, the findings suggest the initial Cyber school student has shifted from a *niche* student (e.g., independent students who *needed* control of place or pace of learning), to a more diverse population (e.g., students supplementing face-to-face courses, homeschool students, students who are not comfortable in a face-to-face classroom). The shift in student populations for Cyber schools has not always equated to a shift in the pedagogical approach or student services support. Where there was not a connection between purpose, pedagogy, and person (e.g., students expecting an independent course but being required to collaborate, or students needing collaboration for motivation but expected to work independently) teachers expressed frustration, burnout, and

increased time tracking students. In turn, this disconnect took away the focus on supporting deep learning opportunities.

The findings here suggest transferability of research on collaborative learning in higher education context (e.g., increased satisfaction and retention) (Garrison et al., 1999; Moore, 1989) may be limited in a high school ADL context. I attribute the lack of transferability largely to higher education studies being conducted in cohort paced contexts (Downes, 2012; Littlejohn, 2013; McAuley et al., 2010; Siemens, 2005), in contrast to most high school ADL programs throughout Saskatchewan that have, sometimes unnecessarily, student-led pacing.

Different pedagogies have different strengths and weaknesses. Independent self-paced pedagogies are best suited to students with limited internet access, students who need full control of course pacing, or students who have large student absences that limit social interaction (Anderson & Dron, 2012). Social constructivist approaches can increase emotional engagement through social interaction and deepen learning (Barbour & Rich, 2007; Salmons, 2009), but they are also time consuming for teachers and limit accessibility (due to unattainable expectations) for some students.

When self-paced independent courses are *needed* for access to learning opportunities, Cyber Schools would be wise to implement such pedagogies. However, I would argue that where social constructivist pedagogies are possible (e.g., where students could be paced as a cohort), they are a viable under-used option to meet the intent and stance of the curricula. Additionally, as neither teacher nor student has been largely exposed to this type of approach, it follows that support systems are needed (e.g., teacher professional development, scaffolding collaborative skill acquisition) (Robinson et al., 2017).

The next chapter summarizes each theme with direct connections back to the research questions and provides recommendations to strengthen a social constructivist approach to high school asynchronous distance learning and recommendations for future research.

CHAPTER FIVE: CONCLUSION

The purpose of this mixed-methods study was to explore how socially constructed learning is actualized in high school asynchronous distance learning (ADL) environments. The impetus for this research arose from my awareness of the paucity of teacher resources and literature to support a social constructivist approach to distance learning in high school asynchronous environments. My research aim was to illuminate social constructivist high school ADL strategies, understand what supports and inhibits such practices, and provide recommendations to strengthen high school ADL.

Within a Province with diverse school divisions (i.e., serving large city centres or sparsely populated rural areas), I expected that the answer to the research question, “How do high school ADL teachers actualize social constructivism?” would be complex. Indeed, viewing distance learning as a dynamic ecosystem was a response to the complexity of the system. The themes addressed the complex reciprocal nature of elements of a distance learning ecosystem; namely, how the teacher, student, and environment are synergetic and evolving. Each element affected the other. For example, the teacher’s approach to distance learning affected the student’s learning experience. Student agency for independent learning affected teachers’ approaches. Finally, the resources and structure of the environment (e.g., course pacing, student support, class size) affected the teaching approaches and student’s learning opportunities. When the teacher as catalyst, student agency, and connection in the environment align, meaningful learning (not necessarily social constructivist learning) is possible.

Viewed from a distance learning ecosystem framework, each theme represents paramount considerations for distance learning ecosystems. The *Teacher as Catalyst* theme provides an in-depth understanding of the teacher’s role in catalyzing social constructivist learning. The *Student Agency* theme addresses the student’s active role in influencing the ecosystem and how the system is structured for them to lead their learning. Finally, the *Alignment between Purpose, Pedagogy, and Person* addresses the necessity of seeing distance learning from a holistic learning ecosystem. Connectedness is at the heart of a learning ecosystem. Reciprocity between teachers and students strengthens the learning environment. When senior administrative staff have a strong connection with teachers, policies and support can be strengthened through a shared understanding of the

system needs. Together, the three themes provide a comprehensive understanding of the distance learning ecosystem and provide recommendations for strengthening and supporting social constructivist high school ADL practices.

Below, I summarize each theme, highlight barriers to social constructivist high school ADL practices, provide recommendations to strengthen distance learning, and suggest further research possibilities.

Teacher as Catalyst

The theme *Teacher as Catalyst* describes the synergetic role of teacher to support student learning. Distance learning frameworks such as instructional dialogue (Moore, 1997), learner-instructor interaction (Moore, 1989), teacher presence (Moore, 1997), and teacher engagement (Borup et al., 2020) describe the importance of the teacher's role in distance learning. Frequently cited in literature is the metaphor of a teacher as a "coach" (Driscoll, 2005) or that of a "guide-on-the-side" (King, 1993). Considering my research, I view these as insufficient as they minimize the interactive role of the teacher throughout a dynamic distance learning ecosystem. The theme, teacher as catalyst, describes the teacher's role beyond that of a coach or guide, including strengthening resources, supporting connections, and motivating students to take an agentic role in leading their learning. Within the teacher as catalyst theme, I addressed the overarching research question; "How do teachers actualize socially constructed learning in high school ADL?"

In the literature review social constructivist learning was broken down into four categories: collaborative learning, student agency, flexible student-centred course design, and deep learning tasks. Below, I summarize the findings within the teacher as catalyst theme for each category.

Collaborative Learning

Collaborative learning was actualized through discussion boards, shared online documents, community service, field trips, group work, and student-teacher interaction.

Although discussion boards were used, or at least tried, by many teachers, there was also concern about superficial participation, which, for some, limited future use. Community service and field trips were not widely used; however, where they were used, teachers cited positive learning outcomes. Group work was primarily used by teachers who paced students as a cohort and had some opportunity for synchronous class sessions. Where teachers used group work, they cited needing to scaffold and support students to build skills and comfort with each other to successfully collaborate.

Collaborative learning with peers was not a strong component of most teachers' strategies (with the exception of those who paced students as a cohort). Collaborative learning largely took place between the teacher and student as needed. Lack of exposure/training, time, and reluctance from some students with the approach largely influenced the extent to which teachers implemented collaborative learning.

Student Agency

Teachers supported student agency through teacher-curated student-choices, where students could choose from equitable content or assessments (a reflection of flexible student-centred course design). An innovative strategy for student agency was to provide opportunities for students to create resources for other students to learn from or interact with. For example, in a Wellness 10 class students created wellness activities for classmates to engage with. Student agency, in terms of co-constructing the learning path, was limited (if not absent). Teachers expressed an openness for students to advocate for a different way to demonstrate their learning. However, students initiating conversations about co-constructing their learning seemed to have little uptake. Leaving the initiation for co-constructed learning opportunities up to the student may be problematic for introverted students, those without confidence in online interpersonal skills, or students who may not realize it is an option.

Flexible Student-Centred Course Design

I view this as the strongest area in the actualization of social constructivist practices. Indeed, distance learning lends itself to branched student-choice learning activities without affecting classroom management. Teachers often cited providing students with choice in content (e.g., different case studies) or assessment (e.g., portfolio, presentation, traditional exam). However, teachers noted providing student choice was a barrier for some students, particularly students learning English as an additional language, or students with cognitive difficulties who may be overwhelmed by multiple choices.

Student-centred design was also evidenced in the data by scaffolding learning tasks through incorporating video clips to guide students, creating opportunities to get to know their class peers (primarily through some synchronous sessions), and including content and discussion boards that related to student interest, previous experiences, and socio-cultural contexts.

Apart from teachers who paced their students as a cohort, most participants in this research focused on flexible student-centred course design in terms of teacher-curated student choice within the learning rather than through social interaction and community building. Borup et al. (2020) noted similar findings with an increased focus on flexible learning design compared to meaningful collaboration.

Deep Learning Tasks

Deep learning tasks identified by teachers overlapped with the categories above. Specific deep learning tasks included critical and creative tasks in which the student was interested (e.g., book club, open-ended problem-solving tasks). When teachers elaborated on deep learning tasks, pause points were crucial but limited in some student-paced courses. Pause points included students checking in with the teacher, receiving feedback (e.g., teacher, peer, and/or self-assessment), and implementing the feedback for improvement. Deep learning tasks were not just a product, rather they were equally about the learning process. Where teachers designed self-assessment feedback as the primary means of feedback, deep learning appeared to “depend on the student” (further addressed in the student agency theme). I note here that when I asked teachers about units that they would like to model all their courses around, deep learning tasks were often overshadowed by clear, consistent course design that provided clarity of the task for students. At this time in distance learning, routine and predictability in creating comfort within an asynchronous distance learning environment, may overshadow deep learning tasks. Additionally, deep learning was sometimes cited as curricula/subject dependent. Although literature cites the necessity of behaviour engagement for learning (Borup et al., 2020), the American National Research Council (2003, as cited in Willms et al., 2009) asserted that “ultimately we need to achieve the more ambitious goal of deep cognitive engagement that results in learning” (p. 3).

Student Agency

Providing deep learning collaborative tasks was not sufficient for students to enthusiastically take part in them. I interpreted that students’ agency (away from collaborative learning) was influenced by both student readiness for, and student buy-in to, socially constructed learning. Teachers identified that many students did not have the necessary readiness skills (e.g., independence, technological skills, interpersonal skills) to be successful in socially constructed learning. Additionally, teachers viewed that many students did not buy-in to the benefits of socially

constructed learning. In some cases, teachers felt students saw collaborative work as infringing on their ability to direct their learning.

Social constructivist strategies that teachers received positive student feedback about included learning from others work through a shared class gallery, discussion boards that students could participate in regardless of their progress in the course, and collaborative activities in the student's community, with family, or through field trips.

Even as teachers identified the benefits of socially constructed learning (increased knowledge and critical and creative thinking), they also had to assess whether student readiness and buy-in was fixed (i.e., static for the duration of the course) or flexible (i.e., teachers can significantly influence student skills and buy-in throughout the course). If teachers interpreted that student readiness was fixed, they had to assess whether their time and effort would be better spent elsewhere (e.g., improving course design, adding multimedia, creating additional individual learning paths). However, if teachers interpreted that student readiness was flexible, then they had to teach the skills necessary for collaboration readiness. The perception of teacher influence on student readiness and buy-in to collaborative deep learning tasks, is a significant determining factor on how teachers make decisions. Teachers weigh the investment and continued effort it would take to create a sustainable collaborative ecosystem in comparison to the potential outcomes (e.g., deeper learning or students dropping the course). As students were not part of this research, these assumptions may or may not be accurate.

Alignment between Purpose, Pedagogy, and Person

I constructed the theme of *Alignment between Purpose, Pedagogy, and Person* in response to finding shared meaning about why teachers make the instructional choices they do. This theme also aided understanding the benefits and challenges of social constructivist high school ADL.

Teachers largely made the instructional choices they did to meet a specific student need, often tied to the school purpose. Some teachers advocated for self-paced independent asynchronous distance learning, indicating it was a privilege to work in such environments to meet student needs. The same confidence was expressed by other teachers who spoke of the privilege they had in being able to support some synchronous communication with students. However, when a homogeneous approach was used for all students, there was often a disconnect for students who could not conform

to the approach. For example, independent learning approaches worked well for some students but were problematic for students who needed more support and personal connections.

Within this theme, I view homogeneous pedagogies to be problematic when not critically analyzed to support diverse student needs. As student populations for Cyber schools shift, an continued re-analysis of the effectiveness of the pedagogical approaches and support systems is needed to ensure the pedagogy and supports shift alongside the needs of students. I provide recommendations to strengthen distance learning ecosystems below.

Barriers to Social Constructivist Approaches in High School ADL

Here, I highlight the main barriers or inhibitors to implementing socially constructed high school ADL; namely, continuous student intake, student response influencing course design, lack of resources and professional development opportunities, teacher time, and perceptions of student readiness.

First, teachers noted that with a continuous intake of students, peer collaborative learning was limited, as few, if any, students were at the same place in the course at the same time. Second, students' response to collaborative learning has, for some, influenced course design to the point where collaborative learning has been reduced or removed. The third point, lack of exposure and training in how to effectively implement collaborative, and the fourth point, teacher time, go hand in hand. Teachers identified they had little to no formal training in teaching distance learning prior to becoming a distance learning teacher. They were, in many cases "building the boat in the water." The time and effort it took to build new distance learning courses and learn how to be a distance learning teacher (without training or resources) was significant. I suggest insufficient teacher training and time can lead to cognitive overload, leaving teachers with little energy left over to support or implement collaboration in deep learning tasks. Both teachers and students may experience cognitive overload with navigating the new distance learning environment, leaving little energy left for deep learning processes.

Finally, teacher perceptions of student readiness to co-construct learning opportunities inhibited having co-constructed learning as a *starting point* for learning. Rather, a teacher-led, or teacher-curated student-choice, approach was a typical starting point for learning activities, with teachers being open to students advocating for an alternate approach. Given that it is part of a teacher's job to make judgments about what students need, it brings into question the extent to

which authentic social construction for deep learning is possible when beginning from a position of power. Although teachers suggest that social constructivism is necessary for deep learning, their teaching approach often contradicts this aim. It is clear that teachers care deeply about their students, yet the teachers often remain at the centre of the pedagogical approach. Whether this is due to their own assumptions or structural realities, it justifies a need for future research to confirm some of these assumptions with students (e.g., what students need and why they make the choice they do).

I view the above barriers to socially constructed learning as challenging, but not insurmountable. Below, I provide *recommendations* to strengthen social constructivist distance learning ecosystems.

Recommendations to Strengthen Distance Learning Ecosystems

The findings demonstrate that social constructivist practices can be strengthened through a) distance learning policy, b) a clear understanding that distance learning is not a homogeneous pedagogy, c) improving institutional support, d) incorporating distance learning processes and skill acquisition as a learning outcome, and e) finding areas to incorporate community thinking.

Distance Learning Policy

At times during the interviews there was at times discourse that “online learning is inferior” to face-to-face learning, whether from the teachers themselves or from perceptions others had of their role. Furthermore, some teachers carried anxiety about asynchronous distance learning, in part, as a result of uninformed perceptions (e.g., by parents or internal senior administrative staff), that an asynchronous teacher is “slacking off” or not working hard enough. In truth, for a conscientious teacher it is the opposite. I place responsibility for some of these uninformed perceptions at the feet of the Ministry of Education, senior administration staff at local divisions, and the Saskatchewan Teachers’ Federation. Below I address each organisation's role in supporting a synergetic distance learning system in the province.

Saskatchewan Ministry of Education

Notably, Saskatchewan is the only Canadian province without a specific distance learning policy or framework. In every other Western province (i.e., British Columbia, Alberta, and Manitoba), explicit distance learning frameworks are in place highlighting social learning, equitable access, pedagogical practice, and quality success standards (Alberta Education, 2019; British Columbia Ministry of Education, 2021; Manitoba Education, 2020). Regrettably, the same cannot be

said for Saskatchewan. For over five years, Saskatchewan has in the process of creating. Notably, this five-year process (citing my personal involvement in such processes in focus groups) has yet to provide any official framework. In my view, particularly given the elevated importance of distance learning during the recent emergency remote learning, the absence of a framework and policy is unacceptable and implicates the ministry in reinforcing the notion that online learning is inferior and not worthy of equitable attention.

Within a learning ecosystem, the focus is not on the tools or technology, however, teachers were clear that if access to such resources did not exist, the focus could hardly be anywhere else. One of the pillars identified in Saskatchewan's Framework for a Provincial Education Plan 2020-2030 (Saskatchewan Ministry of Education, 2019), is to ensure an inclusive learning environment for all students. However, funding for inclusive learning environments in the 2022-23 Business Plan (Saskatchewan Ministry of Education, 2022) only addressed face-to-face building repairs. Without quality technology and tools available to all students, an inclusive learning environment for all students will not exist. As noted in the report, *Uncharted Waters: Toward a World-Class Canadian e-learning Paradigm* (Ivus et al., 2021), Indigenous youth, Black Canadians, students with disabilities, and students in rural areas have been disproportionately impacted by the challenges related to distance learning. "If the Canadian K-12 and post-secondary education system is to move forward in an equitable manner, inclusive learning and distance learning strategies must be considered" (Ivus et al., 2021, p. 48). Policy development must include voices from marginalized students to ensure inclusive learning environments beyond face-to-face building repairs (e.g., access to laptops, increased bandwidth, learning supports, culturally relevant content).

Saskatchewan School Boards Association and Senior Administration

Where teachers expressed a frustration with policy, it was almost exclusively focused on the lack of understanding from senior administrative staff regarding what distance learning is and how it works. Over 25 years ago, the Saskatchewan School Trustees Association report on distance education (1995) detailed the following distance learning concerns:

- People do not understand the vision and directions.
- People don't implement properly what they don't understand.
- People don't implement what they are not committed to.

School boards are reluctant to invest in educational technologies and distance education without an understanding of the directions in which the province is headed. (Leadership and Coordination section, para. 1)

Such issues continue to exist. Without a clear understanding of distance learning it is difficult to make and support informed decisions. This research suggests that there is still work to be done at school division levels to ensure that:

- Senior administrative staff have a comprehensive understanding of the complexity of a distance learning system.
- Distance learning pedagogy, instructional practices, and student learning needs are at the forefront of policy creation and implementation.
- Student services support is equitably funded in distance learning.
- Teachers are included in the future vision and policy creation/implementation for distance learning.

The Saskatchewan Teachers' Federation

In 2021, the Saskatchewan Teachers' Federation created their first distance learning policy that addressed many concerns cited in this research. For example:

- Distance learning must teach to the whole student, attendant to their intellectual, social, emotional, physical and spiritual well-being.
- The working conditions of distance-learning teachers must include resources and assigned time required to develop and deliver distance-learning programs.
- Material created through public funds to support distance-learning programs should be made available freely throughout the public education system.
- Distance-learning teachers must have access to professional learning, teaching resources, accreditation, networking, mentorships and opportunities to collaborate.
- Teachers individually and collectively:
- Advocate for the expansion of curriculum resources administered by the Ministry of Education tailored for distance learning.
- Advocate for pre- and in-service professional learning for online pedagogy and assessment practices.

(pp. 94-94)

Elevating the Distance Learning Profile

I strongly recommend a collaborative effort on the part of each entity above to elevate the public relations profile regarding distance learning at all levels (ministry, federation, school divisions, local schools, and the general public). There is a need to counter narratives that distance learning as an inferior approach to learning where distance learning is used as a “deficit version of learning” where the student is seen as “being without” (Ivus et al., 2021). Elevating distance learning discourse through highlighting how it strengthens and supports the education system is needed to spur conversations and actions to imagine the possibilities for distance learning beyond trying to mimic face-to-face classrooms (Vadillo, 2010) or replicating static paper correspondence courses (Anderson & Dron, 2012).

The above stated policies, implied values, and provincial norms are part of the distance learning ecosystem, their influence cannot be overlooked. It is with hope that the above education bodies evolve with the changing learning environment and no longer be the only province without a distance learning policy or framework.

The Problem of Homogeneous Pedagogy

I suggest the lack of clarity regarding the diverse approaches to distance learning has been problematic. Distance learning is the *mode* through which educational outcomes are facilitated. Distance learning is *not* a “one size fits all” approach. Although self-pacing is not synonymous with asynchronous learning, unrestricted self-pacing seems to be ingrained in many high school asynchronous courses. *Some* students need an unrestricted self-paced option to graduate from high school (e.g., family responsibilities, extra-curricular obligations, medical reasons), but *many* students do not. To strengthen distance learning institutions, I suggest a separation between pacing and pedagogy. Although the findings demonstrate that one affects the other (e.g., social constructivist practices are more easily facilitated in cohort paced courses), they are not one and the same. An asynchronous course can be collaborative, as suggested by the teachers who used field trips, community service, or family involvement for collaboration. Similarly, a synchronous course can be equally limited in meaningful interaction.

In Saskatchewan, distance learning is strongly associated with self-paced independent learning. This association may limit the ability to support social constructivist practices, specifically,

when self-pacing means that students can work independently at the expense of receiving and incorporating feedback for improvement.

I suggest that an asynchronous cohort model is an overlooked, yet more supportive, model for social constructivist practices. Furthermore, with little to no changes to existing scheduling, cohort pacing is possible for many students. Within individual schools, where there were “pods” of students taking the same distance learning course, informal collaboration was more accessible. Where teachers paced students as a cohort, teachers cited an increase in opportunity for social constructivist practices with peers, more time supporting critical discussions, and fewer inactive students.

Independent self-paced courses in Saskatchewan were created to meet a very niche population with varied learning schedules that made synchronous learning an access barrier. They are a legacy practice that works to increase educational access. However, today’s distance learning student and family needs are much more diverse. The advancements in technology can support a more connected approach. Starting with a collective understanding of distance learning pedagogy, followed by intended learning outcomes, and consideration of the learning context will ensure each school can reinvent or invent themselves, not according to the legacy practices or possibilities of the past but based on the possibilities of today and the future.

Finally, the results suggest that the free-for-all student-led pacing is insufficient for peer-to-peer collaborative engagement and, at times, is a barrier to deep learning. Student-led pacing should not mean that students can bypass deep learning processes, such as receiving and using feedback for improvement (Fullan et al., 2017). When teachers paced students as a cohort, they created space and time for collaborative engagement through peer feedback, peer-led learning, and dialogue.

I suggest that without some guidelines for student-led pacing (e.g., set intake times, weekly cohort), an increase in peer-to-peer dialogue is not likely to dominate distance learning teaching strategies. Student-led learning within Saskatchewan appears to be synonymous with low peer-to-peer dialogue. For students who need full control over pacing, student-led pacing increased access to learning opportunities. However, maintaining low peer-to-peer dialogue may have negative effects on students, such as increased dropout rates and feelings of isolation and disconnection from the course (Symeonides & Childs, 2015). McMullen and Rohrbach (2003) have similarly cited such

disconnect among Indigenous students across Canada, whom distance learning has not historically served well.

By imposing or expecting too much independence on a group of people who believe in relationships and social learning, the curriculum developer and instructor will restrict the positive influence of the culture, and ultimately the success of the course... This required social interaction can be achieved by ensuring the instructor and the students have opportunities to build relationships. Through the design of the course, students should also be able to interact and build relationships with other students in their class. (pp.6970)

It is important to consider who is privileged, marginalized, and omitted based on the addition or absence of collaborative spaces. Not all approaches are equitable for all students.

Distance Learning Processes and Skill Acquisition as an Outcome

Registering a student in an online course does not make a student an online learner. However, given the strong presence within the data connecting distance learning skills to deep learning (e.g., communication through technology, independence, interpersonal skills), it follows explicitly teaching, nurturing, and assessing such skills will be supportive of all learners. For example, taking time to model and provide feedback on collaborating with others in shared online documents. Schools can expect that students will not come to distance learning with all the necessary skills to be successful, but with support and persistence (by both the teacher and student) they can be learned.

These findings suggest that skill acquisition cannot be separated from social constructivist practices that support deep learning (Rotherham & Willingham, 2010; Voogt & Roblin, 2010). In this regard, I highlight the importance of Rotherham and Willingham's (2010) statement; "If we deem that such skills as collaboration and self-direction are essential, we should launch a concerted effort to study how they can be taught effectively rather than blithely assume that mandating their teaching will result in students learning them" (p. 19). I suggest that to strengthen social constructivist high school ADL praxis, stakeholders (e.g., policymakers, administration, teachers) should consider Barkley et al.'s (2014) assertion that since collaborative skills (e.g., teamwork, social skills) are part of educational goals they should at minimum be assessed, if not included as part of a student's final grade.

I suggest it is problematic to view student readiness as fixed. If distance learning is left to the “strong” students, the education system may reinforce a system where the “rich-get-richer” (Toshalis & Nakkula, 2012); those who are “pre-disposed” to distance learning will continue to do well and those who are not will continue to struggle. Similarly, I argue that to say “distance learning is not for everyone” is a disservice to all students. When students struggle in face-to-face one would not simply say, “face-to-face learning is not for everyone.” Indeed, there are entire face-to-face student services departments dedicated to students who struggle. The data suggest the same cannot be said to be ubiquitous in distance learning.

Furthermore, Pavelich and Moore (1996) contend that the more students are exposed to intellectually challenging tasks, the more likely the student is to reach a higher level of intellectual maturity. In other words, incorporating more deep learning tasks, will increased intellectual maturity more so than decreasing such tasks when having trouble or attending to students’ dislike of said tasks.

Kloss (1994) reminded educators that students may experience a “sense of loss” when they are expected to move away from the comfort in seeking the “right” answers from the teacher to having to consider the value in learning from others’ (i.e., peers) diverse viewpoints. Kloss cites students may experience “anxiety about peers being a reliable sources of knowledge” when they are used to attributing “truth to a single authority, the teacher” (p. 154). He does not suggest that students’ negative response to collaborative work should be catered to; rather, it may be helpful for teachers to understand the resistance some students show when they want a teacher to give them “the right answers” so they can “get down to [independent] work.”

Fullan et al. (2017) posited that the skills necessary for deep learning do not need to be prerequisites (either the student has them or not); rather, effective education programs can “simultaneously engross students in authentic tasks that engage them deeply while providing meaningful ways to learn critical literacy skills” (Fullan et al., 2017, p. 24). Furthermore, Driscoll (2005) suggested that, in the absence of student readiness, teachers have a responsibility to “coach” students to choose learning processes that will challenge their thinking. Within the data there were promising experiences noted by teachers that social constructivist approaches (asynchronous and synchronous) are viable options with teacher coaching through encouragement, scaffolding student collaboration, and reinforcing the positive effects of learning through collaboration.

To get to the goal of deep learning, we must move beyond the stance that student readiness is fixed. Shifting to a flexible student readiness stance opens the opportunity to focus on the learning process while *simultaneously* engaging with the content. In this regard, I interpret that acquisition of deep learning skills (e.g., interpersonal, technology, and independence) needs to be explicitly taught and assessed to support quality equitable distance learning for all students.

Institutional Support

Suggested improvements to strengthen the high school ADL system include, a) automated progress reports, b) intervention policies to support inactive or struggling students, and c) implementing an open-access Provincial resource hub.

Automated Progress Reports. As previously mentioned, automated progress reports (e.g., bi-weekly report on student progress sent to parents, students, and support persons) are suggested as an efficient method of supporting communication between all parties while reducing extraneous teacher time spent “tracking inactive students.” Whether due to not wanting to admit they are struggling or whether students are intentionally avoiding work, teachers noted that relying on student reporting to parents and support persons on progress may be insufficient. It is unclear why more divisions have not implemented automated progress reports, as it appears to be something teachers noted can be programmed through the LMS and significantly reduces teachers’ workload.

Intervention Policies to Support Inactive or Struggling Students. Where schools had intervention policies that did not solely rest on the teacher (e.g., inactivity policies that triggered a meeting with the student and a support team), teacher time was freed to support active students who were struggling and increase dialogue with students in general. Some teachers identified a system-wide disconnect from the senior administrative staff in understanding time commitment to support distance learning students, in turn leading to many teachers who were overworked and felt underappreciated, both of which affect student outcomes (Lowe, 2020). Implementing intervention policies has the potential to not only support teachers and students but also provide additional legitimacy for distance learning, as such policies are already in place for face-to-face learning.

Shared Resource Hub. Creating a shared, accessible digital resource hub would provide teachers with a starting place to improve and extend distance learning practices. Teachers cited that the Ministry of Education has done a poor job in supporting distance learning resources for teachers, leading to an inefficient use of teachers’ time reinventing similar resources across the province. A

common shared resource hub would save teacher time and improve distance learning practices. Ultimately, strengthening teacher resources will strengthen student resources.

These institutional support recommendations have the potential to strengthen reciprocal relationships within distance learning ecosystem by creating more efficient communication (i.e., automated progress reports), and implementing policies that structure a strong student support system for all distance learning students. Implementing a provincial resources hub has the potential to strengthen the system by increasing access to quality teaching resources.

Shift from Group Work to Community Learning: ‘Learning From and With Others’ and ‘Supporting the Thinking of Others.’

With so many research studies pointing to the benefits of collaborative work (Barkley et al., 2014; Driscoll, 2005; Lamon et al., 2001; Salmons, 2009), teachers did not find their students felt the same way. I suggest a shift in thinking about collaboration from group work to community learning by building a collaborative body of knowledge through shared learning spaces, opportunities to dialogue with others, and emphasising the responsibility and benefits of supporting the thinking of others in online collaborative spaces. Teachers highlighted how students spoke positively about collaborative digital spaces where students could post their work for others to see and discussion boards where students could share about themselves. Teachers also shared how students responded positively to collaborative face-to-face interactions, such as working together with other distance learning peers in their face-to-face school, teacher visits, field trips, or work experience. It is my view that shifting from thinking about collaboration in terms of group work to a focus community learning with “the ability to ‘think with’ others, learn from others, and support the thinking of others” (Saskatchewan Ministry of Education, 2010, p. 23) will strengthen not only social constructivist practices but also student buy-in.

Designing Courses for Emotional Engagement

These findings suggest that using emotional engagement as a bridge between behavioural engagement to intellectual engagement may be an effective yet under-used strategy. Shifting the focus from how to structure the course to meet curricular outcomes to how to structure the course to meet curricular outcomes *and* student interest and relevance may be a subtle, yet powerful strategy to support deep learning. For example, students may be more motivated to engage in deep learning when they have a positive social connection with the teacher (Fullan et al., 2017) or the teacher encourages excitement for learning (hooks, 1994). Furthermore, Indigenous Saskatchewan high

school students who took part in the project “Seeking Their Voices” (Berryman et al., 2014), indicated that they needed to see the “relevance” of what they were doing to be engaged and noted personal connections with their teachers supported their learning (p. 3).

In this study, when students experienced emotional engagement through a positive relationship with the teacher, participants noted behavioural engagement increased. Additionally, teachers noted that when students were completing assignments they were interested in (e.g., whether through choosing their own topic, or implementing “fun” into an assignment), students wanted to go deeper — they had fun, asked questions, and wanted to know *why* things were the way they were. Although specific courses appeared to lend themselves to being more intrinsically interesting, the responses strongly suggested that regardless of the course, the teacher can influence emotional engagement (e.g., relevance, creativity within assignments, modeling curiosity, connecting content to student interests, encouraging student advocacy for alternate ways to meet the outcomes).

Interestingly, emotional engagement appeared to have a positive effect on both students and teachers. Not only were there positive benefits for students when teachers designed courses around emotional engagement, but there were also positive benefits for teachers too. Teachers were excited to mark the assignments and show off students’ work to colleagues. There was a sense of “excitement” when teachers spoke of marking assignments that students were emotionally engaged in.

In support of my position, Roorda et al. (2011, as cited in Borup et al., 2020) evidenced connections where emotional engagement affects both behaviour and intellectual engagement. As such, it could be a “starting point for promoting school success” (p. 812). I further suggest that distance learning processes that focus on emotional engagement are a key factor to motivate students from shallow learning to deep learning and are an important contributing factor to increase teacher enjoyment.

Further Research

Although beyond the scope of this study, many teachers reported a drastic increase in students with *anxiety* enrolling in distance learning courses. The influx of students with anxiety suggests that face-to-face classroom practices may not be supportive of all students. Further research

exploring what challenges students with anxiety are experiencing will benefit both face-to-face and distance learning students.

I suggest that heavily relying on student-teacher relationships for content dialogue and collaboration is unsustainable and limiting given both teacher and student competing time and priorities, and diverse schedules. In asynchronous distance learning, student-teacher dialogue is largely one-on-one, requiring a significant increase in time commitment compared to a face-to-face classroom. I suggest further exploration in how to leverage the power of peer-tutoring (Fullan et al., 2017) and an on-site support person (Tait, 2014) to strengthen the distance learning ecosystem.

This research was focused on how social constructivist learning is actualized, from the teachers' perspective; however, students' perspectives in distance learning research are needed. I encourage divisions and teachers to engage in action research with students to explore effective distance learning practices that lead to deep learning and have students critique teacher assumptions about what they need. In my view, student participation in an action research project is worthy of a course credit where students have an agentic role in shaping their education where their voices are valued and heard.

Implementation of collaborative work, not only in distance learning but in face-to-face classrooms is needed. The number of teachers citing not only students' previous negative experience with collaborative work but also with their own negative experience with group work, suggests that there are areas for improvement in the implementation stage. Within the social constructivist categories, described in the literature review (i.e., collaboration, student agency, flexible student-centred course design, deep learning tasks), collaboration implementation lags the other categories. More research is needed to determine whether it is the design of collaborative approaches or collaborative learning itself that is problematic. It is my view that an effective starting point would be to study the effects of professional development that support the implementation of social constructivist approaches in distance learning.

Finally, at the beginning of my research journey, distance learning for students in kindergarten to Grade 9 was not prevalent in Saskatchewan. Since the COVID-19 pandemic, all students, for a time, had to complete their formal education through distance learning. If distance learning for this demographic continues beyond the COVID-19 pandemic, further research is needed in a distance learning on effective practices for this largely unexamined area.

Limitations

As all research participants were recruited from the province of Saskatchewan using Saskatchewan curricula, the findings are specific to Saskatchewan high school ADL. However, other school divisions, teachers, administrators, etc. in similar contexts (e.g., demographics, socio-cultural context) may find value in the findings applicable to their distance learning context. Additionally, since participants volunteered to take part in the study, it is possible that not all perspectives were represented in the data.

No data was collected respective of the geographical location of the participants (i.e., urban versus rural, northern versus southern communities, teachers working full time online versus teacher who also teach face-to-face). Additionally, no data was collected regarding teachers who taught only students within their school division versus teaching students provincially, nationally, or internationally. As such comparisons could not be made regarding varied approaches depending on context.

In the second member check, where potential themes were sent to participants for input, only one participant provided feedback. I addressed the lack of member feedback through rigorous continued feedback from my supervisor and continuous immersion in the data. However, the lack of member participation is nonetheless a limitation to the theme construction.

The data collected, specifically regarding student readiness, was gained solely from teachers' perspectives, as such, further research from the student's perspective is needed. Furthermore, this study did not gather quantitative data on how many students expressed a dislike for collaborative work. It is possible that a vocal student minority pushed back against collaborative work, overly influencing teachers' perceptions and approaches.

Concluding Thoughts/Statements

A foundational principle of learning ecologies is that they are constantly changing. Distance learning ecologies are no exception. If we are to maintain the vision and mission of the distance learning of yesteryears (i.e., independent correspondence courses or mimicking face-to-face learning) we may miss the opportunity to meet the future needs of students. Students need to be prepared to enter a workforce that increasingly requires self-regulated, digitally literate, critical, and creative thinkers who can learn with and from others, even at a distance (Trilling & Fadel, 2009). When schools' purpose, pedagogy, and student needs align, distance learning can be an integral part

of supporting the larger goals of education (deep learning, interdependence, social responsibility, engaged citizens, critical/creative thinking) (Leithwood et al., 2006; Saskatchewan Ministry of Education, 2010).

However, deep learning cannot happen unless the learning ecology is conducive to support it. Without a critical analysis of the larger learning ecosystem (e.g., students, teacher training, resources), future visioning, and policy to support future visioning, the previous status quo of distance learning independent and individual learning expectations may remain dominant, even in the face of empirical evidence that distance learning social constructivist pedagogies provide richer outcomes (Barbour & Rich, 2007; Salmons, 2009).

As the strategies teachers have identified within asynchronous distance learning have shown, distance learning is a viable option to meet Saskatchewan curricular goals. However, we risk stopping at shallow learning if we do not have an ecosystem that sees value, and supports, socially constructed learning as a realistic possibility.

References

- Alberta Education. (2019). *Online learning school and school authority leader guide*.
<https://open.alberta.ca/dataset/4c652a2b-e38b-4421-bf86-a07a2a767fb9/resource/4452dacb-c2f5-435a-9ade-a07ac22e06c2/download/online-learning-school-and-school-authority-leaders-guide-2019.pdf>
- Amoah, C., Ameyaw-Baah, K., Annafo, Y., & Darkeh Assem, H. (2018). Investigating the effect of enquiry-based learning approach in science on junior high school 2 students in Paradise International School. *International Journal of Scientific Research and Management*, 6(07).
- Anastasiades, P. S., Vitalaki, E., & Gertzakis, N. (2008). Collaborative learning activities at a distance via interactive videoconferencing in elementary schools: Parents' attitudes. *Computers & Education*, 50(4), 1527-1539.
- Anderson, T., & Dron, J. (2012). Learning technology through three generations of technology enhanced distance education pedagogy. *European Journal of Open, Distance and ELearning*, (2).
- Anderson, R. C., Graham, M., Kennedy, P., Nelson, N., Stoolmiller, M., Baker, S. K., & Fien, H. (2019). Student agency at the crux: Mitigating disengagement in middle and high school. *Contemporary Educational Psychology*, 56, 205-217.
- Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. Longman.
- Archer, W. (2010). Beyond online discussions: Extending the community of inquiry framework to entire courses. *The Internet and Higher Education*, 13(1-2), 69.
- Barbour, M., & Rich, P. (2007). Social constructivist e-learning: A case study, *International Electronic Journal for Leadership in Learning*, 11(5).
<https://journals.library.ualberta.ca/iejll/index.php/iejll/article/download/661/322>
- Barkley, E., Major, C., Cross, P. (2014). *Collaborative learning techniques: A handbook for college faculty* (2nd ed.). Jossey-Bass.
- Bates, A. T. (2015). Teaching in a digital age: Guidelines for designing teaching and learning.
<https://opentextbc.ca/teachinginadigitalage/>

- Bayne, S., Evans, P. Ewins, R., Knox, J., & Lamb, J. (2020). *The Manifesto for Teaching Online*. MIT Press.
- Beck, C., & Kosnik, C. (2006). The starting point: Constructivist accounts of learning. University of New York Press. In Leithwood, P. McAdie, N. Bascia, & A. Rodrigue, (Eds), *Teaching for deep understanding: What every educator should know* (pp. 17-25). Corwin Press.
- Berryman, M., Carr-Stewart, S., Kovach, M., Laliberté, C., Meyer, M., Merasty, B., Sloboda, A., Stelmach, B., & Steeves, P. (2014). *Seeking their voices: Improving Indigenous student learning outcomes*. Saskatchewan Instructional Development and Research Unit.
https://aerc.usask.ca/research-projects-planningactivities/Seeking%20Their%20Voices_Nov%202014.pdf
- Besse, J. (2014). Expanding learning opportunities for high school students with distance learning. *American Journal of Distance Education*, 28(4), 292-306.
<https://doi.org/10.1080/08923647.2014.959343>
- Billings, E., & Walqui, A. (2018). *The zone of proximal development: An affirmative perspective in teaching ELLs/MLLs*. New York State Education Department.
http://www.nysed.gov/common/nysed/files/programs/bilingualed/zone_proximal_development.pdf
- Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research*, 26(13), 1802-1811. <https://doi.org/10.1177/1049732316654870>
- Bolam, B., Gleeson, K., & Murphy, S. (2003, May). "Lay person" or "Health expert"? Exploring theoretical and practical aspects of reflexivity in qualitative health research. *Forum, Qualitative Social Research*, 4(2).
<https://www.qualitative-research.net/index.php/fqs/article/download/699/1515/>
- Borup, J., Graham, C. R., West, R. E., Archambault, L., & Spring, K. J. (2020). Academic communities of engagement: An expansive lens for examining support structures in blended and online learning. *Educational Technology Research and Development*, 68(2), 807-832.
- Borup, J., West, R. E., Graham, C. R., & Davies, R. S. (2014). The adolescent community engagement framework: A lens for research on K-12 online learning. *Journal of Technology and Teacher Education*, 22(1), 107-129. <http://www.editlib.org/p/112371>

- Bosetin, J., Wilson, H. & Keuren, J. (2007). Teachers' and students' perceptions about personal interactions in a high school distance education course [Doctoral Dissertation]. ProQuest Dissertations and Theses.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328-352. <https://doi.org/10.1080/14780887.2020.1769238>
- British Columbia Ministry of Education. (2021). *Standards for K-12 online learning in British Columbia*. https://www2.gov.bc.ca/assets/gov/education/administration/kindergarten-to-grade-12/online-learning/ol_standards_k12.pdf
- Bronfenbrenner, U. (Ed.). (2005). *Making human beings human: Bioecological perspectives on human development*. Sage Publications.
- Bronfenbrenner, U., Ceci, S., & Kintsch, W. (1994). Nature–nurture reconceptualized in developmental perspective: A bioecological model. *Psychological Review*, 101(4), 568-586.
- Bronfenbrenner, U., & Evans, G. (2000). Developmental science in the 21st Century: Emerging questions, theoretical models, research designs and empirical findings. *Social Development*, 9(1), 115-125.
- Brown, F. B. (2000). *New strategies for program delivery in Saskatchewan*. Saskatchewan School Trustees' Association. <https://saskschoolboards.ca/wp-content/uploads/2015/08/00-02.pdf>
- Brown, M., Keppell, M., Hughes, H., Hard, N., & Smith, L. (2013). Exploring the disconnections: Student interaction with support services upon commencement of distance education. *The International Journal of the First Year in Higher Education*, 4(2), 63-74.
- Bruner, J. (1990). *Acts of meaning*. Harvard University Press.
- Bryant, A. (2016, December 12). Technology vs teachers: Can technology replace teachers? Kognity. <http://www.kognity.com/can-technology-replace-teachers/>
- Bryant, A., & Charmaz, K. (2007). *The SAGE handbook of grounded theory*. SAGE Publications Ltd. <https://doi.org/10.4135/9781848607941>

- Burke, K. (2007). Getting student buy-in. In S. Beyerlein, C. Holmes, & D. Apple (Eds.), *Faculty guidebook: A comprehensive tool for improving faculty performance* (4th Ed.). Pacific Crest.
- Burns, M. (2011). Distance education for teacher training: Modes, models, and methods. Education Development Center, Inc.
<https://www.edc.org/sites/default/files/uploads/Distance-Education-Teacher-Training.pdf>
- Canadian Council on Learning. (2009). State of e-learning in Canada.
<http://www.deslibris.ca.cyber.usask.ca/ID/218410>
- Carter, R., Rice, M., Yang, S., & Jackson, H. (2020). Self-regulated learning in online learning environments: strategies for remote learning. *Information and Learning Sciences*, 121(5-6), 321-329. <https://doi.org/10.1108/ILS-04-2020-0114>
- Chandra, V., & Lloyd, M. (2008). The methodological nettle: ICT and student achievement. *British Journal of Educational Technology*, 39(6), 1087-1098.
- Coldwell, J., Goold, A., Craig, A., & Mustard, J. (2007). Gender and Equity in eLearning. *Australasian Journal of Information Systems*, 15(1), 9-24.
<https://doi.org/10.3127/ajis.v15i1.476>
- Cavanagh, A. J., Aragón, O. R., Chen, X., Couch, B. A., Durham, M. F., Bobrownicki, A., Hanauer, D., & Graham, M. J. (2016). Student buy-in to active learning in a college science course. *CBE—Life Sciences Education*, 15(4), ar76.
- Cheruvilil, K., Soranno, P., Weathers, K., Hanson, P., Goring, S., Filstrup, C., & Read, E. (2014). Creating and maintaining high-performing collaborative research teams: the importance of diversity and interpersonal skills. *Frontiers in Ecology and the Environment*, 12(1), 31-38.
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123.
- CoI Framework. (2018). *CoI.athabascau.ca*. Retrieved 2 April 2018, from
<https://coi.athabascau.ca/coi-model/>
- Corbin, J., & Strauss, A. L. (2015). Basics of qualitative research techniques and procedures for developing grounded theory. Sage Publications.

- Cotterill, P. (1992, September). Interviewing women: Issues of friendship, vulnerability, and power. In *Women's Studies International Forum*, 15(5-6), 593-606.
[https://doi.org/10.1016/0277-5395\(92\)90061-Y](https://doi.org/10.1016/0277-5395(92)90061-Y)
- Creswell, J., & Plano Clark, V. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.
- Crumly, C., Dietz, P., & D'Angelo, S. (2014). *Pedagogies for Student-Centered Learning: Online and On-Ground*. <http://doi.org/10.2307/j.ctt9m0skc>
- Demaria, R., & Bongiovanni, T. (2012). *Dispelling myths about online education*. BizEd.
<https://bized.aacsb.edu/articles/2012/03/dispelling-myths-about-online-education>
- Dewanti, P. (2016). Linking national standards of distance education with e-learning ecosystem. *Journal of Theoretical & Applied Information Technology*, 86(3).
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Heath & Co Publishers.
- Douglas, T. A., Mather, C. A., Earwaker, L. A., James, A. J., & Murray, S. L. (2020). Supporting digital engagement: An evaluation of the use of a Guide for effective development and facilitation of online discussion boards. *Journal of Applied Learning & Teaching*, 3(1), 1-10.
- Downes, S. (2008). Places to go: Connectivism & connective knowledge. *Innovate, Journal of Online Education*, 5(1), 1-6.
<http://www.innovateonline.info/index.php?view=article&id=198>
- Downes, S. (2012). Connectivism and connective knowledge. *Essays on meaning and learning networks*. <http://www.downes.ca/me/mybooks.htm>
- Driscoll, M. (2005). *Psychology of learning for instruction* (3rd ed.). Pearson Education.
- Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report*, 23(11), 2850-2861. <https://nsuworks.nova.edu/tqr/vol23/iss11/14>
- Entwistle, N. (1991). Approaches to learning and perceptions of the learning environment: Introduction to the special issue. *Higher Education*, 22(3), 201-204.
<https://doi.org/10.1007/BF00132287>
- Entwistle, N., & Tait, H. (1993). Approaches to studying and preferences for teaching in higher education: Implications for student ratings.

- Falconer, L. (2012, October 3). *Transactional distance*. YouTube.
https://www.youtube.com/watch?v=_BI52drYwa4
- Fendler, R. J., Ruff, C., & Shrikhande, M. M. (2018). No significant difference-Unless you are a jumper. *Online Learning*, 22(1), 39-60.
- Fleming, R., & Pain, B. (1996). *What do students, parents and teachers think about the technologies that are used in schools?* Saskatchewan School Trustees' Association
<https://saskschoolboards.ca/wp-content/uploads/96-08.htm>
- Freire, P. (1974). *Pedagogy of the oppressed*. Seabury Press.
- Fullan, M., & Langworthy, M. (2014). A rich seam: How new pedagogies find deep learning. Pearson. <https://oer4nosp.col.org/id/eprint/5/1/Rich%20seam.pdf>
- Fullan, M., Quinn, J., & McEachen, J. (2017). *Deep learning: Engage the world change the world*. Corwin Press.
- Garrison, D. R. (2009). Communities of inquiry in online learning: Social, teaching and cognitive presence. In C. Howard et al. (Eds.), *Encyclopedia of Distance and Online Learning* (2nd ed., pp. 352–355). IGI Global .
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The internet and higher education*, 2(2-3), 87-105.
- Giattino, T., & Stafford, M. (2019). Governance for learning ecosystems. In J.J. Walcutt, and S. Schatz, (Eds.). *Modernising learning: Building the future learning ecosystem* (pp. 317–338). Washington Publishing Office.
- Giles, D. (2020, March 16). Public schools in Saskatchewan closing amid coronavirus concerns. *Global News*. <https://globalnews.ca/news/6683648/schools-saskatchewan-closing-covid19-coronavirus/>
- Glanz, J. (1999). A primer on action research for the school administrator. *The Clearing House*, 72(5), 301-304.
- Goulet, L. & Goulet, K. (2014). *Teaching each other: Nehinuw concepts and Indigenous pedagogies*. UBC Press.
- Government of Canada. (2018). Elementary and secondary education program. *Sac-isc.gc.ca*.
<https://www.sac-isc.gc.ca/eng/1450708959037/1531319458607>

- Halldorsdottir, S. (2000). The Vancouver school of doing phenomenology. In B. Fridlund and C. Hildingh (Eds.). *Qualitative methods in the service of health* (pp. 47-81). Lund: Studentlitteratur.
- Hallinger, P., & Leithwood, K. (1998). Unseen forces: The impact of social culture on school leadership. *Peabody Journal of Education*, 73(2), 126-151.
- Hanover Research Council. (2009). Best practices in online teaching strategies. <http://www.uwec.edu/AcadAff/resources/edtech/upload/Best-Practices-inOnlineTeaching-Strategies-Membership.pdf>
- Hecht, M., & Crowley, K. (2020). Unpacking the learning ecosystems framework: Lessons from the adaptive management of biological ecosystems. *Journal of the Learning Sciences*, 29(2), 264-284.
- Helsper, E., & Eynon, R. (2010). Digital natives: Where is the evidence? *British Educational Research Journal*, 36(3), 503-520.
- Henning, E. & Van der Westhuizen, D. (2004). Crossing the digital divide safely and trustingly: How ecologies of learning scaffold the journey. *Computers and Education*, 42(4), 333352.
- Herman, K.C., Hickmon-Rosa, J., & Reinke, W.M. (2018). Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. *Journal of Positive Behavior Interventions*, 20, 90-100
- Hirtle, J. (1996). Social constructivism. *English Journal*, 85(1), 91.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020, March 27). *The difference between emergency remote teaching and online learning*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Hong, J., Lee, Y., & Ye, J. (2021). Procrastination predicts online self-regulated learning and online learning ineffectiveness during the coronavirus lockdown. *Personality and Individual Differences*, 174, 110673.
- hooks, b. (1994). *Feminism is for everybody: Passionate politics*. Pluto Press.
- Horsley, J. (2012). Teacher catalysts: Characteristics of teachers who facilitate high academic success. *Australasian Journal of Gifted Education*, 21(1), 23-31

- Houghton, W. (2004). Engineering subject centre guide: Learning and teaching theory for engineering academics. Loughborough University.
https://repository.lboro.ac.uk/articles/Engineering_Subject_Centre_Guide_learning_and_teaching_theory_for_engineering_academics/9488288/files/17113940.pdf
- Icenogle, G., Steinberg, L., Duell, N., Chein, J., Chang, L., Chaudhary, N., Giunta, L., Dodge, K., Fanti, K., Lansford, J., Oburi, P., Pastelorelli, C., Skinner, A., Sorbring, E., Tapanya, S., Tirado, L., Alampay, L., Al-Hassan, S., Takash, H., & Bacchini, D. (2019). Adolescents' cognitive capacity reaches adult levels prior to their psychosocial maturity: Evidence for a "maturity gap" in a multinational, cross-sectional sample. *Law and Human Behavior*, 43(1), 69.
- Indian and Northern Affairs Canada. (n.d.). *Band operated schools*.
https://publications.gc.ca/collections/collection_2013/aadnc-aandc/R5-11-2009-eng.pdf
- Ivus, M., Quan, T., & Snider, N. (2021). *Uncharted Waters: A World-class Canadian E-learning Paradigm*. Information and Communications Technology Council.
- Jackson, N. (2013). *The concept of learning ecologies*.
http://www.lifewideebook.co.uk/uploads/1/0/8/4/10842717/chapter_a5.pdf
- Jacklin, A., & Le Riche, P. (2009). Reconceptualising student support: From 'support' to 'supportive'. *Studies in Higher Education* (Dorchester-on-Thames), 34(7), 735-749.
- Johnson, G. M. (2014). The ecology of interactive learning environments: Situating traditional theory. *Interactive Learning Environments*, 22(3), 298-308.
<https://doi.org/10.1080/10494820.2011.649768>
- Johnson, G., & Cooke, A. (2016). An ecological model of student interaction in online learning environments. In L. Kyei-Blankson, J. Blankson, E. Ntuli, & C. Agyeman (Eds.), *Handbook of research on strategic management of interaction, presence, and participation in online courses* (pp. 1-28). <https://doi.org/10.4018/978-1-4666-9582-5>
- King, A. (1993). From sage on the stage to guide on the side. *College teaching*, 41(1), 30-35.
- Kirkness, V., & Barnhardt, R. (1991). First nations and higher education: The four R's-respect, relevance, reciprocity, responsibility. *Journal of American Indian Education*, 30(3), 1-15.
<http://www.jstor.org.cyber.usask.ca/stable/24397980>
- Kloss, R. (1994). A nudge is best: Helping students through the Perry scheme of intellectual development. *College Teaching*, 42(4), 151-158.

- Kong, S. C. (2018). Parents' perceptions of e-learning in school education: Implications for the partnership between schools and parents. *Technology, Pedagogy and Education*, 27(1), 15-31.
- Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia-social and behavioral sciences*, 31, 486-490.
- Lambert, A. (2016). Intimacy and social capital on Facebook: Beyond the psychological perspective. *New Media & Society*, 18(11), 2559-2575.
- Lamon, M., Reeve, R., & Scardamalia, M. (2001). *Mapping learning and the growth of knowledge in a knowledge building community* [Paper presentation]. American Educational Research Association Meeting 2001, Seattle, Washington.
<https://ikit.org/fulltext/2001mapping.html>
- Leithwood, P., McAdie, N., Bascia, N., Rodrigue, A., & Moore. (2006). Deep understanding for all students: The overriding goal for schooling. University of New York Press. In P. Leithwood, N. McAdie, N. Bascia, & A. Rodrigue (Eds), *Teaching for deep understanding: What every educator should know* (pp. 3-10). Corwin Press.
- Lemke, J. (2000). Across the scales of time: Artifacts, activities, and meanings in ecosocial systems. *Mind, Culture and Activity*, 7(4), 273–290
- Liu, L., & Maddux, C. (2010). Using dynamic design in the integration of type II applications: Effectiveness, strategies and methods. *International Journal of Technology in Teaching & Learning*, 6(1).
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.
- Lincoln, Y.S., Lynham, S.A., & Guba, E.G. (2018). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N.K. Denzin & Y.S. Lincoln (Eds.), *The Sage handbook of qualitative research* (5th ed., pp. 108-150). Sage Publications.
- Lindsey, N. S., & Rice, M. L. (2015). Interpersonal skills and education in the traditional and online classroom environments. *Journal of Interactive Online Learning*, 13(3)
- Littlejohn, A. (2013). *Understanding massive open online courses*.
https://www.cemca.org/ckfinder/userfiles/files/EdTech%20Notes%20_Littlejohn_final_1June2013.pdf

- Livingston, K. (2012). Independent learning. In: Seel N.M. (Ed) *Encyclopedia of the Sciences of Learning*. Springer https://doi.org/10.1007/978-1-4419-1428-6_895
- Luciuk, C. (2007). *Saskatchewan government correspondence school*. The encyclopedia of Saskatchewan.
https://esask.uregina.ca/entry/saskatchewan_government_correspondence_school.jsp
- Lowe, G. (2020). *Creating healthy organizations: Taking action to improve employee wellbeing*. University of Toronto Press.
- Macken, C., Hare, J., & Souter, K. (2021). Seven radical ideas for the future of higher education: An Australian perspective. Springer Nature
- Madjar, N., Greenberg, E., & Chen, Z. (2011). Factors for radical creativity, incremental creativity, and routine, noncreative performance. *Journal of Applied Psychology*, 96, 730–743.
- Malamah-Thomas, A. (1991). *Classroom interaction*. Oxford, UK: Oxford University Press.
- Manitoba Education. (2020). *Manitoba remote learning framework*.
<https://www.edu.gov.mb.ca/k12/dl/docs/remoteframework.pdf>
- Marshall, M. (1996). Sampling for qualitative research. *Family Practice*, 13(6), 522-526.
- Martin, A. (2014). Interpersonal relationships and students' academic and non-academic development: What outcomes peers, parents, and teachers do and do not impact. In *Interpersonal Relationships in Education* (pp. 9-24). Brill Sense.
- Marto, F., & Säljö, R. (1976). On qualitative differences in learning: I—Outcome and process. *British journal of educational psychology*, 46(1), 4-11. <https://doi.org/10.1111/j.2044-8279.1976.tb02980.x>
- Mbati, L. S. (2021). Enhancing student agency as a driver of inclusion in online curriculum, pedagogy, and learning content. In *Evolving multicultural education for global classrooms* (pp. 86-108). IGI Global.
- McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). *The MOOC model for digital practice*. http://www.academia.edu/download/43171388/MOOC_Final.pdf.
- McMillan, J. H., & Schumacher, S. (2010). *Research in education: Evidence-based inquiry, Myeducationlab series*. Pearson.
- McMullen, B., & Rohrbach, A. (2003). *Distance education in remote aboriginal communities: Barriers, learning styles and best practices*. College of New Caledonia Press.

- Merriam, S. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Merriam, S., & Tisdell, E. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.
- Meyer, A., Rose, D.H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. CAST Professional Publishing.
- Moore, M. (1973). Towards a theory of independent learning and teaching. *Journal of Higher Education*, 44, 661-679.
- Moore, M., (1989). Editorial: Three types of interaction. *The American Journal of Distance Education*, 3(2), 1-6.
- Moore, M. (1997). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education*. Routledge, (pp. 22-38).
<https://ebookcentral.proquest.com/lib/usask/reader.action?docID=242212#>
- Moore, M., & Kearsley, G. (1996). *Distance education: A systems view*. Wadsworth.
- Morgan, D. (2014). *Integrating qualitative and quantitative methods: A pragmatic approach*. Sage Publications. <https://www.doi.org/10.4135/9781544304533>
- Morse, J. & Niehaus, N. (2016). *Mixed method design: Principles and procedures*. Left Coast Press
- Nardi, B.A., & O'Day, V.L. (1999). *Information ecologies. Using technology with heart*. The MIT Press.
- Ng, C. F. (2021). The physical learning environment of online distance learners in higher education: A conceptual model. *Frontiers in Psychology*, 12.
doi.org/10.3389/fpsyg.2021.635117
- Oakley, A. (1981). Interviewing women: A contradiction in terms? In H. Roberts, (Ed.), *Doing Feminist Research* (pp. 30–61). Routledge and Kegan Paul.
- O'Brodovich, K. (1997). *Strengthening strategies for small schools*. Saskatchewan School Boards Association. <https://saskschoolboards.ca/wp-content/uploads/97-01.htm>
- Offir, B., Lev, Y., & Bezalel, R. (2008). Surface and deep learning processes in distance education: Synchronous versus asynchronous systems. *Computers & Education*, 51(3), 1172-1183.
- O'Leary, Z. (2017). *The essential guide to doing your research project* (3rd ed.). Sage Publications, Inc. <http://www.ru.ac.bd/wp-content/uploads/sites/25/2019/>

03/402_06_00_O%E2%80%99Leary-The-Essential-Guide-to-Doing-Your-ResearchProject-2017.pdf

- O'Neill, G., & McMahon, T. (2005). Student-centred learning: What does it mean for students and lecturers? In G. O'Neill, S. Moore, B. McMullin, (Eds.), *Emerging issues in the practice of university learning and teaching* (27-36). All Ireland Society for Higher Education.
- Oviatt, D., Graham, C., Borup, J., & Davies, R. (2016). Online student perceptions of the need for a proximate community of engagement at an independent study program. *Journal of Online Learning Research*, 2(4), 333-365.
- Pavelich, M., & Moore, W. (1996). Measuring the effect of experiential education using the Perry model. *Journal of Engineering Education*, 85(4), 287-292. <https://doi.org/10.1002/j.2168-9830.1996.tb00247.x>
- Perrins, D., (2016). *Educational Governance Review Report*. Government of Saskatchewan. publications.gov.sk.ca/documents/11/96975-Perrins-Governance-Review-Report.pdf
- Perry, W. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. Jossey-Bass Publishers.
- Pinkelman, S. E., McIntosh, K., Rasplica, C. K., Berg, T., & Strickland-Cohen, M. K. (2015). Perceived enablers and barriers related to sustainability of school-wide positive behavioral interventions and supports. *Behavioral Disorders*, 40(3), 171-183.
- Pushor, D. (2019). Using parent knowledge to enhance teaching and learning experiences in schools for children and youth. In T.A. Turner-Vorbeck & S. Sheldon (Eds.), *Handbook of family, school, community partnerships in education* (pp. 243-263). John Wiley & Sons.
- Quillen, I. (2012). When technology tools trump teachers. *Education Week*, 31(37), 1-20.
- Ravitz, J., Becker, H.J., & Wong, Y. (2000). *Constructivist-compatible beliefs and practices among U.S. teachers*. Teaching, learning, and computing: 1998 national survey report #4. <https://files.eric.ed.gov/fulltext/ED445657.pdf>
- Ries, I. (1998). The role of the site facilitator in the new directions in distance learning project [Doctoral dissertation]. <https://www.learntechlib.org/p/123843/>

- Robinson, H., Kilgore, W., & Warren, S. (2017). Care, communication, support: Core for designing meaningful online collaborative learning. *Online Learning Journal*, 21(4).
- Rodriguez, A. J., & Berryman, C. (2002). Using socio-transformative constructivism to teach for understanding in diverse classrooms: A beginning teacher's journey. *American Educational Research Journal*, 39(4), 1017-1045.
- Rodriguez, M. C., Ooms, A., Montanez, M., & Yan, Y. L. (2005). Perceptions of online learning quality given comfort with technology, motivation to learn technological skills, satisfaction, and online learning experience. *American Educational Research Association*. <https://files.eric.ed.gov/fulltext/ED491688.pdf>
- Rogerson, C., & Chomicz, G. (2014). Catalytic teaching: A teaching equation transfers to enhanced student learning. *Journal of Student Engagement: Education Matters*, 4(1), 3-13.
- Rotherham, A. J., & Willingham, D. T. (2010). 21st-century skills. *American Educator*, 17(1), 17-20.
- Ryan, A. M., Gheen, M. H., & Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social-emotional role, and the classroom goal structure. *Journal of Educational Psychology*, 90(3), 528.
- Salmons, J. (2009). E-social constructivism and collaborative e-learning. In J. Salmons & L. Wilson (eds.), *Handbook of research on electronic collaboration and organizational synergy* (pp. 280-294). IGI Global. <https://doi.org/10.4018/978-1-60566-106-3>
- Saloviita, T., & Pakarinen, E. (2021). Teacher burnout explained: Teacher-, student-, and organisation-level variables. *Teaching and Teacher Education*, 97. <https://doi.org/10.1016/j.tate.2020.103221>
- Saskatchewan Ministry of Education. (2010). *Renewed curricula: Understanding outcomes*. https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Renewed_Curricula.pdf
- Saskatchewan Ministry of Education. (2018). *Inspiring success: First Nations and Métis preK12 education policy framework*. Government of Saskatchewan. <https://www.saskatchewan.ca/residents/education-and-learning/first-nations-and-metiseducation>

- Saskatchewan Ministry of Education. (2019). *Saskatchewan's framework for a provincial education plan 2020-23*. <https://www.saskatchewan.ca/government/public-consultations/past-consultations/provincial-education-plan>.
- Saskatchewan Ministry of Education. (2021, December). *2021-22 Funding manual*. <https://publications.saskatchewan.ca/#/products/100142>
- Saskatchewan Ministry of Education. (2022). *Business plan 2022-23*. <https://publications.saskatchewan.ca/#/products/117223>
- Saskatchewan School Boards Association. (2012). *Saskatchewan school board elections*. <https://saskschoolboards.ca/wp-content/uploads/2015/08/2012ElectionsPackage.pdf>
- Saskatchewan School Trustees' Association. (1995). *Distance education network*. <https://saskschoolboards.ca/wp-content/uploads/95-10.htm#pi>
- Saskatchewan Teachers' Federation. (2022). *Governance handbook*. https://www.stf.sk.ca/sites/default/files/governance_handbook_2021_2022.pdf
- Scardamalia, M., & Bereiter, C. (2014). Knowledge building and knowledge creation: Theory, pedagogy, and technology. In K. Sawyer (Ed.), *The Cambridge Handbook of the Learning Sciences*, (2nd ed., pp. 397-417) Cambridge University Press. <https://doi.org/10.1017/CBO9781139519526>
- Schoonenboom, J., & Johnson, R. (2017). How to construct a mixed methods research design. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie*, 69 (S2), 107–131. <https://doi.org/10.1007/s11577-017-0454-1>
- Segerstrale, U. (2018). The teacher as catalyst: skills development & self-discovery in group contexts. *Universities and Knowledge for Sustainable Urban Futures*, 109.
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *Elearnspace*. http://www.itdl.org/journal/jan_05/article01.htm
- Siemens, G. (2007). Connectivism: Creating a learning ecology in distributed environments. In T. Hug (Ed). *Didactics of microlearning: Concepts, discourses and examples*, 53-68).
- Shin, N. (2003). Transactional presence as a critical predictor of success in distance learning. *Distance Education*, 24(1), 69-86. <http://cyber.usask.ca/login?url=https://search-proquest-com.cyber.usask.ca/docview/217782151?accountid=14739>
- Spitzberg, B. H., & Cupach, W. R. (2002). Interpersonal skills. In M. L. Knapp & J. R. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 564–611). Sage.

- Stake, R. (1995). *The art of case study research*. Sage Publications.
- Staker, H. (2011). The rise of K-12 blended learning: Profiles of emerging models. *Innosight Institute*. <https://files.eric.ed.gov/fulltext/ED535181.pdf>
- State of the Nation. (2021). *Data and information*. <https://k12sotn.ca/data/>
- Stenbom, S. (2018). A systematic review of the community of inquiry survey. *The Internet and Higher Education*, 39, 22-32.
- Storey, M. (2017). Considering core competencies: Social and emotional learning in British Columbia's redesigned curriculum. *Journal of Contemporary Issues in Education*, 12(2).
- Symeonides, R., & Childs, C. (2015). The personal experience of online learning: An interpretative phenomenological analysis. *Computers in Human Behavior*, 51, 539–545. <https://doi.org/10.1016/j.chb.2015.05.015>
- Tait, A. (2014). From place to virtual space: Reconfiguring student support for distance and elearning in the digital age. *Open Praxis*, 6(1), 5-16.
- Tanner, K. (2013). Structure matters: Twenty-one teaching strategies to promote student engagement and cultivate classroom equity. *CBE Life Sci Educ*, 12, 322–331.
- Thompson, L. (2001). *Online education: Implementation guidelines for boards of education*. Saskatchewan School Boards Association. <https://saskschoolboards.ca/wp-content/uploads/02-01.htm>
- Toshalis, E., & Nakkula, M. J. (2012). *Motivation, engagement, and student voice. Jobs for the future*. <https://studentsatthecenterhub.org/wp-content/uploads/Motivation-EngagementStudent-Voice-Students-at-the-Center-1.pdf>
- Trilling, B., & Fadel, C. (2009). *21st Century skills: Learning for life in our times*. Jossey-Bass.
- UCD Teaching and Learning, (n.d.). *Education theory: Constructivism and social constructivism*. http://www.ucdoer.ie/index.php/Education_Theory/Constructivism_and_Social_Constructivism
- Vadillo, G. (2010). Five myths surrounding K-12 online learning. *Distance Learning*, 7(2), 61-63.
- Verenikina, I. (2010). *Vygotsky in twenty-first-century research*. University of Wollongong Australia. <https://ro.uow.edu.au/edupapers/1022>
- Voogt, J., & Roblin, N. (2010). 21st century skills. *Discussienota. Zoetermeert*, 23(03), 2000.
- Vygotsky, L. (1978). *Mind in society*. Harvard University Press.

- Walker, A. (2015). *The ecology of digital childhood: The 'digisystem.'* *Thinking onscreen*.
<http://www.aishawalker.com/2015/07/16/digisystem/>
- Walqui, A., & Van Lier, L. (2010). Scaffolding the academic success of adolescent English language learners: A pedagogy of promise. WestEd.
- Wahlstedt, A., Pekkola, S., & Niemelä, M. (2008). From e-learning space to e-learning place. *British Journal of Educational Technology*, 39(6), 1020-1030.
- Wigert, B., & Agrawal, S. (12 July 2018). *Employee burnout, part 1: The 5 main causes*. Gallup Workplace. <https://www.gallup.com/workplace/237059/employee-burnout-part-maincauses.aspx>
- Williams, J. (2006). *Higher education faculty: Satisfaction with online teaching*. [Doctoral Dissertation]. University of Texas. http://www.ut-ie.com/s/samples/joanne_williams.pdf
- Williams, R., Karousou, R., & Mackness, J. (2011). Emergent learning and learning ecologies in Web 2.0. *International Review of Research in Open and Distance Learning*, 12(3), 39-59.
- Willms, J. D., Friesen, S., & Milton, P. (2009). *What did you do in school today? Transforming classrooms through social, academic, and intellectual engagement*. Canadian Education Association.
https://www.researchgate.net/publication/234702084_What_Did_You_Do_in_School_To_day_Transforming_Classrooms_through_Social_Academic_and_Intellectual_Engagement_First_National_Report
- Wu, D. (2015). Online learning in postsecondary education: A review of the empirical literature. *Ithaca S+R*. <https://doi.org/10.18665/sr.221027>
- Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166-183
- Zittoun, T., & Brinkmann, S. (2012). Learning as meaning making. *Encyclopedia of the Sciences of Learning*, 1809-1811.

Appendix A

Initial E-mail Contact: Superintendent or Designate of School Division

Hello,

My name is Racquel Biem and I am reaching out to you as a Ph.D. student in the College of Education, at the University of Saskatchewan. For my Ph.D. research, I am examining socially constructed learning in asynchronous High School distance learning courses. I am excited about the possible benefits of the research findings and how these might support teachers, policy makers, and school divisions with respect to instructional strategies that foster deep understanding and collaborative learning communities. With the emergence of online learning in the province over 20 years ago, it follows that Saskatchewan distance learning teachers will have a wealth of experience to be “mined” and shared to benefit distance learning praxis.

The exploration of high school distance learning practices will take place through an exploratory survey (≈ 15 min) and follow up interview (≈ 1 hour). I am seeking teachers to participate in the survey and/or interview.

Background and Research Purpose

Deep understanding is one of the overarching goals of the Saskatchewan curricula. Deep understanding is supported through socially constructed processes. Socially constructed processes are highlighted throughout the Saskatchewan curricula (e.g., lively discussion, collaboration, engaged communitarian thinking and dialogue) with little mention how those processes transfer to asynchronous distance learning. This lack of direct guidance regarding distance learning practices places a burden on distance learning teachers, policy makers, and course designers to discover how to achieve socially constructed learning to foster deep understanding.

Potential Benefits

In this time of increased emergency remote learning, illuminating effective achievable high school distance learning teaching practices that facilitate deep understanding is timely. The potential benefits of the research, specific to a Saskatchewan high school distance learning context, include:

Supporting distance learning teachers, policy makers, and course designers to achieve socially constructed curricula goals through:

- Illuminating practical distance learning strategies and contexts that support deep understanding in distance learning;
- Understanding the benefits and challenges of socially constructed distance learning;
- Making direct connections for how to meet socially constructed curricula expectations in
High School Asynchronous distance learning;
- Providing recommendations to strengthen distance learning educational processes.

Confidentiality

Throughout the study, assurance of confidentiality will be guaranteed; any identifying student, teacher, or administrator information will be removed from the research data.

Consent to Approach Possible Participants

I am seeking permission from Superintendents or Designates to contact high school distance learning teachers in their respective division to participate in the research. Upon your consent to proceed, I would contact the Principal of your Cyber School and ask if they have additional questions or concerns. Additionally, I would ask Cyber School Principals to forward a document that explains the research and seeks participants for the online survey (≈ 15 min). At the end of the survey teachers may self-select to participate in a follow-up interview (≈ 1 hour) to gain a more in-depth understanding of effective distance learning teaching processes. I would not approach distance learning teachers until at least three weeks into the first semester to ensure that the research does not coincide with a considerably busy time for teachers.

The research findings will be presented at local, national, or international conferences and will be published in relevant academic journals and/or research reports, accessible to the public.

Thank you for considering participating. If you agree to take part in this exciting research project, please fill out the consent form *below*. Please *copy and paste* the online consent form in your *reply to this email* to indicate your level of consent.

Please contact me with any questions or concerns.

Sincerely,

Racquel Biem

Please copy and paste the information below in your reply to this email to indicate your level of consent.

Consent to Participate Form

Note:

- No student information will be viewed or obtained at any point in the research.
- Identifying information about the participants, Schools, and School Divisions will not be made public or revealed to anyone other than the research committee, as needed.
- Division consent does not imply willingness of teachers to participate.

I _____ as Superintendent or Designate of _____ School Division consent to Racquel Biem, as a Ph.D. student researcher at the University of Saskatchewan, under the Supervision of Dr. D. Morrison, to:

Yes No Approach distance learning teachers in my School Division for possible participation in the research as explained in the attached email. Yes No I would like to be contacted with more information about the research.

Yes No I would like to receive a summary of the research findings.

By placing an X on this line and typing my name below, I am electronically signing this consent form and indicating that I have read and understand the purpose of the research and consent to Racquel Biem approaching potential participants within my School Division.

_____ Name

Appendix B

Initial E-mail Contact: Cyber School Teachers

Hello,

My name is Racquel Biem and I am reaching out to you as a Ph.D. student in the College of Education, at the University of Saskatchewan. For my Ph.D. research, I am examining socially constructed learning in asynchronous High School distance learning courses. I am excited about the possible benefits of the research findings and how these might support teachers, policy makers, and School Divisions with respect to instructional strategies that foster deep understanding and collaborative learning communities. With the emergence of online learning in the province over 20 years ago, it follows that Saskatchewan distance learning teachers, such as yourself, will have a wealth of experiences to be “mined” and shared to benefit distance learning praxis.

I am pleased to say that your division has provided approval for high school distance learning (DL) teachers to participate in this research.

The exploration of high school distance learning practices will take place through an exploratory survey (≈ 15 min) and an optional follow up interview (≈ 1 hour). I am seeking teachers who are willing to participate in the survey and/or interview.

Background and Research Purpose

Deep understanding is one of the overarching goals of the Saskatchewan curricula. Deep understanding is supported through socially constructed processes. Socially constructed processes are highlighted throughout the Saskatchewan curricula (e.g., lively discussion, collaboration, engaged communitarian thinking and dialogue) with little mention how those processes transfer to asynchronous distance learning. This lack of direct guidance regarding distance learning practices places a burden on distance learning teachers, policy makers, and course designers to discover how to achieve socially constructed learning to foster deep understanding.

Potential Benefits

In this time of increased emergency remote learning, illuminating effective achievable high school distance learning teaching practices that facilitate deep understanding is timely. The

potential benefits of the research, specific to a Saskatchewan high school distance learning context, include:

Supporting distance learning teachers, policy makers, and course designers to achieve socially constructed curricula goals through:

- Illuminating practical distance learning strategies and contexts that support deep understanding in distance learning;
- Understanding the benefits and challenges of socially constructed distance learning;
- Making direct connections for how to meet socially constructed curricula expectations in High School Asynchronous distance learning;
- Providing recommendations to strengthen distance learning educational processes.

Confidentiality

Throughout the study, assurance of confidentiality will be guaranteed; any identifying student, teacher, or administrator information will be removed from the research data.

Seeking Participants

I am seeking distance learning teacher participants who would be willing to complete an online survey about current distance teaching and learning practices, including contributing factors and barriers to successful learning outcomes. The survey will take approximately 15 minutes.

The last question on the survey will ask if you are willing to participate in a follow up telephone or face-to-face interview (\approx hour). The interview is optional and not required for the survey. As a token of appreciation, a \$20 gift certificate will be given to anyone participating in the follow up interview.

I am seeking diverse experiences to understand the Saskatchewan context for successful distance learning teaching and learning strategies.

If you are interested in participating, please **click** on the *survey link* below.

Please contact me with any questions or concerns.

Sincerely,

Racquel Biem

Appendix C

Initial E-mail Contact: Principals of Cyber Schools

Hello,

My name is Racquel Biem and I am reaching out to you as a Ph.D. student in the College of Education, at the University of Saskatchewan. For my Ph.D. research, I am examining socially constructed learning in asynchronous High School distance learning courses. I am excited about the possible benefits of the research findings and how these might support teachers, policy makers, and School Divisions with respect to instructional strategies that foster deep understanding and collaborative learning communities. With the emergence of online learning in the province over 20 years ago, it follows that Saskatchewan distance learning teachers will have a wealth of experience to be “mined” and shared to benefit distance learning praxis.

I am pleased to say that your division has provided approval for high school distance learning (DL) teachers to participate in this research.

The exploration of high school distance learning practices will take place through an exploratory survey (≈ 15 min) and an optional follow up interview (≈ 1 hour). I am seeking teachers to participate in the survey and/or interview. If you, as a principal, are also a distance learning teacher, I invite you to participate in the research as well. Your experience will enrich the research.

Background and Research Purpose

Deep understanding is one of the overarching goals of the Saskatchewan curricula. Deep understanding is supported through socially constructed processes. Socially constructed processes are highlighted throughout the Saskatchewan curricula (e.g., lively discussion, collaboration, engaged communitarian thinking and dialogue) with little mention how those processes transfer to asynchronous distance learning. This lack of direct guidance regarding distance learning practices places a burden on distance learning teachers, policy makers, and course designers to discover how to achieve socially constructed learning to foster deep understanding.

Potential Benefits

In this time of increased emergency remote learning, illuminating effective achievable high school distance learning teaching practices that facilitate deep understanding is timely. The

potential benefits of the research, specific to a Saskatchewan high school distance learning context, include:

Supporting distance learning teachers, policy makers, and course designers to achieve socially constructed curricula goals through:

- Illuminating practical distance learning strategies and contexts that support deep understanding in distance learning;
- Understanding the benefits and challenges of socially constructed distance learning;
- Making direct connections for how to meet socially constructed curricula expectations in High School Asynchronous distance learning;
- Providing recommendations to strengthen distance learning educational processes.

Confidentiality

Throughout the study, assurance of confidentiality will be guaranteed; any identifying student, teacher, or administrator information will be removed from the research data.

Please contact me with any questions or concerns.

Provided any questions or concerns you have, have been addressed, I would request that you forward the attached document that explains the research and seeks participants for the included online survey (≈ 15 min). At the end of the survey teachers may self-select to participate in a follow-up interview (≈ 1 hour) to gain a more in-depth understanding of effective distance learning teaching processes.

The research findings will be presented at local, national, or international conferences and will be published in relevant academic journals and/or research reports, accessible to the public.

Sincerely,

Racquel Biem

Appendix D

Survey Questions

1. Do you currently teach at least one high school distance learning course in Saskatchewan?
(Y/N)
2. Please indicate your current school division.
3. Total years of teaching experience (face-to-face and online).
4. Years of experience teaching distance learning courses.
5. Please indicate — male, female, other, prefer not to say
6. Please choose your role(s) in your division. (DL teacher, distance learning support person, Principal, face-to-face classroom teacher, distance learning course creator).
7. Which distance learning courses do you teach?
8. If you teach more than one subject, is your teaching approach significantly different in each course?
9. Please indicate whether your courses are primarily asynchronous, synchronous, or an equitable blend of both.
10. Has the delivery of your courses changed as a result of student working from home due to COVID?
11. Which best describes when your students start their online courses? (various start times, together at the beginning of a semester, both)
12. Is your teaching approach significantly different if your students start their courses together compared to students who can start anytime in the school year?
13. For students where students typically start at the same time, which option best describes the pacing of the course? (paced as a cohort with common due dates, self-paced)
14. When it comes to student learning choices, which approach are you most comfortable with?
 - a. Learning is enhanced when students are given the choice to direct their learning (e.g., choosing content, processes, assessments, etc.) Students tend to be more interested and make more learning connections when provided opportunity to direct their learning.

- b. Many students struggle with directing their learning. Often students choose the option perceived as the “easiest.” I feel student learning is enhanced if I choose most of the content, processes, assessments, etc. for the student.
- c. Unsure.

15. Which approach are you most comfortable with?

- a. Having students engage with a wide variety of concepts in the curriculum is the most important goal. We may not be able to go deep on everything but at least the students will be exposed to a wider body of knowledge.
- b. Deep learning and critical thinking skills are the most important goals, It is better to go deeper on fewer concepts, even if students are exposed to a narrower body of knowledge.
- c. Unsure.

16. Which of the two statements do your beliefs tend toward?

- a. Statement 1: Student interest and ability to make personal connections to concepts is necessary for deep learning. Concepts should be adjusted to ensure students are intrinsically motivated to learn.
- b. Statement 2: While student interest and personal connections are certainly useful, adjusting concepts simply for intrinsic motivation is not necessary for deeper understanding.

Definitely Statement 1 Tend Toward Statement 1 Unsure/Neutral Tend Toward Statement 2 Definitely Statement 2

17. Below are three descriptions of course designs with varying interactions.

Strong Independent Learning	Strong Peer Interaction	Strong Collaboration
A course/unit with strong individual learning. The student gains feedback from the teacher and can ask for help as needed. The student interacts with the concepts independently.	A course/unit with strong peer interaction (e.g., discussion boards)	A course/unit with a strong collaborative component (e.g., learning with and from others). Student collaboration could be with peers, teachers, parents, community, etc.

Please indicate:

	Strong Independent Learning	Strong Peer Interaction	Strong Collaborative Component	Unsure or N/A
Which course/unit design have you taught from and/or designed? (Click all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which course/unit design do you think students prefer? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which course/unit design do you think students gain the most knowledge? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which course/unit design do you think students gain the most critical thinking skills? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Below are three descriptions of course designs with varying student responsibilities.

Limited Responsibility	Some Responsibility	Strong Responsibility
The student has no (or limited) responsibility to direct their learning path throughout the course. Typically, the teacher has designed the course with pre-determined resources, processes, and assessments.	The student is responsible to make some learning choices to direct their path (e.g., content, processes, assessment, etc.)	The student is responsible for co-creating the learning path with the teacher.

Please indicate:

	Student has limited responsibility to direct learning path	Student is responsible to make some choices to direct learning path	Student is responsible to co-create learning path	Unsure or N/A
Which course design have you taught and/or designed? (Click all that apply)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which level of responsibility do you think most students prefer? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which level of responsibility do you think students gain the most knowledge? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which level of responsibility do you think students gain the most critical thinking skills? (Choose one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. When thinking about your online courses, please rank the biggest influencers on student learning.

- a. Course teacher and/or resources provided by teacher.
- b. Parents/guardians.
- c. Classmates/friends.
- d. Onsite support person (e.g., designated school support).
- e. Student’s independent research.

20. Collaborative learning occurs when students actively engage in learning with and from others (e.g., peers, parents, teachers, community). Examples of collaborative learning include discussions, collaboratively solving problems, and sharing information.

Please choose the best option for each statement.

	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree
Online high school students need to collaborate with others to gain deep understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaborative online instructional strategies increase deep understanding compared to independent online learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High school students have the necessary skills to successfully collaborate with others online.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heavily relying on collaborative learning in asynchronous online courses is a realistic goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Please answer the following questions about the listed tools/strategies in online learning.

	Discussion Boards	Blogs	Group Projects	Peer Feedback	Collaborative Documents (e.g., Padlet, Google Docs)	Work experience	Social Network Groups (e.g., Facebook, Twitter)	Group Chat	Shared student work (e.g., presentations to class)	Group Video Meetings	Individual Video Meeting/Chat
Yes, I have used this tool/strategy currently or in the past.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes, this tool/strategy is effective for <i>building a learning community</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes, this tool/strategy is effective for <i>developing critical thinking skills</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes, this tool/strategy is effective in <i>helping students take ownership of their learning</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This tool/strategy is not effective for my online teaching context and/or students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. Which would you identify as the top three barriers to implementing collaborative learning in distance learning courses?

<input type="checkbox"/> Teacher time	<input type="checkbox"/> Inability to change existing course design
<input type="checkbox"/> Competing teaching priorities	<input type="checkbox"/> Course subject
<input type="checkbox"/> Professional Development Opportunities	<input type="checkbox"/> None of these are barriers
<input type="checkbox"/> Opportunity to collaborate with other distance learning teachers	<input type="checkbox"/> Unsure
<input type="checkbox"/> Teachers don't believe it is the best approach for distance learning	

23. Which would you identify as the top three student barriers to successful student collaboration in DL?

<input type="checkbox"/> Student maturity	<input type="checkbox"/> Trust/safety with other students
<input type="checkbox"/> Student skill	<input type="checkbox"/> None of these are barriers
<input type="checkbox"/> Student desire	<input type="checkbox"/> Unsure
<input type="checkbox"/> Student support	

24. Which would you indicate as the top three environmental (context) barriers to student collaboration in DL?

- LMS/Software limitations
- Equipment limitations (e.g., computers, internet speed, headphones, microphones)
- Student physical space (e.g., space for audio discussion, storage for project materials)
- Traditional school schedule
- Students not at the same place in the course
- Policy Limitations
- None of these are barriers
- Unsure

25. The following distance learning supports are integral to successful high school online learning.

	Agree	Somewhat Agree	Neutral/Unsure	Somewhat Disagree	Disagree
Active face-to-face support person (not the course teacher).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designated physical space within a school building free from distractions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive community belief about the quality and/or benefits of distance learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy student access to high quality technology equipment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct access to live teacher/help-line during the regular school day (e.g., instant live online chat).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct access to live teacher/help-line on the weekends and/or evenings (e.g., instant live online chat).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. For high school students who take courses face-to-face and online, most are capable of being successful in their online courses when primarily working from home.

Strongly Agree	Somewhat Agree	Unsure/Neutral	Somewhat Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix E

Semi-structured interview questions

Only answer questions you are comfortable with. Simply saying “pass” is sufficient and we will move on. Alternatively, if you have any questions for me, feel free to ask at any time.

It is my hope that through my research, we can illuminate practical strategies that will benefit current and future distance learning teachers in the province. As well as provide guidance to policy makers for supporting effective distance learning practices. Thank-you for sharing your experiences to benefit distance learning processes in the province.

1. Tell be a bit about yourself as an asynchronous high school distance learning teacher:
 - i. How did you become a distance learning teacher?
 - ii. Have you ever been a distance learning student?
 - iii. What was it like to learn to be a distance learning teacher?
 - iv. Did you have any mentors or resources to get you started?
2. What are some of the best parts of being a distance learning teacher?
3. What might be some frustrations you experience as a distance learning teacher?
4. How would you describe your distance learning classroom? How might you describe what your students do?

What you do? How would you describe the physical space teaching and learning take place in? I'd like to talk about some successful teaching processes you have experienced.

5. Can you tell me a bit about a specific module/unit/project that stands out to you as being successful?
 - a) Can you explain a bit about why you think that module is successful?
 - b) Can you see the design of that module working within other distance learning courses?
6. Can you tell me a bit about strategies that work for you to generate deep learning?
 - a) Are there some situations or factors that have made those strategies more or less successful?
 - b) Can you see those strategies working within other distance learning courses?
7. Can you tell me a bit about times when you have had to adjust your original course for individual students?
 - a. How do you know when students need the course to be adjusted?

8. There is a lot of “buzz” in education that the teachers’ role should be one of a facilitator - letting the student lead their learning path? How does that resonate with you? How has your role as a distance learning teacher changed compared to a face-to-face teacher?
9. Can you tell me a bit about your experiences with students being active, engaged, and self-motivated in their distance learning courses?
 - a. Do you have any advice on how to keep students active, engaged, and self-motivated?
 - b. Are there some students for whom this comes easier?
10. What is your experience with getting students to learning with or from others in DL? (Social interactions that support student learning. For example, with yourself, peers, community, parents, etc.)
 - a. Do you have any strategies that you’ve tried to get students to learn with or from other students in your distance learning courses?
 - b. Are there factors that make learning with or from others more or less successful?
 - c. Can you see those strategies working within other distance learning courses?
 - d. Do you think most students want their distance learning courses to be socially engaging or might they prefer to work independently?
11. Do you have any teaching strategies, course designs, etc. that you’ve tried that didn’t work out as well as you thought they might?

Might you try those strategies again in a different context?
12. Are some strategies you’d like to try in distance learning but don’t have the time to learn how, or the distance learning context wouldn’t support it?
13. What recommendations might you have for high school distance learning improvement within SK?
 - a. For policy makers?
 - b. What advice might you have for current or future distance learning teachers who are seeking advice for instruction improvements?

The goal of the research is to illuminate effective distance learning processes that support deep learning. Specifically, I am looking at whether social constructivism processes are achievable within asynchronous distance learning in SK. It is my hope that the information gained from this interview and from others in the province will bridge the gap between curriculum expectations and distance learning teaching processes. Ideally future curricula will highlight distance learning strategies equitably as face-to-face strategies.
14. Before we leave the interview, is there anything else you would like to add? Thoughts about what is missing, connections you have personally made, strategies we haven’t discussed.

Appendix F

Participant Consent Form Interview

You are invited to participate in a research study entitled:

Learning Ecologies: Connecting Social Constructivism and Distance Learning in Asynchronous Secondary Contexts

Researcher: Racquel Biem, PhD Candidate, Education, University of Saskatchewan , xxx@mail.usask.ca

Supervisor: Dr. D. Morrison, Education, 306-966-6483, dirk.morrison@usask.ca

Purpose(s) and Objective(s) of the Research:

The purpose of the research is to explore how socially constructed learning is achieved through distance learning practices, specifically with secondary asynchronous distance learning.

The overarching questions guiding our interview are:

- Tell me a bit about your experiences as a distance learning teacher?
- In your experience, what strategies, context, support systems support consistent deep understanding?
- Can you describe a module, assignment, or project that you feel consistently demonstrates deep understanding?
- Why do you think it consistently represents deep understanding?
- What is your experience in designing a course/units/lessons where students have to socially construct their learning through collaboration? (e.g., group work, peer interaction, community interaction, social media).
- What are the strengths and weaknesses of designing a distance learning course around socially constructed learning?

The findings of this research will be presented for completion requirements of the U of S College of Education Cross-Departmental PhD.

Procedures:

- You will have completed the online research survey.
- With your consent, we will meet for a one-hour semi-structured interview session, to take place in a confidential setting, through the online platform Zoom, where you will feel safe to share without distraction.

- During the semi-structured interview, I will, among other things, ask you to describe a distance learning (DL) module/assignment/project identified as consistently demonstrating successful learning outcomes.
- Please feel free to ask any questions regarding the procedures and goals of the study or your role and only answer those questions that you are comfortable with.
- With consent, the interview will be recorded and transcribed afterwards.
- Within two weeks after your interview, you will be given the opportunity to review the transcript to add or clarify information from the transcripts as you see fit.
- Once all the data has been analyzed, a digital and/or paper copy of a theme summary will be sent to you. You will have the opportunity to verify that your experience is reflected in the summary and whether you want to change or add anything.

Note: There are no known or anticipated risks to you by participating in this research and no Division, Teacher or Student information/identifiers will be used.

Potential Benefits:

The potential benefits of the research, specific to a Saskatchewan high school distance learning context, include:

- Supporting distance learning teachers, policy makers, and course designers to achieve socially constructed curricula goals through:
- Illuminating practical distance learning strategies and contexts that support deep learning;
- Understanding the benefits and challenges of socially constructed distance learning;
- Making direct connections for how to meet socially constructed curricula expectations in secondary asynchronous distance learning;
- Providing recommendations to strengthen distance learning educational processes.

Compensation:

No monetary compensation is available, however a \$20 gift card to a coffee shop will be given in appreciation of your participation.

Confidentiality:

Although the data from this research project will be presented during research committee meetings and thesis defense at the University of Saskatchewan, the data will be reported in aggregate form, so that it will not be possible to identify individuals. Moreover, the Consent

Forms will be stored separately from any audio recordings and transcripts so that it will not be possible to associate a name with any given set of responses.

The data from this research project will be presented during research committee meetings and thesis defense at the University of Saskatchewan; however, your identity will be kept confidential; although I may report direct quotations from the interviews, you will be given a pseudonym, and all identifying information such as your School or Division will be removed from my report.

Please indicate your preferred option below:

I grant permission to for the interview to be audio recorded: Yes: ___ No: ___

Right to Withdraw:

- Your participation is voluntary.
- Answer only those questions that you are comfortable with. You may withdraw from the research project for any reason, at any time without explanation or penalty of any sort.
- Should you wish to withdraw, you may inform either Dr. D. Morrison, 306-966-6483, dirk.morrison@usask.ca or myself through email – xxx@usask.ca or phone –
- Your right to withdraw data from the study will apply until two months after the interview. After this date, it is possible that some results have been analyzed, written up and/or presented and it may not be possible to withdraw your data.
- If you choose to withdraw, all the data collected from the interview, such as recordings and transcripts, will be destroyed.
- Participants' personal information will be kept confidential but anonymity with regards to their own personal conversations would naturally be limited.
- Storage of Data:
- Paper copies of transcripts and written consent forms will be kept in a locked filing with my Supervisor, Dr. D. Morrison.
- All digital files, including audio recordings, will be stored on a password-protected computer.
- The data will be stored for 5 years at which time it will be destroyed. If you choose to withdraw from the research your transcripts and audio recordings will be destroyed as soon as possible after confirmation of withdrawal.

I would like to receive the final results from the study: Yes: ___ No: ___

Questions or Concerns:

- Contact the researcher directly using the contact information provided;
- This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975.

Your signature below indicates that you have read and understand the description provided; I have had an opportunity to ask questions and my/our questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

_____	_____	_____
Name of Participant	Signature	Date
_____	_____	_____
Researcher's Signature	Date	

A copy of this consent will be left with you, and a copy will be taken by the researcher.