

EXAMINING THE EXPERIENCES OF TEACHERS IN ONLINE
PROFESSIONAL DEVELOPMENT: A TEACHER EDUCATION
TWITTER-BASED PROFESSIONAL LEARNING NETWORK

by

Rebecca Mae Nusbaum

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Adult and Higher Education

in

Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2020

©COPYRIGHT

by

Rebecca Mae Nusbaum

2020

All Rights Reserved

DEDICATION

To Carrie and to Nick for your unwavering holistic support. Your support, wisdom, and guidance helped me to better myself. Working with you has truly made me a better person.

To Gampa, Gammie, and T, you instilled in me a deep appreciation for education. Gampa, for you to know what it is to be hungry and later put three generations through college — your legacy exemplifies how education can be leveraged as a vehicle for change.

To Brent, Kelsi, Kendall, and Max, your support and sacrifices have brought me here today. From meals to time and everything in between, I could not have accomplished this without your support.

To my parents, sisters, and brother. Thank you for your endless support. I have never doubted your boundless love and support, thank you.

To Dave and Judy, for your selfless help throughout the years. You helped raise Kelsi, Kendall, and Max, from school pick-ups, school volunteers, meals, sleepovers, to all of the day-to-day, you were there. Thank you.

To my participants for your willingness to share.

ACKNOWLEDGEMENTS

I wish to thank the following people for their time and support during my dissertation process. First, I want to thank Dr. Carrie Myers and Dr. Nicholas Lux for your invaluable support as Committee Chairs. Dr. Myers, I met you over a decade ago. As shared, you have truly helped me grow as an educator, student, and human being. I specifically remember an early EDU class in the Masters program when I looked to you for your approval and for the answers. Learning from you was truly transformative, I learned how to advocate for myself and how to seek the answers, with your support. You believed in me without fail and I felt that support. You supported me academically while recognizing times when my personal life seeped in. Thank you. Dr. Lux, I was fortunate enough to take one of your EdTech courses in 2015, and I have latched onto you as a support and mentor ever since. Thank you for your support, encouragement, and guidance through my growth. When I think of how I have grown academically and personally, I think of you. Thank you, Dr. Lux.

I would also like to thank Dr. Sweeney Windchief, for your tremendous support early on in my program of study. Your guidance and foundational support were instrumental in my success. A genuine thank you to Dr. Bryce Hughes for joining my committee and for your invaluable support. Dr. Hughes, your support aided me in perspective and encouragement. Thank you to each of you for your support, words cannot express my gratitude.

TABLE OF CONTENTS

1. INTRODUCTION	1
Background	1
U.S. Dept Ed Educational Technology Report Directives.....	2
International Society for Technology in Education (ISTE) AND PD	4
Association for Supervision and Curriculum Development (ASCD) and PD.....	8
Regional Reform in Montana.....	9
OPI PD Through Teaching Learning Hubs	9
OPI PD and #MTEDCHAT	11
Bozeman Public Schools and #MTEDCHAT.....	12
Number of EdChats.....	15
Statement of Problem.....	16
Statement of Purpose	18
Guided Research Questions	18
Theoretical Framework.....	19
Constructs and Operational Definitions.....	23
Limitations and Delimitations.....	25
Assumptions.....	26
Significance of the Study	27
Chapter One Summary	27
2. LITERATURE REVIEW	29
Introduction.....	29
Constructivist and Social Constructionist Paradigms	30
Dewey and Constructivism	32
Social Constructionism	33
Vygotsky and the Zone of Proximal Development.....	33
Social constructionism, Vygotsky, and Technology.....	35
Dewey's CoI with Peirce.	36
Community of Inquiry Model.....	37
Professional Learning Networks (PLNs).....	39
Social Media and Twitter.....	40
Electronic Learning (E-Learning) and Mobile Learning (M-Learning).....	41
Chapter Two Summary	51
3. METHODOLOGY	53
Method	53
Role of the Researcher	54

TABLE OF CONTENTS CONTINUED

Context for the Study	57
Sample and Sampling Procedures.....	59
Demographics and Sampling Criteria	61
Data Collection Strategies.....	66
Data Analysis Strategies	70
Ethical Considerations	75
Chapter Three Summary	80
 4. RESULTS AND RESEARCH FINDINGS	 82
Introduction.....	82
Interpersonal	85
Encouragement	88
Trust	94
Reciprocity, Roles, and Equality	99
Inquiry based learning and problem-solving	101
Intrapersonal	106
Perspectives.....	107
Reflection.....	118
Social Capital	119
Resources and Influences of Practice	122
Lessons and Educational Practice	122
Technological Tools.....	125
Articles Journals.....	127
High Impact Leaders	128
Network Snowball – Ongoing Social Capital &Community	129
Access	138
Unexpected Challenges.....	142
Chapter Four Summary	151
 5. CONCLUSIONS AND IMPLICATIONS.....	 156
Overview of the Study	156
Community of Inquiry (CoI).....	158
Holistic Model: Community of Learners.....	163
Research Question 1	169
Research Question 2	177
Research Question 3	180
Limitations and Future Studies	183
Implications and Recommendations	186
Final Thoughts	187
Chapter Five Summary	188

TABLE OF CONTENTS CONTINUED

REFERENCES CITED.....	191
APPENDICES	206
APPENDIX A: IRB Consent Form	207
APPENDIX B: Participant Recruitment Twitter Posts.....	210
APPENDIX C: Interview Protocol	212

LIST OF TABLES

Table	Page
1. Participant Demographics	65
2. Qualitative interview questions.....	69
2. Categories and subcategories identified.....	72

LIST OF FIGURES

Figure	Page
1. Concentric representation of study's constructs	20
2. Community of Inquiry Framework.....	38
3. E-Learning and M-Learning Analysis	44
4. Graphic representation of emergent themes	84
5. Emergent Interpersonal themes.....	85
6. Emergent Intrapersonal themes.....	106
7. Emergent Social Capital themes	120
8. Community of Inquiry Framework.....	159
9. Findings with Kilpatrick's Composite definition of learning	167

ABSTRACT

Teacher Education Twitter-based Professional Learning Networks, commonly referred to as “EdChats,” have increased rampantly in number and in reach over the past decade. Global, national, and local reforms tout EdChats as an effective learning platform and an innovative form of Professional Development, yet the EdChat trend is new enough that it has not developed research depth. EdChats provide a supplementary solution to traditional district-mandated auditorium Professional Development models. EdChat models often leverage social constructionist and constructivist learning paradigms in a highly accessible ubiquitous environment. Uniquely, EdChats seemingly highlight educators as self-directed learners who are seeking to curate their own learning trajectory to ultimately improve their practice.

This qualitative study was framed from Garrison, Anderson and Archer’s (2000) Community of Inquiry, as it sought to examine reported experiences through social presence, teacher presence, and cognitive presence. Intersection of these three areas provides relevant criteria for online learning analysis, and heavily aligns with educational experience at the crux of the model. This study served to examine reported overall learning experience of #MTEdChat participants through three guided research questions: learning experience, assumed learning roles, and how they learned from varied perspectives. The participants included 10 educators who met the following criteria: (1) being an in-service or pre-service K-12 educator: teacher, principal, coach, or school administrator, and (2) having participated in #MTEDCHAT one time or more. Participants were interviewed through secure video conference, their interviews were transcribed and analyzed, and emergent categories were developed. The data was analyzed using open codes and further analyzed through categories and emergent themes.

Key findings revealed that learning experiences were comprised of three recursive buckets of learning, as described through: interpersonal, intrapersonal, and social capital. Participants revealed how these three primary areas helped to construct their reported learning experiences. Findings illustrate the value of learning reciprocally in a group, and how social capital can effectively facilitate learning. Also telling was the identifiable connection between a geographically boundless environment and the varied perspectives that it yields. Reported learning experiences provide relevance and prompt future use and recommended improvements.

CHAPTER ONE

INTRODUCTION

Every day, educators tweet thousands of fresh ideas and resources, collaborate on projects and support each other (Harrington, 2017).

Background

For K-12 educators, Professional Development (PD) in-service days have been a mainstay in school districts' quest to improve teachers' practices and increase student achievement. Given the number of teachers that in-service PD days aim to reach, these traditional efforts have, at times, been reported as less than engaging, and they conjure the image of an auditorium full of one-sided listeners (Al-Zahrani 2015, Darling-Hammond, Hyler et al. 2017). The taxing challenge has often been, "How can teacher education be more collaborative and engaging?" In an effort to answer this relevant question, K-12 teachers and administrators have sought use of social media as a viable platform to create teacher-education collaborative learning spaces. Many educators today are creating their own personalized learning network, and they are participating in PD that is specific to their own learning objectives and varied disciplines. Twitter-based teacher education Professional Learning Networks (PLNs), often referred to as EdChats, are one way that teachers are obtaining this personalized PD.

Consequently, these Twitter-based PLNs have increased at a rampant rate as an innovative fresh approach for a teacher's professional development. Twitter has grown in popularity over the last few years as a successful platform for PLNs (Everette 2015, Pitler

2017). Touted benefits of teacher education Twitter-based PLNs include: self-curated, self-motivated and self-regulated learning; varied teacher perspectives; shared subject-matter content and discipline; and shared teaching resources (Pitler 2017, Shen, Kuo et al. 2017). Consistently reported, the new online learning PD models provide fewer limitations of time, space, and resources than the district mandated, face-to-face, “one speaker in the auditorium,” one-size-fits all approach of the traditional model. To this end, this study aims to explore how effective Twitter-based Teacher Education PLN groups are for in-service teacher PD. The following sections will provide a backdrop to the study and address: (a) global and national reform efforts focused on educational technology, (b) current number and prevalence of active regional EdChats, (c) introduction of related empirical research, and (d) what existing research is missing, and the need for the current study.

U.S. Department of Education Educational Technology Report Directives.

The U.S. Department of Education Office of Educational Technology has advocated for social media and Twitter-based EdChats to enrich teachers’ practice and increase student engagement. In January of 2017, the Office of Educational Technology published *Reimagining the Role of Technology in Higher Education*. Specific to the role of continued professional learning and technology-based learning communities, the report promotes creating collaborative learning spaces for students, while mirroring these collaborative environments integral to faculty’s continued learning. The 2017 report directs, “leaders need to provide collaborative leadership within their own institutions and also develop collaborative networks across the full range of partners in the ecosystem”

(U.S. Department of Education. Office of Educational Technology, 2017, p. 60). The recent report furthers that these collaborative efforts extend beyond the role of the instructors, with reach to instructional designers, learning engineers, researchers, institutional data analysts, technologists, learners and the entire institution. The core purpose should be to collaborate with instructors in teams, and to design active learning experiences that are engaging and based on research (U.S. Department of Education. Office of Educational Technology, 2017).

In the previous 2016 release, the Department established critical directives for collaborative professional development networks to enrich teacher education. The report establishes the Online Professional Learning Connected Educator Month as an aim to build collaboration across the country. Delivered through an online format, the month-long professional learning conference was structured as a centralized guiding structure, with kickoff and closing events, learning engagement resources, and a shared collaborative calendar for all professional learning events (U.S. Department of Education. Office of Educational Technology, 2016). The 2016 Plan encourages use of specific technology-driven components, while also recommending alignment design so that implementation is tailored specifically to an institution's PD plan. Suggested activities included "webinars, Twitter chats, forum discussions, and actively moderated blog discussions based on personal learning needs and interests" (U.S. Department of Education. Office of Educational Technology, 2016, p. 35). Reported data from the online PD initiative was positive; within the first year, "more than 170 organizations provided more than 450 events and activities. Educators completed an estimated 90,000

hours of professional learning across the month, with over four million people who followed the #ce12 hashtag on Twitter, broken down to 1.4 million impressions per day” (U.S. Department of Education. Office of Educational Technology, 2016, p. 38).

The U.S. Department of Education emphasizes the importance of professional learning communities for both pre-service and in-service teachers alike. The U.S. Department of Education (2016) established *Future Ready* as a part of former President Obama’s *ConnectEd* initiative, which serves to encourage collaboration within school districts and cross-districts. The 2016 Plan details professional learning for pre-service and in-service teachers:

teachers and leaders engage in collaborative inquiry to build the capacity of both the participating staff and the school as a whole through face-to-face, online, and blended professional learning communities and networks. Leaders ensure that professional learning planning is participatory and ongoing. Leaders learn alongside teachers and staff members, ensuring that professional learning activities are supported (U.S. Department of Education. Office of Educational Technology, 2016, p. 42).

One outcome of these national initiatives is to provide in-service teachers with the tools and resources to improve their teaching practices, and therefore increase student engagement. These national initiatives are complemented by international efforts.

International Society for Technology in Education (ISTE) and Professional Development (PD)

In addition to the U.S. Department of Education’s efforts to encourage consideration of more innovative PD models like those that leverage social media, other

organizations are also pushing teachers to explore ways to build their own PD opportunities through digital networks. The International Society for Technology in Education (ISTE) is a large educators professional organization that is highly regarded for its ongoing research publications and technological *ISTE Standards*. As Educational Technology continues to change at a rampant rate, ISTE continues to research technologies, issues and policy, as they align with effective learning modalities.

International Society for Technology in Education (2017b) stresses, that the Standards are not about the technology itself but rather about changing the way *learning* and *teaching* take place so that they are more meaningful and impactful for educators and learners alike. Additionally, ISTE Standards focus on initiatives from a global perspective. Over the past forty years, ISTE has continually provided seminal research assessing learning with technological tools. ISTE stresses that technology's value is contingent upon how it is used and if it effectively aligns with learning theory.

As part of the developed *ISTE Standards*, the organization has curated fourteen *Essential Conditions* for leveraging technology into learning: (1) Shared Vision, (2) Empowered Leaders, (3) Implementation Planning, (4) Consistent and Adequate Funding, (5) Equitable Access, (6) Skilled Personnel, (7) Ongoing Professional Learning, (8) Technical Support, (9) Curriculum Framework, (10) Student-Centered Learning, (11) Assessment and Evaluation, (12) Engage Communities, (13) Support Policies, and (14) Supportive External Context (International Society for Technology in Education, 2017a, 2017b). Notably, *Professional Development* (ISTE Standard #7 above), is an integral part of improving our practice as educators. ISTE prods teachers to create their own

Professional Development through digital networks, social media, Twitter, Voxer, and other platforms.

ISTE values purposeful Professional Development for teachers and suggests, “Ongoing professional learning imbues educators with the confidence they need to use technology successfully. When educators have adequate time to build their networks and collaborate with each other, their ability to effectively apply digital tools in the classroom grows exponentially” (International Society for Technology in Education, 2017a). Through this decisive vision, ISTE maintains the focus on *learning with technology* as a tool, meaning how technology is used is far more valuable than the actual technological tool itself (software or a device as examples of the actual technology). Furthermore, this statement lends to the role of the educator as a self-regulated learner, shifting the responsibility from school districts’ and institutions’ traditional PD models. Harrington (2017) expounds that the *best PD is derived from your own curated Professional Learning Network*. Harrington (2017) shares that extraordinary teachers search beyond the walls of their own school environment, and they search for other perspectives from educators (spanning outlying geographical proximity, same or difference disciplines, and varied resources). Striving educators seek to develop their own global network of people with shared interests and similar positions, and with those who challenge their beliefs and ideas (Harrington, 2017).

ISTE extends that PD often uses a multitude of formats, from online, to face-to-face, to blended models. ISTE suggests benefits specific to Twitter-based PD environments, similar to Brichacek (2015), who expounds that Twitter chats may be the

perfect solution for teacher education professional development. Given that they are free, these chats offer a substantial savings to school districts. Additionally beneficial, they focus on just the topic you need. Harrison extends that they have consistent meeting times, and typically meet weekly, providing an opportunity to build relationships and content. Furthermore, EdChats provide access to an instant community, complete with networking opportunities, emotional support and the chance to give back. Participation even aligns with the ISTE Standards for Teachers, as it supports professional growth and leadership, while giving educators the chance to model digital citizenship (p. 1).

Brichacek (2015) also suggests that educators learn within a collective unit from varied perspectives and shared resources and defines the benefits of the “collective intelligence of a chat.” Fellow educators are armed with shared research findings, technological tools, and classroom-tested lessons – often from diverse perspectives and experiences (Brichacek, 2015).

ISTE conferences, publications, resources, and forums have consistently been regarded for the high-quality Professional Development provided to educators. ISTE maintains the highest standards in delivering Educational Technology skill training, while also being deeply rooted in adult learning theory. Searching through ISTE print publications and web resources, one finds rationale for these programs grounded in the seminal work of Knowles and Kolb, which frames contemporary technological tools and practices. Through this coupling, ISTE recommends various platforms for training, as well as for other purposes. As options for PD have evolved, ISTE’s recommendations for Twitter-based EdChat participation have helped herald them as viable learning

communities. Professional organizations have heeded the advice of the national and international organizations to incorporate online PD as an integral component in trainings and continued education for in-service teachers. Professional organizations model many of these hybrid online and face-to-face trainings throughout their own organizations and annual conferences.

Association for Supervision and Curriculum Development (ASCD) and PD

Another professional educators' organization actively engaged in supporting PD efforts is the Association for Supervision and Curriculum Development (ASCD). ASCD provides high quality Professional Development, publications, conferences and resources to educators. With the changing landscape of Professional Development, ASCD has also recommended social media learning communities for teachers. ASCD (2017b) expounds the empirical benefits, stating "Research has shown that when teachers work together and learn from each other, this collaboration results in rising student achievement" (ASCD, 2017b). ASCD places high value on self-created PLNs and self-created learning of Twitter-based EdChats. The professional association urges educators to utilize Twitter-based EdChats as a learning forum, to share resources, perspectives, feedback, and knowledge. Pitler (2017) shares that Twitter is not useful until you build your community and begin to follow fellow educators. Additionally, ASCD hosts its own Twitter EdChat, #ASCDL2L, which meets monthly. ASCD encourages EdChat involvement, and shares real-world examples of beneficial collaborative feedback, such as "constructive criticism on a lesson plan" or "advice on parent/teacher conferences" (Pitler, 2017). An additional

ASCD resource suggests that Professional Development should be self-designed by the educator, for the educator. ASCD (2017a) likens traditional PD models to the “Stitch Fix approach,” lamenting that learning (and outfits) should not be designed by anyone but the learner (or by the owner). Similarly, if the learning is designed by someone else, the educator’s learning may not reflect the context of the educator’s district or institution. ASCD explains that the first step in an educator’s self-designed learning is to identify personal goals for the area in which they seek to grow. ASCD furthers that an educator must create a network that balances relevant self-designed learning with additional learning that challenges the educator’s existing paradigms (ASCD, 2017a).

Regional Reform in Montana

In analysis of international and federal recommendations for Professional Development social collaborative PLNs, it becomes purposeful to examine PD models at the state and local level as well. Given the rural demographics of Montana, educators throughout the state have preemptively encouraged the expansion of Professional Development options through online social networks as way to widen their circle and connect to learn. With similar intent as national and international calls for reform, the state of Montana identifies valuable characteristics in said PD models. The Montana Office of Public Instruction (OPI) reports benefits of the online PD models as a collaborative sharing of varied perspectives and resources between fellow educators within Montana and outside of Montana.

OPI PD Through Teaching Learning Hubs. In interviews with Jessica Bryant (2017), Teacher Learning Hub Coordinator, she shared the Montana Office of Public

Instruction (OPI)'s positive experiences in implementing Teacher Learner Labs and encouraging digital networked Professional Development throughout the state (J. Bryant, personal communication, December 7, 2017). Bryant shares that the Teaching Learning Hub has evolved over the course of the past four years; while technologies continue to change, so has the delivery of Professional Development. In July 2013, AFT awarded Montana an Innovation Grant to create the Montana Digital Professional Learning Network (MDPLN). OPI shares that the newly created MDPLN was established for the purpose of, "addressing the challenges of distance, time, access, and equity in providing Montana educators access to quality professional learning opportunities statewide" (Montana Office of Public Instruction. Teacher Learning Hub 2017). Primary focus was given to Montana English Language Arts, Literacy, and Mathematics Common Core training, through continued teacher education and coaching support. Additionally, MDPLN served paraprofessionals for Montana Federation of Public Employees (MFPE) PASS training. The Montana Digital Academy (MTDA) worked closely with the newly developed MDPLN, and coordinated educational efforts with MEA-MFT, Montana Office of Public Instruction, Montana University System, School Administrators of Montana, Montana School Board Association, Montana Rural Education Association, and the Montana Providers of Professional Learning Network (MPPLN). This collective team of educators and departments worked together to develop over 100 online modules, and grew to over 1,000 users (Montana Office of Public Instruction. Teacher Learning Hub 2017). In 2015, OPI took over the management of MDPLN and changed the name to the clearly identified Teacher Learning Hub.

OPI details that Teacher Learning Hub courses are typically 3-5 weeks, and while there are not designated times to meet synchronously, the facilitator is available to guide, coach, and provide feedback throughout the duration of the course. The online Teacher Learning Hub courses are a combination of synchronous and asynchronous learning, online learning, and face-to-face meetings. The Teacher Learning Hub typically enrolls 25-30 participants and the courses run two to three times throughout the calendar year. The Hub touts benefits of its model, including self-paced learning and the perfect blend of the “convenience of online learning with the power of collaboration” (Montana Office of Public Instruction. Teacher Learning Hub 2017). Similar to the benefits of Twitter-based Edchats, the Teacher Learning Hub expresses that its primary purpose is “to create a community of teachers across Montana in order to share best practices, solve problems, and collaborate” (Montana Office of Public Instruction. Teacher Learning Hub 2017).

OPI PD and #MTEDCHAT. Per the Office of Public Instruction and Jessica Bryant’s recommendation, Jessica Anderson also provided invaluable information on Montana’s directives towards digital Professional Development, more specifically through EdChats. Anderson’s connected perspective within Higher Education, Teacher Education, the PBS Teacher Community, and the K-12 classroom, aids in establishing Montana’s role in the shifting Professional Development digital model. She earned the 2016 Educator of the Year award and visited the White House to receive her honors. Derived from her experience, Jessica exemplifies how digital Professional Development helps teachers in their ongoing continued learning efforts and improvement of practice. Among her many achievements, she co-created #MTedChat, the synchronous weekly

EdChats meeting and has continued to lead its development. During the transition of MDPLN to the Teacher Learning Hub, #MTEdChat experienced a number of challenges, including consistent participation: “When we first started it wasn't unusual to have 60+ participants on a chat, but that number has since dropped to between 15-30 depending on the time of year and topic. We're hoping the offering of renewal units will again spark more engagement” (J. Anderson, personal communication, December 12, 2017). Jessica reported that #MTEdChat was able to offer renewal units through the Montana Digital Professional Learning Network (2014-2015 academic year); yet when MDPLN was morphed into the Teacher Learning Hub, the staff members lost that ability. Fortunately, through their Montana PBS affiliation, they were again able to offer renewal credits for #MTEdChat in partnership with Montana PBS Teacher Community Project. The Montana EdChat details the renewal credit process on its organizational website, requiring, “1) Participation in the live chat on Tuesday at 8:00 PM MT **OR** review and explore the archives and 2) Complete the embedded #MTEdChat feedback form within **2 weeks** of the chat date” (Edchat 2017). Montana EdChat utilizes participation, reflection, writing, and application in its renewal credit #MTEdChat agreement. Nikki Vradenburg, Crista Anderson, and Jessica Anderson manage the renewal units between #MTEdChat, Montana PBS, and Montana Office of Public Instruction. They are also often moderators of the weekly synchronous Tuesday evening #MTEdChat meetings and were instrumental in providing access for this study.

Bozeman Public Schools and #MTEdChat. An exemplar of effective digital learning Professional Development spaces within Montana, Joe Hagemeister shared his

perspectives as the Curriculum Technology Specialist of Bozeman Public Schools (at the time of our communication). Hagemeister is currently a Google Certified Educator and Principal of Monforton School; his rich experience in Adult Learning, Teacher Education, Professional Development, and K-12 Curriculum provides purposeful context for analysis. An interview with Joe provided thoughtful observable findings, as he shared direct examples of his own learning from #MTEDCHAT, and connected it with relevant application into the Bozeman Public School classroom. Hagemeister is charged with the task of integrating technology into the district and provides ongoing technology training to teachers.

Two salient points resonate from these discussions, and both speak to increased accessibility in teacher education and shared resources. Through his narrative, Joe shared that through #MTedChat and Twitter connections, he found and adapted a useful learning tool for his district. Hagemeister posted a callout to educators, asking for recommendations for an interactive learning tool for Professional Development within Bozeman Public Schools (BPS). He received a response from Kasey Bell, a highly respected educator and author, with a suggested learning resource that she had created. Bell speaks throughout the nation, but she is located in Texas, and reports having over 44,000 Twitter followers (Bell 2017). She had taken the time to develop a purposeful learning tool, a digital Google game board. Hagemeister was able to adapt this tool so that it met the specific learning objectives of the Professional Development content specific to Bozeman Public Schools. He noted that communications with one educator often led to contact with another new educator, and further assistance in learning. He

likened the experience to a learning *hive*, where educators are working together in strengthening their own learning and practice (J. Hagemeister, personal communication, November 3, 2017).

Also telling, Hagemeister shared how digital learning educational groups have assisted in development of Bozeman Public School's internal Teacher Education Professional Development models. Building on his planning and development, BPS implemented a district-wide training program, beginning with training for non-tenure newly hired teachers and integrating all BPS teachers into training within the next three years. The BPS administration and staff identified the most critical learning constructs for their educators, to which Joe developed the aligned Professional Development curriculum. Collectively, the BPS training staff established six modules in the Teacher Education training program:

- Module 1: Google Suite,
- Module 2: Universal Design for Learning (UDL),
- Module 3: Indian Education for All,
- Module 4: Suicide Prevention,
- Module 5: Gifted and Talented (GT) and English Language Learners (ELL),
- Module 6: Build Your Own PLN (social media, hives, build your own global network of continued learning).

The inclusion of *Module 6: Building you own PLN*, speaks to the importance Bozeman Public Schools places on educators creating their own continued Professional Development, specific to their needs. Joe reported that through the self-paced blended

learning model, the PD programs are able to reach teachers at various levels of technological skills and content understanding. He furthered that with Educational Technology integration, students are learning through technology, so it becomes important for educators to stay current with technological skills and to model said social learning hives. Mirrored through research of this study, accessibility to other educators' resources, perspectives, and learning tools, is an apparent advantage to digital learning communities. (J. Hagemeister, personal communication, November 3, 2017).

Number of Active EdChats

Given the trend and recent directives from the U.S. Department of Education, the number of Teacher Education Twitter-based PLNs and EdChats has grown exponentially over the past three years (Carpenter, 2015; Gagnon, 2015). Official indexing of regional Teacher Education Twitter-Based PLNs has not been diligently recorded until recently. Google developer and EdChat collaborator J. Rochelle shared that the regional PLN or EdChat groups have been growing at such a rate that it has been difficult to maintain effective cataloging (J. Rochelle, personal communication, November 3, 2017). According to B. Spirrison of Participate (a non-profit education EdTech facilitator), unofficial reports indicate that over 1,472 active Teacher Education Twitter-Based PLNs exist for weekly meetings and EdCamp conferences. (B.Spirrison, personal communication, November 3, 2017). Alex Pochaski pointed to an active indexing of EdChats that is compiled through a shared Google Site (A. Pochaski, personal communication, February 20, 2020). Current indexing reports over 392 active regional chats (Blumengarten 2020). Tracking can be difficult, but as the U.S. Department of

Education Office encourages further development of these groups, increased organization in cataloging and documentation should follow.

Although EdChats are a newer technology and therefore cursory in empirical findings, recent studies share the common theme of what is known and what remains to be studied. Ross, Maninger et al. (2015) share recent findings that indicate that teachers who have used Twitter to improve their practice will likely revisit the learning communities and continue PD through the collaborative groups, reporting “Ninety percent of the educators responding said they are extremely likely to use Twitter for professional development in the next six months, and 69% of educators said their use of Twitter for professional learning will increase over the coming school year” (p. 55). The most notable differences between *traditional district-wide professional development and virtual-based professional development* are accessibility and costs (Carpenter, 2015; Greenhalgh & Koehler, 2017).

Statement of the Problem

The increased emergence of Twitter-based PLNs may provide a learning context that is absent in traditional development models for teacher education. Traditional models for teacher education do not consistently serve learning needs and outcomes of best practices for professional development as they rely on a blanket approach to learning (Whitaker and Zoul 2015, Harrington 2017, Learning Forward 2017). Ross, Maninger, Laprairie, and Sullivan (2015) support the apparent need for improved professional development, but suggest that traditional PD models may lack the meaningful

experiences required to enhance teachers' professional learning and competencies. In specific highlighted traditional models, the professional development being offered lacks pedagogical content and structural characteristics and merely repeats what has previously been studied during the initial phases of teacher education in college (Kabilan, et al., 2011 as cited in Ross, Maninger, Laprairie & Sullivan, 2016). Through an organic interest of many educators, and through national, state, and local calls for reform, the use of Twitter-based Teacher Education EdChats has increased rampantly (Jackson and Temperley 2007, Everette 2015, Pitler 2017). Compared to traditional PD models, EdChats possess observable advantages, in that they are ongoing, immediate, and self-directed. These three qualities make Twitter based PD more accessible, consistent, and internally motivated for the teacher, all of which contribute to important learning models.

While the increased use of Professional Development EdChats is apparent, there is a gap in the literature. EdChats are new enough that supportive relevant research has not been conducted in order to measure the effectiveness of these innovative learning spaces. Essentially, Twitter-based Teacher Education EdChats are popular, but are they an effective learning space? Through constructivist examination of teachers' experiences within the social constructionist collaborative learning spaces, we can glean whether their learning experiences are beneficial to their Professional Development. Clearly, Twitter EdChats are popular and consistently maintained by devout PD followers. It's apparent that Twitter EdChats are a growing trend, yet as educators, we don't know if teachers are perceiving these collaborative learning groups as effective strategies for improving teaching practice.

Statement of Purpose

The purpose of this qualitative phenomenological study is to discover group participants' (in-service teachers as learners or co-learners) perceptions of their experiences and learning outcomes as part of a teacher education professional learning group, administered through Twitter. This study will focus on three aspects of the teachers' perceptions of their role in the Twitter community, including teacher as student, teacher as co-learner, and teacher as mentor. The phenomenon under study is the teachers' experiences of how Twitter contributes to their professional development (vis-à-vis, learning). The study aims to identify concrete learning outcomes that teachers report as a result of their participation in Montana Ed Chat, #MTedChat. Montana Ed Chat was selected as the Twitter platform for this study for three important reasons. First, it is closely connected with the state's Office of Public Instruction. Second, it is well regarded within Teacher Education EdChats. Third, the results from the Montana community in this study may be transferable to other states with similar rural demographics.

Guided Research Questions

This qualitative study is **guided by the following** research questions:

- Research Question 1: What are the participants' experiences in #MTedChat?
- Research Question 2: What are the different roles that participants assume within #MTedChat and how do these shape their learning experiences?

- Research Question 3: What experiences do the participants in #MTedChat bring to their professional practice?

Theoretical Framework

The study integrates a number of theories to frame the methodology of the study. These theories include *Social Constructionism*, *Constructivism*, *the Community of Inquiry model*, and the *Zone of Proximal Development*, which are used to explain the in-service teachers' experiences in the EdChat professional development network. Each of these constructs frames the intention behind Professional Development and informs learning within Professional Learning Networks. The following concentric circle diagram demonstrates how each construct holistically intersects. As graphically represented below: ***Professional Learning Networks (PLNs)/Professional Development*** demonstrates the ecological outer circle, ***Social Constructionism, the Community of Inquiry***, and ***the Zone of Proximal Development*** are narrowed within, and ***Constructivism*** is at the core of the study, with the purpose of examining the *individual's experience* within the learning group.

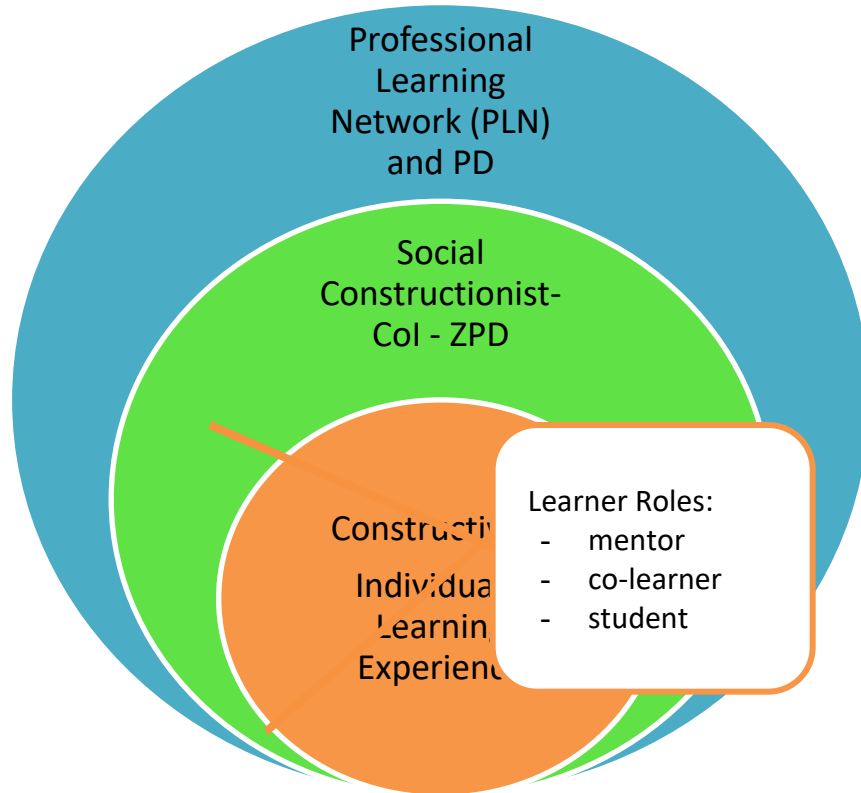


Figure 1. Concentric representation of study's constructs, from ecological outer layer PLN/PD in, to Social Constructionist/CoI/ZPD, to core Constructivist – Individual's Learning Experience (comprised of three learner roles: mentor, co-learner, or student)

Delineated further, the individual learning experience in the core can include three varied roles: (1) as *mentor*, (2) as *co-learner*, and (3) as *student*. At the crux of this study is the overarching understanding that as educators, we are also prompted to be learners. Highly observable in contemporary learning environments today, learning often involves fluid roles for participants between said *mentor*, *co-learner*, and/or *student* roles. Active participants of this Twitter-based Teacher Education study will be in at least one of these roles at any highlighted time. The stated premise behind the formation of this learning community is *to learn*, which is facilitated through these three roles of *mentor*, *co-*

learner, and *student*. Professional development and continuing education often require the educator to transition to a *student* role in order to utilize feedback, increase knowledge, receive varied perspectives, and improve practices. We learn in our role as student, yet we also learn in our role as mentor, and co-learner. The reciprocity of leading as a *mentor* or *co-learner* is not solely for the utilitarian good of the community but also for our own development as an educator (Charbonneau-Gowdy, Capredoni et al. 2016). These transitioning roles transition with corresponding foundational paradigms; as an example, the teacher as student relies on the constructivism paradigm. The teacher as co-learner and mentor relies on social constructionism. The Community of Inquiry and Zone of Proximal Development are used to inform the interactions and learning experiences that take place within the EdChat setting.

The influence of mentor roles is trending universally. Whether demonstrated in the classroom, vocational training, or corporate learning and development, the Vygotsky framed construct of learning from mentors as More Knowledgeable Others (MKOs) is well supported by Dils (2004), Shabani, Khatib et al. (2010), Churcher, Downs et al. (2014), and Murphy, Scantlebury et al. (2015). Charbonneau-Gowdy, Capredoni et al. (2016) expound on how technological advances have radicalized transportation (e.g. Uber) and travel (e.g. AirBNB), and further discuss that these societal examples represent a breakdown in power. Similarly, the researchers argue that technology also prompts a breakdown of power within education. They report that learning roles are more cyclical and less hierarchical. Edwards-Groves (2014) extends that the long-standing practice of pre-service teachers learning from in-service teachers has proven effective. Additionally,

the researchers aptly share that mentoring is both a relationship and a process (p. 151).

Echoing the power of mentoring in education, Nolan and Molla (2018) conducted a study of Early Education teachers in a mentoring program. Although the study was in Australia, the underlying premise of the value of mentorship seemingly transfers to the system within the United States. Nolan and Molla (2018) share the following pertinent observation:

When it comes to learning outcomes, professional development programs such as mentoring are instrumental in developing core attributes of effective teachers, including professional competence and ongoing learning capability. Professional learning outcomes involve ‘changes in professionally relevant thinking, knowledge, skills, habits of mind, or commitments’ that manifest in teachers’ capacity for practice, and actual changes in their practice (p. 262).

Encompassing some of the same attributes and outcomes as mentoring, *co-learning* roles (or a hybrid role of learning) exhibit research that demonstrates its effectiveness within collaborative learning spaces, which again can be found throughout learning for pre-service and in-service teachers (Turner and Blackburn 2016). The worth of mentoring and co-learning roles is arguably apparent and is supported by ongoing research of mentoring roles. Further examination of each of the concentric constructs will be provided in the Literature Review chapter, while Figure 1 above provides a cursory introduction to the constructs of this study.

Constructs and Operational Definitions

Affinity Spaces. An online virtual community for learning, discussions, and sharing resources. Digital or physical spaces in which participants interact with one another, around content of shared interest and through a common portal (or platform) (Rosenberg, Greenhalgh, Koehler, Hamilton, & Akcaoglu, 2016).

Asynchronous learning. A term commonly used in online learning and instruction, which describes learning that does not occur in the same place or at the same time. Learners participate in Internet-based learning opportunities on their own schedules (Mackey, 2016).

Community of Inquiry (CoI). Garrison, Anderson and Archer (2000) created Community of Inquiry as a model, theory, and framework utilized to measure learning experience in an online learning environment. CoI measures three main components: social presence, teacher presence and cognitive presence (Garrison, Anderson and Archer, 2000).

Communities of Practice (CoP). A community of practice is a group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (Wenger, McDermott, & Snyder, 2010).

EdChat. An EdChat is a created group in Twitter that meets online synchronously to discuss educational topics, resources, and practices through Tweets. Often, EdChats are created around a specific region, discipline, or subject (Britt and Paulus, 2016).

Mobile Learning or m-learning. Mobile Learning refers to learning through personal electronic devices that accesses formal course framework, social media and multiple

contexts. Mobile devices, including smart-phones and tablets, provide this access via cellular networks and wireless power. (Ludgate, Becker and Johnson, 2015).

Professional Development (PD). PD is specialized training and formal education to help administrators, teachers, and other educators improve their professional knowledge, competence, skills, and effectiveness. Professional development refers to processes designed to enhance educators' knowledge, skills, and attitudes for the purpose of improving student learning. Terms that have been used synonymously in the past include *staff development, in-service education, on-the-job training, adult learning, and continuing education* (Tallerico, 2006).

Professional Learning Networks (PLNs). Timperley (2008) shares that PLNs are communities for ongoing inquiry and learning; they are frameworks shared by profession and objective which look to share understanding and experiences, increase metacognitive processes, and better individual practices. An EdChat is one type of Professional Learning Network. A PLN is a shared space of learning and collaboration that supports the exchange of ideas and resources. PLNs are rapidly emerging as an innovative approach to PD among in-service teachers, and may be useful to support teacher collaboration, to encourage peer feedback, and to promote new approaches to instruction (Colwell and Hutchison, 2018)

Synchronous learning. A term commonly used in online learning and instruction, referring to learning that occurs in the same place and at the same time (Altınay and Altınay, 2015).

Teacher Education. Whether practiced by veteran teachers or pre-service teachers, teacher education is the process or system designed to train individuals in teaching theories, methodologies and practices in the classroom. Developments in teacher education curricula that took place over the twentieth century led to the proposition that teachers actually need a range of forms of professional knowledge, including pedagogical knowledge and subject-related pedagogical knowledge, in addition to ‘pure’ subject knowledge (Menter, 2015).

Twitter. Twitter is a social networking website, which allows users to publish short messages that are visible to other users. These messages are known as tweets and can only be 280 characters or less in length. A social microblog, it has been used as a platform for PLNs and holds promise for promoting professional development (PD) among educators (Colwell and Hutchison, 2018).

Limitations and Delimitations

While limitations are components that are out my control as the researcher, delimitations are methods over which I have control and can use to limit the research through defined boundaries. Arguably one of the most significant limitations of this study involves potential sampling response; as the researcher, I can invite EdChat participants to participate in the study, but I cannot force them to participate. In response, I can place delimitations on the study by inviting a broader population to participate in the study, but I place additional boundaries and criteria on who is selected for the interviews. One significant delimitation is the study’s focus on in-service teachers, within #MTedChat, using Twitter. There are other platforms that could have been

studied, so this delimitation prevents input from teachers from different grades and schools, who would have brought varied expectations of PD based on different school policies and varied school districts. Extending the proximal considerations, an additional recognized limitation is the fact that this study focuses on one geographic region, when there are EdChats throughout the country, and globe, which could have been selected.

Assumptions

I inherently bring assumptions derived from my biases on the context, specific to technology and social media Professional Development spaces. Additionally, I possess assumptions related to the study methods and to the participants. As the researcher, I assume that participants will answer interview questions honestly, and I assume that in knowing they are being observed, they will answer honestly. I assume that in the EdChat space, they are who they say they are and that their profile name and picture reflect their true identity. I assume that the participating teachers have the technical skills and understanding to adequately operate/participate in a Twitter-based PLN. I assume that learning will occur within the EdChat space. I assume that the participants fulfill at least one of three roles at any given time participating within the group, as mentor, co-learner, or student. Furthermore, I assume that they are educators. Additionally, I assume that twitter is a viable PD platform, while teachers are using the platform to develop professionally and learn from one another collaboratively.

Significance of the Study

As state and regional Twitter-based teacher education EdChats have become increasingly popular, it is important to understand their effectiveness for participants. This study seeks to explore the benefits of PLNs as described by participants. Through examination of teacher participants' experiences from this study, fellow practitioners can develop and utilize similar Twitter-based EdChats for improved Professional Development learning, which in turn can prompt increased best practices, additional shared resources, and ultimately improved student learning. The findings from this study will offer purposeful data to researchers for future studies, by examining what is effective and ineffective, and why, in similar settings. When teachers directly benefit from EdChats, it in turn benefits students, school districts, and professional organizations.

Chapter Summary

Professional Development modalities for teacher education have shifted into digital spaces. Once considered for mere entertainment and consumption, social media is now recognized as a viable platform for learning, depending on how it is utilized. Harrington (2017) shares the benefits of these innovative Professional Development digital spaces: "There are many advantages of using social media tools to collaborate. You can jump on anytime of day or night, your network is global and the tools are free". Increasing at a rampant rate, EdChats have proven to be more than a trend, but how effective are they as a vehicle for teacher education? Federal and state initiatives are calling for increased use of EdChats, which further prompt questions of *how EdChats are*

used, how effective are they, and what are the reported overall experiences of EdChat teacher participants?

CHAPTER TWO

LITERATURE REVIEW

Introduction

The purpose of this qualitative study is to examine teachers' experiences in a Twitter-based Professional Learning Network (PLN), #MTEdChat. To measure the effectiveness of this learning community, the study utilizes the Community of Inquiry (CoI) model. Each of the major social constructs (CoI, PLNs and social media) in this study is grounded in a Social Constructionist approach. The focus of my study is the #MTEdChat learning community, which is built with the sole purpose to learn collectively from varied perspectives. Social constructionist and constructivist theories are used to frame the study. Social constructionism is used to explain the EdChat learning community, and the constructivist theory is used to understand the teachers' learning through their experiences, reflection, and application of the Professional Development within the EdChat.

To conduct the literature review, I systematically researched education databases, specifically ERIC, Credo, and EBSCO. I searched literature in cross-disciplines of psychology, sociology, education, and technology, and my protocol searched for the following relevant terms: eLearning, mLearning, Twitter, Community of Inquiry, CoI, Professional Development, Teacher Educations, in-service, Professional Learning Network, PLN, learning hives, online learning networks, EdChats and affinity spaces. Given the importance of current literature as it relates to changing technologies, I

searched databases for years 2013 to present, with a focus on the most recent two year within that span. Seminal articles frequently harkened back to foundational research on the Community of Inquiry by Garrison, Anderson et al. (2000).

Additionally, this chapter includes a substantive review of the subject of *Mobile Learning (M-Learning)* and its transformative influence on Twitter-based professional learning networks. As technological resources, computers, and portable devices continue to change, online learning environments causally change (Lindsay, 2016). Most notably, the shift from *Electronic Learning (E-Learning)* to the emergent *M-Learning* has prompted an increase in social media as a platform for innovative collaborative learning environments (Keskin & Kuzu, 2015). Given that online learning space is changing and evolving, consistently measuring learning outcomes remains critical. Consistent with most teacher education Twitter-based PLNs, the #MTEdChat PLN study is accessible through both *E-Learning* (computers) and *M-Learning* (mobile devices). Further comparison between *E-Learning* and *M-Learning* will be delineated more fully later in the chapter. While *E-Learning* and *M-Learning* share a multitude of commonalities, the *M-Learning* trend has developed an entirely fresh learning platform unto itself. Characteristics of *M-Learning* provide different functionality, producing both advantages and challenges. As emergent *E-Learning* and *M-Learning* models continue to develop, reviewing the current literature provides a foundational understanding of the technologically driven learning communities.

Constructivist and Social Constructionist Paradigms

Two related paradigms that inform this study are Social Constructionism and Constructivism. Social constructionism and constructivism are associated with two learning models including Vygotsky's *Zone of Proximal Development* and Dewey's *Community of Inquiry*, respectively, that are relevant to online learning environments. Further definition and description of the Zone of Proximal Development and the Community of Inquiry will be addressed later on in the chapter. Creswell (2013) shares that social constructionism constitutes how individuals make meaning in their lives, from subjective perspectives based on their social environments, interaction with others, and historical context. By contrast, constructivism focuses on the cognitive processes that individuals have as they make-meaning from their experiences.

John Dewey (1938) and Lev Vygotsky (1978), seminal theorists of constructivism and social constructionism, proffer learning theories that align with the framework of this study. While the specific technologies of networked social media learning platforms were not available during Dewey and Vygotsky's time periods, their foundational theories are evident in a multitude of modern learning communities today. Current instructional design methodologies are derived directly from the work of Dewey and Vygotsky, encouraging a Social Constructionist space in which students and teachers learn from each other. Relevant examples of Social Constructionist digital learning include forums, discussions, and collaborative group digital projects. This Social Constructionist approach of learning from others in a digital space is prevalent throughout education, from K-12, to higher education, to professional development, and professional development of teacher education. Dewey (1938) and Vygotsky (1978)

provide a legacy that derived from their pragmatic vision, which extends well beyond their writings. A deeper description of Dewey's framed constructivism and aligned *Community of Inquiry* provides purposeful understanding of the foundational constructs of this study.

Dewey and Constructivism. Dewey's (1938) profound influence on education, psychology, scientific inquiry and politics is rooted in his unwavering respect for democracy (Popkewitz, 1998). Apparent in Dewey's learning model, democracy focuses on community and the role of teachers as facilitators of learning. Dewey's marked contributions to the constructivist approach focus on the value of experience and critical inquiry (reasoning, questioning, and reflection). He shares that critical thinking and critical inquiry involve "(re)constructing experience and knowledge through the critical analysis of subject matter, questioning, and the challenging of assumptions" (Dewey, 1959, p. 2). Dewey asserted that we *learn by doing* (McCaughan, 2013). While this active learning model was revolutionary for its time period, it is prevalent and encouraged today in elementary, secondary and post-secondary settings. Experiential, Problem Base Learning (PBL), and inquiry-based learning are contemporary learning models that center on Dewey's theories of engagement and experience (Dewey, 1938; Prawat, 2001). Educators have found that learners are more engaged and motivated when they are actively using the content, as with contemporary practices of Experiential and PBL today. Furthermore, achievement is affected because interested students are more invested in their own learning process. The positive outcomes of inquiry-based learning

and engaged active learning are evident in classrooms today (Dils, 2004; McLoughlin & Lee, 2010).

Social Constructionism. Frequently compared to constructivism, social constructionism embodies many of the same inherent characteristics. Social constructionism focuses on action, experience, and lends more to a subjective reality; it emphasizes that individuals construct their own knowledge and meaning with a significant emphasis on collaboration (Savin-Baden and Major 2012, Maxwell 2013, Trainor and Graue 2013). Whereas a constructivist approach is derived from individual perceptions, a social constructionist approach looks at shared collective perceptions and knowledge. The fundamental premise of a social constructionist paradigm asserts that we learn from others in a social community (Popkewitz, 1998). As a community, individuals exchange experiences and knowledge.

Vygotsky and the Zone of Proximal Development.

Lev Vygotsky's literature focuses on the importance of collaborative communities in learning; he contends that we learn first socially, and second individually. Vygotsky maintains the constructivist's value in learning through action and learning by doing (Costley, 2012; Petrová, 2013; Popkewitz, 1998). A metaphorical representation of Vygotsky's Social Constructionist approach resonates as an example, using the story that describes a number of students with blindfolds on, each touching a different part of an elephant. In order to learn collectively and collaboratively, the students share their experiences and knowledge of their area of the elephant. This concept of social

collaboration emerges, with the understanding that each individual learns from the community of shared experiences (Apple et al., 1999; Kivinen & Ristela, 2003).

Vygotsky (1978) developed the Zone of Proximal Development (ZPD). Integral to a model framed on collaboration, the ZPD establishes that learning occurs through social interactions. Furthermore, students learn from others who know more about a subject. Vygotsky contends that learning occurs when we rely on a More Knowledgeable Other (MKO). Vygotsky (1978) states that the best learning occurs when “MKOs are aiding learners, when the learner is at a stage, a bud or flower proximal (or close to) the next level of development” (Murphy, Scantlebury, & Milne, 2015, p. 287). Essentially, learning takes place when learners are challenged but are still within reach of attainable achievement. Designed instruction and facilitation should set challenging yet reachable student-driven expectations. This model extends that learners learn best from those that know the content a little better than they do (MKOs).

Within education, MKOs are often peers, coaches, advisors, or mentors. In the context of teacher education Twitter-based professional learning networks, the peers can be at various stages of their educational trajectory (whether pre-service or in-service teachers). The MKO is the advanced peer of the given content and is an expert from years of experienced practice or as a cross-curriculum expert. Exchanging information, lessons, practices and resources, the rotating MKO aids in the education of peers at the budding development stage, proximal to the next level of development. The ZPD embodies collaboration at the crux of social constructionism (Murphy et al., 2015; Shabani, Khatib, & Ebadi, 2010; Vygotsky, 2007). As introduced in Chapter 1, the role

of a MKO is equivalent to that of a mentor, prompting the intentioned research question. Inherent to this study, and the concept of learning from the experience of others, pre-service teachers (and in-service teachers) have the advantage of learning from MKOs or mentors. Furthermore, the theories behind ZPD, mentorship, learning in a community, learning from various shared perspectives, and learning through collaborative efforts, are highly observable in contemporary educational technology learning communities.

Social constructionism, Vygotsky, and Technology. Vygotsky's precedential theories and models are relevant in learning communities today. Whether examining traditional face-to-face classroom settings or virtual technology-driven learning communities, Vygotsky's emphasis on collaboration is observable in current learning communities today. Significant empirical literature reports connections between Vygotsky's ZPD model and collaborative technology-based learning communities (Churcher, Downs, & Tewksbury, 2014; Dils, 2004; Shabani et al., 2010). Churcher, Downs, and Tewksbury (2014) connect Vygotsky's seminal theory with modern technological tools and learning environments. Additionally, the researchers aptly describe the connection of social constructionism and constructivism as the underpinnings of this study, "Although learning may occur through collaboration, it is still an internal mechanism within the individual (intrapsychologically). Learning, therefore, occurs at the individual level and is a product of knowledge creation through collaboration, whereas knowledge is co-created in the environment" (p. 35). As technologies continue to emerge from online distance learning university classes to

mobile learning teacher education Twitter-based professional learning environments, Vygotsky's ZPD model remains at the core of collaborative learning communities.

Dewey's CoI with Peirce. While Dewey's (1938) influence clearly aligns with the constructivist approach, his impact extends beyond the overarching constructivist paradigm. Peirce (1992) developed the Community of Inquiry theory to be applied narrowly to scientific studies; Dewey (1938) later broadened the Community of Inquiry theory to extend to the field of education and learning. Dewey developed the CoI theory to apply to a group of individuals involved in a process of inquiry through problem solving. Collectively, Dewey and Peirce's contributions serve as the foundational framework for this entire study. Garrison, Anderson, and Archer (2000) innovatively applied the extended Community of Inquiry (CoI) modalities to learning in online environments. The researchers grounded the CoI online alignment with Dewey (1938) and Peirce's (1992) emphasis on practical inquiry (Lipman, 2003; Swan & Ice, 2010). Dewey (1938) delineates that a classroom is a community and he asserts that learning is derived from critical inquiry (reasoning, questioning, and reflection of experience). Lipman (2003) aptly describes Dewey (1938) and Peirce's (1992) Community of Inquiry model: "Students listen to one another with respect, build on one another's ideas, challenge one another to supply reasons for otherwise unsupported opinions, assist each other in drawing inferences from what has been said, and seek to identify one another's assumptions" (Lipman, 2003, p. 20).

Community of Inquiry Model

Garrison et al. (2000) developed the Community of Inquiry (CoI) seminal model as an effective way to measure levels of learning in online learning environments. The authors were influenced by John Dewey's Community of Inquiry as it applies to scientific inquiry and constructed the CoI online model as a tool to measure three main tenets of online learning environments: teacher presence, social presence and cognitive presence (Garrison, 2007, 2016; Garrison & Kanuka, 2004; Garrison & Vaughan, 2008; Swan, Garrison, & Richardson, 2009; Vaughan, Cleveland-Innes, & Garrison, 2013).

As exhibited in *Figure 2* below, the representation organizes the conceptual framework for this study based on the Community of Inquiry model developed by Garrison et al. (2000). Garrison's model was designed for online learning environments and is based on the presence of the teacher, social presence and cognitive presence of the individuals who comprise the learning community. Vaughan & Garrison, (2006). Affirming that technology is not a stand-alone construct in learning, Garrison et al. (2000) crafted an invaluable tool which is highly regarded as a seminal pillar model. The CoI model asserts that online learning experience occurs at varying levels within the three constructs (See *Figure 2* below).

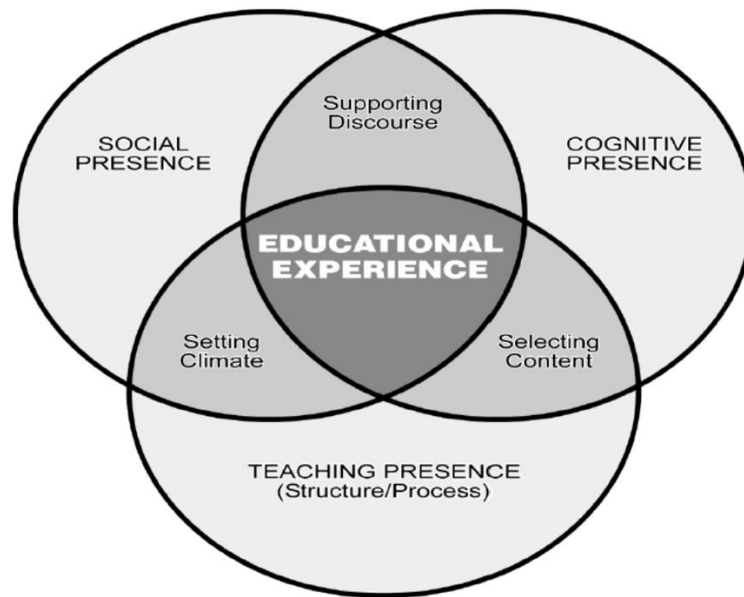


Figure 2. Community of Inquiry Framework (Garrison, Anderson, & Archer, 2000).

- **Social presence.** Social presence applies to the collaborative inter-personal communications of an online course; it's the students' connection with the course's community as a safe and trusted environment.
- **Teaching presence.** Teaching presence is the teacher's design, facilitation and course management that is directing the students' cognitive and social processes.
- **Cognitive presence.** Cognitive presence is the student's ability to construct and make meaning through discourse and reflection.

Social constructionism is at the very crux of the Community of Inquiry model. Professional Learning Networks are one example of a CoI model because these networks have identifiable social presence (learning in groups), teacher presence (the facilitator), and cognitive presence (the actual cognitive processing). The following section outlines the features associated with PLNs.

Professional Learning Networks (PLNs)

Provided the CoI model is heavily couched in social constructionism, Professional Learning Networks (PLNs) are a type of Professional Development, which also follow constructivism's focus on learning from a social community context and reflection (Churcher et al., 2014; Popkewitz, 1998). A PLN is a curated space for the primary purpose of increasing individuals' learning, learning from others and strengthening each other's knowledge and practice. The purpose of PLNs congruently aligns with that of social constructionism and the Community of Inquiry model, which asserts that effective learning occurs in a social community. Highly representative of Vygotsky's ZPD, PLNs focus on learning from others who are more expert or offer varied perspectives from our own. PLNs are at the heart of the relationship between school networks and the professional learning larger encompassing community (Lieberman & Pointer Mace, 2010). They are rooted in a Social Constructionist paradigm as they are communities of continuous inquiry towards improvement. Characteristics of PLNs focus on learning from one another and learning from diverse perspectives, and co-constructing learning objectives and outcomes together (Holmes, Preston, Shaw, & Buchanan, 2013; Jackson & Temperley, 2007; Munoz, Pellegrini-Lafont, & Cramer, 2014; Nicholson & Galguera, 2013).

Traditional face-to-face PLNs or in-service Professional Development (PD) in-service days are dependent on allocated space and time constraints. Facility planning, drive time, and scheduled time away from research, classes and projects have been known to cause faculty and teacher grumblings. It has invariably been asked, "Are PD

days an effective way to foster learning?” A valid question, as a trend in a changing PD delivery is apparent. Arguably, face-to-face traditional professional development allows participants to delve more deeply into the topic of study. However, limitations exist in the “One size fits all” topics often covered during PD days, as it is difficult to cover specialization areas tailored to each teacher or faculty member.

In addition, teacher education participants have frequently responded that while technological skill set development is encouraged, supportive technological professional development is not always provided. With the given expectations that educators stay current with ever changing technological trends, professional development support should follow. Grant et al. (2015) found that school districts often lack in providing sufficient professional development that matches or prepares for new technological implementations. Reportedly, educators attest to technology roll-outs which are not adequately prepped with scaffold training (Timperley 2008, Lieberman and Pointer Mace 2010). This ongoing complaint regarding technological training seems a mainstay whether among K-12 teachers or higher education faculty. Furthermore, providing training skillsets at varied technological skill set levels proves to be challenging, and PD needs to meet teachers at their specific technological skillset. As school districts have begun to use social media platforms for PD, they have benefitted from decreased expenditures corresponding with fewer auditorium-filled district-wide face-to-face in-service days. The next section outlines how Twitter has gained in popularity for PD as a form of PLN.

Social Media and Twitter

With its rampant popularity, social media has been regarded primarily for its consumable entertainment value. Shifting from mere entertainment, social media is now also being recognized as a potential tool for connecting, sharing and learning in education. Social media has the power to increase accessibility and provide a viable platform for learning. When social media is used effectively as a learning tool, it has the capacity to be a viable CoI modeled learning community. Acosta (2014) shares Twitter's increased presence in higher education: "Junco and Arthur W. Chickering have noted that participation in social media that connects students with others may provide students with a stronger sense of community and can help benefit learning" (p. 13). Surprisingly, social media and Twitter provide an opportunity for learning, mirroring the collaborative learning communities for which Vygotsky advocated.

Electronic Learning (E-Learning) and Mobile Learning (M-Learning)

By evaluating the major Social Constructionist paradigms -- the *Community of Inquiry model*, *Professional Learning Networks* and *Twitter* - it becomes possible to study where all three intersect. Examination of the #MTEdChat teacher education Twitter-based PLN serves as a study of a Social Constructionist learning community. Additionally, examination of *E-Learning* and *M-Learning* environments (as potential social constructs) also proves purposeful and specifically relevant to teacher education Twitter-based PLNs.

With the proliferation of *mobile learning (M-Learning)* environments, some research claims that *M-Learning* has revolutionized digital learning. Ozuorcun (2012)

expounds the role of *M-Learning* through mobile devices as a vehicle of opportunities for learners, learning ubiquitously, at all times, with no boundaries for education (Ozuorcun & Tabak, 2012). While *M-Learning* has increased rampantly and distinctly changed learning modalities, *M-Learning* and *E-Learning* have comparative advantages and challenges.

Electronic Learning (E-Learning). The scope and definition of *E-Learning* continues to evolve as new technologies are consistently developed. *E-Learning* refers to *electronic learning*, as it pertains to any learning that involves electronic files. In the early 2000s, *E-Learning* frequently included learning through desktop computers, laptops, CD ROMs, flash drives and physical storage. While these learning formats conceptually remain included as a part of *E-Learning*, the number of available platforms used to access information has increased dramatically. Contemporary models of *E-Learning* commonly include the use of Internet access as the core for content, information, communication, collaboration, and networking (Borba et al., 2016; Chow & Croxton, 2017; Felix, 2005; Reyna, 2016).

While *E-learning* spans a massive overarching construct, the way that *E-Learning* is delivered can be unique. *E-Learning* often denotes learning that is done through a desktop or laptop computer and frequently involves sitting at a desk. *E-Learning* within Higher Education has become synonymous with distance learning and blended learning models (Borba et al., 2016; Felix, 2005; Vilkonis, Bakanoviene, & Turskiene, 2013).

Mobile Learning (M-Learning). In simplest terms, *mobile learning (M-Learning)* is defined as learning through portable devices, such as tablets or smart phones. Similar in premise to social media, portable devices can be used for varied purposes, from mere entertainment consumption to curation of engaged learning communities. Earlier terms for *M-Learning* include *ubiquitous learning* and *seamless learning*, meaning that learning is available everywhere and all of the time. This modality encourages learning outside of the four walls of a traditional classroom. Conceptually, M-Learning is technically a type of *E-Learning*, as *M-Learning* is based off of electronic files and often the Internet (Cochrane, 2011; García & Fombona, 2015; Keskin & Kuzu, 2015; Lindsay, 2016; Ozuorcun & Tabak, 2012; Park, 2011; Tseng, Tang, & Morris, 2016). And yet, *M-Learning* possesses different characteristic than *E-Learning*, as illustrated in *Figure 3*. As Marín et al. (2016) share, “Much of the research on the use of mobile devices for learning has been conducted either in formal or informal learning environments, but not much research has been done on bridging these two environments” (Marín et al., 2016, p. 278). As *M-Learning* becomes an emergent force within higher education, its purpose, design and effectiveness deserve to be measured.

Comparison of E-Learning and M-Learning. While the terms *E-Learning* and *M-Learning* have been used interchangeably, the two constructs are significantly different in their mode of purpose, delivery, and functionality. In order to properly compare commonalities and differences, it is necessary to comprehensively define *E-Learning* and *M-Learning* terms (see *Figure 3*).

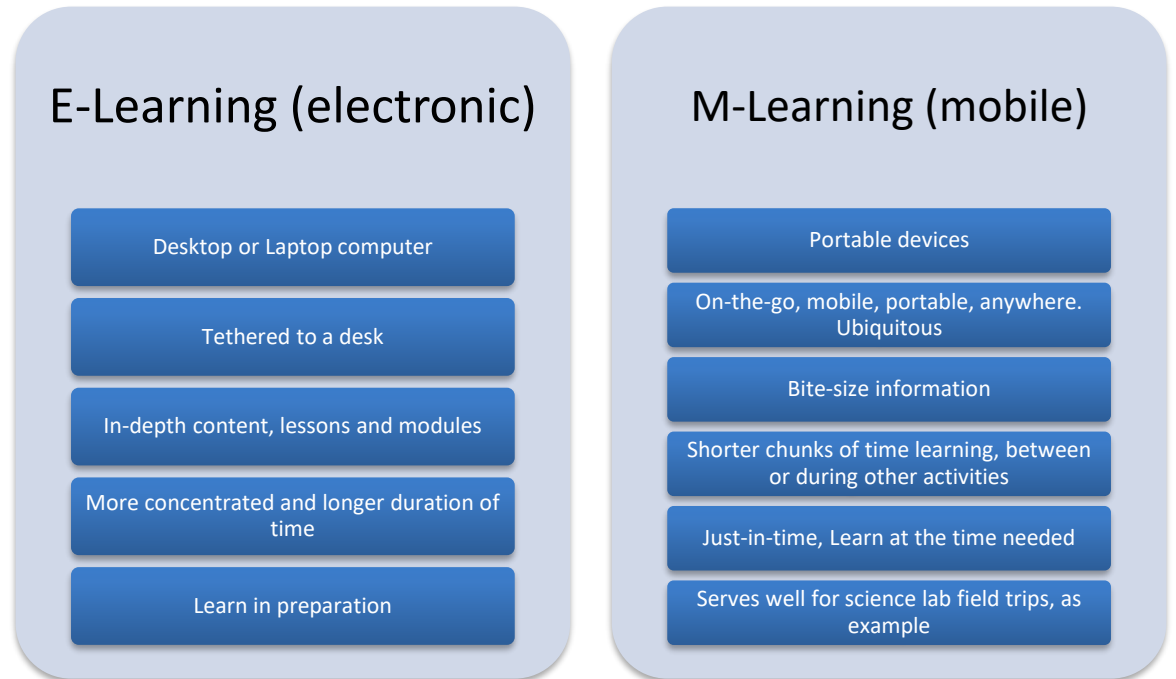


Figure 3. E-Learning and M-Learning Analysis. Adapted from ({Lindsay, 2016 #255;Ordóñez de Pablos, 2015 #267;Kim, 2013 #258;Ozuorcun, 2012 #262})

Essentially, the main categorical differences between *E-Learning* and *M-Learning* are the information itself and how it is delivered. As noted earlier, *E-Learning* refers to *electronic learning*, and *M-Learning (mobile learning)* is technically a type of electronic learning. Pointedly, *M-Learning* is not merely *E-Learning* while on a mobile device. Consider how learners use desktop computers, online classes, and *E-Learning* environments; course lessons and modules can be delivered with lengthy content. For the learner, scrolling through complex information is a part of the *E-Learning* environment. This often allows for more depth in course material, but also can restrict the learner who is tethered to a desk. *Mobile learning* is appropriately coined, as it is portable and can be used for learning “on the go.” *M-Learning* provides advantages in cases where learning coincides with lessons that are outside of the walls of a classroom or office. As an example,

an on-site science field lab provides opportunity to refer to information, track information, and share information from mobile devices while learning in an engaged community, simultaneously. Typically, *M-Learning* embodies shorter lessons and chunks of information (Nedungadi & Raman, 2012). Technically speaking, mobile apps and content do not require as much scrolling for the learner. How *M-Learning* is used – often during shorter bursts of time, during other activities and other distractions – provides its own set of advantages and challenges as outlined in the next section (Nedungadi & Raman, 2012; Ordóñez de Pablos, Tennyson, & Lytras, 2015; Park, 2011; Squires, 2014).

Learning outcomes and instructional design necessitate an analysis of the delivery method platforms between *M-Learning* and *E-Learning*. Given that *E-Learning* is often delivered on desktop and laptop computers, instructional design is geared towards large screens and a more static environment, whereas *M-Learning* is designed for a small screen and two-way or multi-level responsive environments. *E-Learning* design lends itself towards detailed information, screen space for large graphics, and more media interactivity for videos and large bandwidth content. Design for *M-Learning* environments requires smaller chunks of information to accommodate smaller screens, the premise of one main idea per screen, and large buttons with simple navigation (Abik, Ajhoun, & Ensias, 2012; García & Fombona, 2015; Lindsay, 2016; Squires, 2014). *M-Learning* often integrates interactive features, where the learner chooses responsive selections and can participate socially with others in self-elected networked mobile devices (Lindsay, 2016; Ozuorcun & Tabak, 2012; Park, 2011).

In terms of instructional design considerations, the typical time duration for working within *M-Learning* and *E-Learning* environments also differs significantly. *E-Learning* offers greater capabilities for lengthier content, so the time involved with online course work, and more detailed content, corresponds with more concentrated time in front of the *E-Learning* screen. Conversely, *M-Learning* promotes shorter spans of time, in the midst of or broken up by other activities. With the *M-Learning* screen being smaller and with smaller chunks of content, the corresponding time duration in an *M-Learning* environment is typically shorter than that of an *E-Learning* environment (Keskin & Kuzu, 2015; Kim, Kim, & Han, 2013; Nedungadi & Raman, 2012).

Whether observing *E-Learning* or *M-Learning* environments, the collective issue of resource disparity applies. Winters (2013) expresses, “If mobile learning is to work across the formal and informal sectors, the complexities of the lives of those in marginalized communities must be given very focused consideration” (Winters, 2013, p. 487). As relevant research encourages, *M-Learning* has the potential to bridge technological resource disparity, because it benefits from the use of shared mobile devices, which are less costly than entire computer systems. Fractus (2016) extends, “a mobile learning device like a single tablet, which may be passed easily from hand-to-hand or shared amongst a group of students, is a great way to ensure that pupils are still able to benefit from the diverse opportunities presented by education technology” (Fractus, 2016, p 1). The prevalent 1:1 model or Bring Your Own Device (BYOD) models address the issue of access to technological resources, and continually prompt, “Is

technology furthering an achievement gap, between those that have technological resources and those who do not?” (Fractus, 2016, p 1).

The topic of accessibility accommodations also applies to *E-Learning* and *M-Learning*, but each platform has different attributes, advantages, and disadvantages. As *E-Learning* has matured over the past decade, so have the standards for compliance with the American with Disabilities Act (ADA). Conversely, *M-Learning* is growing and expanding at such a rate, that ADA compliance and app development do not always account for necessary accommodations. Yet *M-Learning* proponents argue that mobile devices inherently have increased functionality compared to desktops, which extend usability aligning with universal design and the ADA. Standen (2014) shares that mobile devices aid significantly in accessibility and promote learning and communication for those with disabilities, thus enabling students with severe communication disorders to participate in learning alongside their non-disabled peers in an inclusive environment.

E-Learning Study in Higher Education. In further exploration of *E-Learning* and *M-Learning* in Higher Education, review of two relevant case studies proves purposeful. While ample *E-Learning* research is available for literature review, *M-Learning* is not as established and a gap in the literature exists. An exemplary qualitative *E-Learning* study conducted by Jackling, Natoli, Siddique, and Sciulli (2015) examines the perceived experience of reflective and collaborative learning in an *E-Learning* environment through blogging. Speaking to the Social Constructionist approach, *E-Learning*, and collaboration, the researchers establish, “Over the last two decades, research has shown that group work tends to improve the overall quality of student learning” (Jackling et al.,

2015, p. 542), and furthered, “blogs are effective in providing a suitable social networking interface for effective collaboration and evaluation” (Jackling et al., 2015, p. 543). This study sought to examine student reflection of collaboration and overall experience in the *E-Learning* mixed-methods case study. Although the study focused specifically on blogging in an *E-Learning* environment and used quantitative methods, it is highly reflective of an *E-Learning* study in higher education that uses a form of social media as learning in a collaborative environment. This direct connection between EdChats and E-Learning occurs as many educators access Twitter via TweetDeck on their laptops. Relevant to this study, Jackling’s (2015) first research question asks, “Does the use of e-learning (blogs) in an assessment task facilitate reflection as part of collaborative learning?” (p.545). This question bears relevance as it connects social constructivist collaborative learning with the constructivist individual reflections on experiences, which is similar to what I seek to discover in my study.

Findings of this study indicate that the *E-Learning* tool requires comprehensive evaluation to align with course learning outcomes. Jackling et al. (2015) share “a collaborative *E-Learning* tool that was designed through consultation with various support staff including an education developer and E-Learning consultant, to ensure the assessment task addressed appropriate learning outcomes, yet catered for the differences in background of students” (Jackling et al., 2015, p. 552). Additionally, this study is relevant as it drew out an unexpected trend and reported the importance of technological training and support for the actual E-Learning tool itself. In seminal educational technology models, content and technology work together to curate an effective learning

environment. In order to do this, full understanding of the technological tool provided is critical. In this particular study, students were asked to participate in an E-Learning collaborative environment using a blogging space, so a working knowledge and skill-set of blogging as a technology is necessary. As the researcher for an *E-Learning* and *M-Learning* study, I found this particular study extremely helpful in showcasing a Social Constructionist approach in an *E-Learning* collaborative learning environment, which utilized a different *E-Learning* tool (blogging). Review of this empirical study proved exemplar, with deep parallels to my study, as it examined the *perceived experience* of *reflective* and *collaborative learning* in an E-Learning environment through blogging. The study in focus is similar in purpose, yet it differs in that it examines the experiences in collaborative learning of a Twitter-based Teacher Education PLN. A mere change of platforms provides significant distinction between the studies. Arguably, Twitter PLNs use a different platform, communications are different, modes of access are different, and facilitation styles are different.

M-Learning Study in Higher Education. Equally relevant to the teacher education Twitter-based PLN *E-Learning* and *M-Learning* study, Ekanayake and Wishart (2015) contribute valuable literature to the study of teacher education, professional development, and *M-Learning* in one qualitative case study. Their keystone research provides salient implications that contribute to the increasing body of *M-Learning* literature. The purpose of the researchers' study was to evaluate the teachers' experience and attitude towards the use of mobile devices within a professional development context. Their purpose was two-fold, as the intent was to (1) teach teachers to use *M-Learning* technology as a

platform for their own professional development, while also to (2) provide the meta-cognitive prompt and modeling of mirrored *M-Learning* for their students' learning environments. The study was centered upon a 3-day teacher education planning workshop and provided a blended model of face-to-face PD with M-Learning "outside" of the classroom as an extension. Although conducted in Sri Lanka, the study appears to parallel with many of the same constructs contextually within higher education *M-Learning* in the United States. The underlying theme of this study promotes a meta-cognitive analysis in teacher education: "The important role of the teacher's pedagogical knowledge and actions in using technology in a lesson in achieving the desired outcomes is highlighted" (Ekanayake & Wishart, 2015, p. 175). The researchers sought to answer how *M-Learning* can enhance PD in teacher education, and how hands-on knowledge of the actual technology and *M-Learning* environment proves invaluable. The researchers introduce the term information and communication technology (ICT) as an operational definition of pertinent mobile devices used for learning. Arguably most relevant, the findings of this study indicated that teacher participants found value in mirrored *M-Learning* environments, as coded themes reveal that 64 of 186 participants reported "experience gained in the hands-on screen helped them to understand the potential of integrating mobile phones in lesson planning and implementation" (Ekanayake & Wishart, 2015, p. 183). Of additional relevance to social constructionism, *M-Learning*, teacher education, professional development, and collaboration, "shared supported developing skills" emerged as a prevalent theme. As the researcher of a Social Constructionist *M-Learning* teacher education study, I found this study significant in

alignment of purpose (examining experience) and content (learning in an online learning environment).

Through analysis of the provided *E-Learning* and *M-Learning* studies, I discovered that *M-Learning* not only differs in *how* the learning network is accessed (what equipment is used), but in turn it also determines the type of learning content. Highlighting this *M-Learning* study demonstrates how bite-size micro-blogged chunked information and resources are delivered through mobile devices. In comparison of these two *E-Learning* and *M-Learning* studies, I find that my study differs significantly in that Twitter utilizes both *E-Learning* and *M-Learning*, to access the same network. Researching relevant *M-Learning* studies proves purposeful as it informs my intention to study a unique network harnessing both *E-Learning* and *M-learning*. *M-Learning* has been touted as a vehicle for Just in Time teaching and is frequently used as the framework of contemporary PLNs today (whether exclusively online, or a hybrid model of face-to-face, with pre-conference and post-conference learning). After preliminary review, I found the researchers' discovery that *M-Learning* served as an extension of the professional development as highly pertinent.

Chapter Two Summary

Vygotsky's (1978) theories are exhibited today in technologies that did not exist when he boldly asserted that we learn from each other, collectively, collaboratively, through shared perspectives and learning groups. Contemporary Professional Learning Networks use social media platforms once considered merely for entertainment and

consumption. While the core of #MTEdChat is Social Constructionist in nature, this study seeks to examine the individual participants' learning experience from a Constructivist's approach. What are the individual educator's learning experiences in Professional Development as a participant of #MTEdChat? How is that teacher using these learned experiences as applications in their own classrooms?

Through examination of Social Constructionist constructs of this study, funneled down from the Garrison et al. (2000) Community of Inquiry model (social presence, cognitive presence, and teacher presence), to Professional Development and Professional Learning Networks (PLN)s, to social media, and Twitter, it is apparent that each of these constructs is representative of an innovative collaborative learning model that is deeply characteristic of Social Constructionism.

Established literature exists for each of these constructs, yet there remains a gap in understanding of where they intersect. This study serves to examine how effective Teacher EdChat PLNs are in a new Professional Development model and in their practical application.

CHAPTER THREE

METHODOLOGY

Method

This study is framed from a constructivist philosophical stance and utilizes a Hermeneutic phenomenological approach in conjunction with the Community of Inquiry theoretical model. Through this study, I seek to discover, (1) What are the participants' experiences in #MTedChat? (2) What are the different roles that participants assume within #MTedChat and how do these shape their learning experiences? (3) What experiences do the participants in #MTedChat bring to their professional practice?

As the major construct of *experience* is at the core of this study, a phenomenological approach aligns well. What is lived experience? Van Manen (1990) answers, "our immediate, pre-reflective consciousness of life: a reflexive or self-given awareness which is, as awareness, unaware of itself" (p.35). This study is based on a phenomenological philosophy and phenomenological approach as it seeks to discover the *lived experience* of the participants. Given the inherent intention in examining the *learning experience of the educator participants*, a phenomenological study aligns accordingly (Giorgi, 2009; Van Manen, 1990). Creswell (2013) furthers that phenomenology studies *lived experience*, and its purpose is to "reduce individual experiences with a phenomenon to a description of the universal essence" (p. 76). Savin-Baden (2012) furthers that phenomenologists study structures of consciousness and lived experience by the person first hand.

Variations of phenomenology were developed by two seminal theorists, Edmund Husserl and Martin Heidegger. Edmund Husserl is recognized as the father of phenomenology. While the two shared many theoretical commonalities, they differed distinctly in positionality. Husserl's school of phenomenological theory is referred to as *transcendental* and one of the most significant comparisons is his focus on bracketing. Husserl asserts that researchers must "bracket" or separate their biases entirely from the study, subject, and object. Conversely, Heidegger expounds that as practitioners, we can never fully remove ourselves from the environment, experience, or study and therefore our biases remain. Heidegger extends that the researcher can actually use pre-existing information to help direct the study, aiding in data collection and findings.

The Hermeneutic Phenomenological approach also aligns as it often is utilized in teaching and learning settings and works in collaborative spaces. The Community of Inquiry framework coupled with the Hermeneutic approach allows for the addition of theoretical constructs, recognizes pre-existing understanding, and permits theory construction. This Hermeneutic Phenomenological approach facilitates in-depth interviews, which aim to discover rich findings of educators' lived learning experiences participating in #MTEdChat .

Role of the Researcher

Heidegger (1978), as the father of hermeneutic phenomenology, shares that we cannot truly bracket ourselves as the researcher. He asserts that it is impossible to set aside our own biases and lens. Highly interpretive in nature, Heidegger shares that researchers aim to identify their positionality, reflexivity, perspectives and biases,

throughout every stage of the research (Tufford and Newman, 2012). From that theory, I seek to identify and disclose my biases and perspectives as I hold the role of a co-researcher in this study. Data collected, analyzed, and interpreted will be received with this understanding that it is through my filtered perspective as a researcher. As the researcher, I will be an instrument of the study, in addition to the interviews, observations and document collection (Van Manen, 1990, 2014).

Day (2012) expounds that examination of reflexivity provides “important challenges in terms of the complex issues of power, knowledge production and subjectivity” (p. 60). To describe potential influences as the researcher, I am a white Caucasian forty-eight-year-old heterosexual cisgender middle-class socioeconomic status woman. I come from a point of privilege and opportunity based on my background. My background and bias lean towards advocating for education and likely being an early adaptor of technology. Not as a generalization, but given my age, I am less likely to adopt new technologies as easily as younger generations who are “digital natives” and have grown up with technologies (Zawacki-Richter, Müskens, Krause, Alturki, & Aldraiweesh, 2015). As an example, I first took a typing class in high school that was on a typewriter, whereas I recently taught keyboarding to middle school students who had previously taught themselves keyboarding on screens in elementary school. Early adoption of technology tends to follow our age, and the probability of technological exposure associated therein.

As the researcher, I come from a background of digital learning since 1999. Through my career experience and educational program of study, I have found my

passion where education and technology intersect. Evident in ever-changing technologies, digital learning has changed dramatically over the past two decades. While I aim to stay objective towards the advantages and challenges of technology, I have a biased lens based on my previous experience. My instinctive beliefs about #MTEdChat and Twitter-Based EdChats lean towards an inclination to curiosity and effective learning spaces. When I first learned of Twitter EdChats, I immediately wanted to learn more and my assumptions led me to conjure an effective collaborative learning space.

My inherent bias is deeply connected to my view of technology as an effective tool in educational environments. In evaluation of my technological experience, I would likely be considered a “Technology Enthusiast.” As Collins and Halverson (2009) describe, “enthusiasts believe that technology customization offers great capabilities to enhance people’s learning” (Collins & Halverson, 2009, p. 17). As educators, we do not typically embody solely one area of designations; it is more likely we identify with characteristics of each. Depending on the project or environment, we may vacillate on the continuum of technology adoption, whether resistant or an early adopter. As the researcher and a visiting member of #MTEdChat, I am considered an insider of the participants’ group and a co-researcher based off of Hermeneutic criterion. Therefore, the research was influenced by Heidegger’s (1978) seminal understanding that our subjective perspectives cannot be suspended. This study does not adhere to Husserl (1931) transcendental properties of bracketing, epoché or phenomenological reduction. As Stake (2010) aptly describes, “Humans are the researchers. Humans are the interpreters, among them the readers of our reports” (p.36). In other words, as the researcher I am also

considered an instrument, as all data is designed, collected, and analyzed through my subjective lens. With that responsibility and representation, it proves critical to continually seek to identify my biases throughout the entire span of the study (Van Manen, 1990, 2014). As an ongoing analysis, I practiced the process of reflexivity throughout the study as described in the section on credibility below.

Context for the Study

The context of this study is comprised primarily of situational and proximal factors. Through the use of technology, a non-traditional online learning group was created. #MTEdChat is a Teacher Education Twitter-based EdChat, which exists through a shared virtual space and is not bound by geographical proximity or brick-and-mortar facilities. By logging into Twitter and locating #MTEdChat, more than 118 educators (primarily in-service teachers) have access to shared perspectives, questions, and resources from other teachers. Their purpose in participating in #MTEdChat and similar EdChats is to further their own Professional Development and better their teaching practices.

Specific tools are necessary for #MTEdChat participants, as educators require Internet access through a mobile device (such as a tablet or smart phone with a browser or Twitter app) or through a laptop or desktop computer with the same Internet and browser requirement. Teachers accessing via laptop or desktop computer may possibly use Tweetdeck, a software dashboard which indexes, organizes, and displays multiple groups and digital conversations all at once. As defined in Chapter 2, #MTEdChat and similar Twitter-based PLNs utilize both E-Learning and M-Learning, depending on how

the group is accessed (whether through computer or mobile device). #MTedChat participants log in to Twitter through a free individual account that they create, and access twitter.com through a browser or through a downloadable application. Typing #MTedChat in the “Search” area of Twitter opens a listing of all posts and communications within that virtual space. Posts are default sorted, with the most recent posts and communications listed first. When crafting a post, the user must include the #MTedChat within each post, in order for it to be indexed to the #MTedChat. Additional tagging is attributed to further sort and organize #MTedChat content. As an example, if I were going to post about a STEM lesson, I would include #MTedChat and #STEM. Similarly, if I were to post about Indian Education for All (IEFA), I would include #MTedChat and #IEFA. This provides context for the reader at the time of reading, whether synchronously or asynchronously, and it also provides an archived indexing of content that can be easily accessed at any time. Specific to #MTedChat and EdChats, facilitators prompt their question with the letter Q and a number, while participants respond with A for answer and the corresponding number. This helps facilitate and manage the questions and answers for the participants as they respond and prompt discourse.

Contextually, the fact that educators are meeting synchronously helps shape the learning space and learning experience, as compared to educators communicating asynchronously at various times. Although not a physical space, the synchronous attribute does bring educators together as a proximal group.

#MTEdChat group meets synchronously Tuesday nights during the school year from 8:00 p.m to 9:00 p.m. Geographically, educator participants are primarily from Montana, but without restrictions on who can join. The group is comprised of pre-service teachers, practicing teachers, and veteran teachers, and they come from all disciplines, including principals and administrators. According to one of the #MTEdChat facilitators: “I would say the last two years has added about 100 more who participate intermittently. In 2018 we had 118 regular participants. There are many who are only use it when they are at conferences... Some of them start really strong at the beginning of the year, and during school breaks. There are probably 50 core colleagues that are consistent across all of the years since we began” (C. Anderson, personal communication, April 26, 2020). While #MTEdChat does not fit the traditional model of a learning space, it does serve as a viable context for an innovative Professional Development learning space.

Sample and Sampling Procedures

The population for this study is comprised of 118 educator members of #MTEdChat. I received permission to sample the PLN group from the group creators, Crista Anderson and Jessica Anderson. My objective in this purposive heterogeneous sampling was both to obtain a representative sample, but also to attain willing participants. Gobo (2004) shares that one of the advantages of purposive sampling is, “for certain characteristics or cases within a wide range of situations in order to maximize variation” (p.448). The sample for this study was purposively selected from the #MTEdChat group of 118 members comprised of K-12 in-service teachers, coaches, and administrators, primarily in the Montana area, who are not limited to, or selected by, one

content discipline. In light of the study's intent to examine continued professional development for in-service teachers, this representative sampling will draw in-service teachers, pre-service teachers, and administrators as participants. Furthermore, this sampling drew from rural frontier regions in order to represent a population that may be underrepresented in traditional professional development models due to accessibility challenges. My rationale in this sampling design was to pull rich data. I selected ten participants derived from initial prospective responses. I began by considering first respondents; after increasing recruitment more assertively, I applied purposively selecting criteria from the following to diversify the sample:

- (1) respondents who are an in-service or pre-service K12 educator: teacher, principal, coach, or school administrator
- (2) respondents who have participated in #MTEdChat one time or more.

To invite participants, I posted a notification on Twitter to the #MTEdChat group asking for volunteers. This announcement fit within 280 characters and linked to more information within a digital recruitment flyer. I began by posting this general announcement at the beginning and end of the #MTEdChat meeting, and I found the moderator's introduction and encouragement helpful. I included all of my contact information. Based on the responses, I then sent an email invitation to the volunteers that included pertinent IRB approval, IRB Consent form, phenomenological study details, and secure Zoom video conferencing details.

Demographics and Sampling Criteria

Ten participants were sampled for this study, $n = 10$. Illuminating my preconceived biases, I discovered that the planned sampling criteria would have created unanticipated barriers that would not accurately represent the #MTEdChat population. It quickly became beneficial to modify the IRB participant criteria to become more representative of the sampling group itself. The initial sampling criteria called for the participants to be: (1) an in-service teacher, (2) a teacher in role, and 3) geographically located in Montana. Through initial correspondence with potential participants, and in initial interviews, I found these bounds limiting. The purpose behind said criteria was to focus on the experiences of teachers, and the application of practice back in their classroom. I quickly identified the limitations in my bias and requested modifications to the IRB criteria. As an example, in the first interviews, RBG (participants are represented by coded initials) shared that as a veteran teacher, she appreciated the voices of the pre-service teachers and benefited from their presence in #MTEdChat. Seemingly a snowball effect, subsequent participants also referenced other participants of my study, whether as motivators to join #MTEdChat, or connections through PBS educators, or in shared resources. Through these interwoven network connections, snowballed connections allowed me to interview AME, a superintendent of a large western school district serving approximately 9,200 students. This proved to be an unexpected discovery for two reasons. I quickly had access to a superintendent via a tweet post, without barriers. Secondly, it soon became apparent through interviews that not only did AME provide motivation for teachers to join, he also benefitted in application of his practice. Through #MTEdChat, he had the opportunity to listen to the teacher perspective, stay abreast of

classroom trends, and keep in touch with the “teacher pulse.” Lastly, I found that my geographic focus on Montana residents proved limiting, and contrary to the geographical reach of #MTedChat, which participants cited as a benefit and reoccurring theme of the PLN. I found these unexpected discoveries at the onset of the study riveting, and they prompted an interesting self-reflection of biases.

While study participants homogenously are all considered educators, they provided identifiable diversity in the demographic questions asked, which surveyed: *age, identified gender, geographic location, years teaching, years participating in #MTedChat, grade teaching, and educational discipline.*

Collecting participants’ ages provided a diverse snapshot of ages ranging from 23-years-old to 70 years-old. Although this diversity of ages was not purposefully targeted, this information provided useful, as it further demonstrates that learning from others is not dictated by age, gender, years of service, geographical location, or discipline. Ages reported respectively as: 23, 32, 33, 34, 41, 43, 49, 49, 58, and 70. This data is represented by an average of 43.2-years-old and a median of 42. Reported identified genders consisted of six females and four males. Collecting gender information provided a context, without observable differences in findings.

As educators, five of the participants are not classroom teachers; of these, four are coaches and one is a superintendent. One participant is a pre-service teacher, in his practicum. The remaining five participants are all serving in the role of classroom teachers. Educator experience ranged from 0 years for the pre-service teacher, to a veteran with 49 years of experience in teaching and coaching. Participants shared various

motivators to first join in #MTedChat. One participant shared that she was personally motivated to join #MTedChat during her time working on her Master of Education. She immediately appreciated the intimacy of #MTedChat, because it felt like the small country teaching environment to which she is accustomed. Another participant shared that she was motivated after moving away from an established network at her previous school district that she missed. She immediately found #MTedChat validating and easy to participate in from home. Some findings were particularly telling and foreshadowed subsequent findings. For example, some participants were inspired by personal relationships; specifically, three participants revealed that they were motivated to join #MTedChat by another study participant. These glimpses of the network web were revealed prior to discovery of emergent themes.

Geographically, of the ten participants, eight were located in Montana; the other two participants represented Seattle, Washington and Stettler, Alberta, Canada). To further delineate beyond Montana and non-Montana residents, I compared regions and their respective classifications. Varying demographics were identified first by the classifications of the U.S. Census Bureau (2020): Rural represents populations under 2,500; Urban Clusters (UC) represent populations 2,500-49,999; and Urbanized Areas (UA) represent populations of 50,000 or greater. Secondly, the geographical location was then applied to the *Rural Education in America* guidelines provided by the National Center for Education Statistics (NCES) (2020). This proximal demographic categorization proved purposeful as it directly pertains to K-12 educators in the United States. Of additional benefit, the guidelines quantify the populations into smaller

measurements, providing greater distinction between regions (e.g. Missoula, Montana and Seattle, Washington are both considered urbanized areas according to the U.S. Census, whereas the NCES differentiates Seattle as a large city and Missoula as a small city). Equally important, the NCES classifications consider how close a region is to an urbanized area of 50,000 people or greater; which provides additional considerations, such as accessibility or isolation. The distance between the region and other surrounding areas is arguably influential on the participant's physical proximal location. Demographic descriptors are summarized in Table 1 and include the following highlights:

Of the ten participants' teaching locations, five are considered as Urbanized Areas, of which: three are from small cities, one from a midsize city, and one from a large city.

Three participants were from remote towns within an Urban Cluster..

Two participants lived in remote rural areas within a large U.S. Census considered Rural Areas.

Table 1: Participant Demographics

Participant	Population	US Census	IES NCFS	Yrs teaching	Yrs in #MTedChat	Grade	Discipline
RBM	51,000 +	urbanized area	small city	16 class/3 yr coach	6	Director Education of a high profile non-profit educational services organization	Tech Int, Media Literacy and SD
LSJ	290	rural	remote rural	6	6	7-12	English teacher
KFH	23,938	urban cluster	remote town	23	1	HS	Science Biology Astronomy & Forensics
PBG	318	rural	remote rural	8	1-2 yrs	within K-3 range	all areas
AME	74,428	urbanized area	small city	27	5/at start	Superintendent	
STF	3,406,000	urbanized area	large city	49	4	K12 Edu Peer Coach/Teacher Leaders	all areas
LBD	5,952	urban cluster	remote town	30	since 2009	within K-3 range	13 students in county
HFC	51,000 +	urbanized area	small city	11	4	within 4-6 range	GT/ Math Enrichment
TDB	4,261	urban cluster	remote town	0	6 mos	HS	Pre-service
BTA	109,550	urbanized area	midsize city	17	5 yrs	Tech Integrative Specialist	K-3 teachers and students

Data Collection Strategies

This study sought to gain a deeper understanding of the experiences of teachers as learners participating in a Twitter-based Teacher Education Professional Learning Network. In order to gather this reported experience, I collected data through observations within interviews and within the active learning space, recordings of video conference interviews, transcripts, tweet logs (auto-generated listing of posts, user, time and date), and document analysis. Congruent to a Hermeneutic co-researcher role, Creswell (2009) explains that phenomenological research design involves the researcher as a primary instrument in seeking participants' shared *lived experiences*.

Observations

Informed by the research of Bangert (2008), as it pertains specifically to the Community of Inquiry, this study seeks to utilize purposed assessment protocols through *observation protocols, interview protocols, and document analysis protocols*. Foundational in education research, this study utilizes primary components of the *Observation Protocol for Learning Environments (OPLE)* framework, and its *Teaching Dimensions Observation Protocol (TDOP)* for observations (Hora 2015, Boulder 2019). The OPLE is a cross-university project which stresses, "Technology-based observation protocols enable objective capture of observable teaching practices and student behaviors in a classroom environment" (p. 1). The framed intention is to capture nuanced data from observation, following a protocol specific to the research objectives of learning. This study uses selected components as relevant of the TDOP established "3 Basic Dimensions of Teaching" for observations (as further delineated in Appendix B):

Instructional Practices, Instructional Technology, and Student-Teacher Dialogue. This protocol lends well to technological driven studies and online learning environments and will align with the Twitter-based teacher Education EdChat in this study (Hora 2015, Boulder 2019).

Remote virtual observations of #MTEdChat's Tuesday night group meetings provided an initial opportunity to gather information on the environment of the group and its activities. Savin-Baden and Major (2012) expound that observation has the potential to draw invaluable data from context: "One of the hallmarks of qualitative approaches is that they involve investigation within a natural rather than controlled setting" (p. 392). Salient data can be derived from studying participants in their own natural environment. As the researcher, I conducted observations from both participant and direct stances. I took notes while observing interactions and posts from participating members during active #MTEdChat meetings. After the synchronous Tuesday night meetings, I collected activity transcripts which were accessible from Twitter for document analysis. Greenhalgh and Koehler (2017) model use of Twitter Archiving Google Sheets TAGS as an effective form of Twitter data collection. Based on their empirical experience, I used TAGS to collect tweets and retweets using the supplied hashtags (#MTEdChat), along with metadata such as usernames and timestamps. Additionally, I observed interactions, behaviors, facial responses, and non-verbal cues during interviews:(1) observations during individual interviews and (2) observations within the active synchronous Tuesday night EdChat meeting.

Interviews

By asking the sample participants pertinent questions concerning their school system, demographics and settings, the study findings have the potential to provide additional transferability options in future applications. Thick descriptors which delineate the teachers' school size and demographics provides purposeful. As part of the sampling selection process, the educators were asked about their school setting: what content area they teach, which grades, how long they have been teaching, and how long they have participated in #MTEdChat. By gathering as much information on the teacher participants as possible, we aim to increase transferability options for future application. In-depth semi-structured interviews were conducted with the ten selected participants. Interviews were conducted in a recorded Zoom Video conference environment for a duration of 50-60 minutes. Preliminary analysis of Zoom settings for research level security were studied and followed. I created a separate individual private link with password protection for each of the ten interviews. An interview protocol was used to maintain consistency with each of the ten participants. While a level of consistency is required, the phenomenological approach often uses a semi-structured interview protocol, so that the researcher is not leading or forcing the direction and flow of the interviews. Trainor and Graue (2013) describe semi-structured interview as a dynamic exchange of ideas based on researchers' open-ended questions on areas of interest, with probes that are designed to elicit details and explanations (p. 126). The semi-structured interviews will be informal in conversational tone but will not stray from the scope of the interview questions and will be open enough to encourage any unanticipated emergent themes. As the researcher, I tried to guard against using leading verbal or non-verbal cues, in order to

avoid affirming or negating reactionary responses, while also striving to systematically work through the Interview Protocol. As delineated in the table of research questions below, and listed in the Interview Protocol, found in Appendix C, the intentioned questions aimed to elicit the EdChat participants' reported experience, their differentiating roles, and their reported application.

I recorded the face-to-face interviews utilizing the internal video recording option within Zoom Business software, and I notified the interviewees that I was doing so. Through Zoom, I utilized a paid business account in order to enable secure cloud recording and Audio Transcribe functions. I conducted additional observations throughout the span of the individual in-depth interviews, and I documented any non-verbal responses or additional information.

Table 2. Qualitative interview questions.

Research Question	Interview Questions
Research Question 1: What are the participants' experiences in #MTedChat?	IQ1: Tell me about your overall learning experience within the teacher education Twitter PLN group. IQ2: Tell me about any benefits. IQ3: Tell me about any challenges. IQ4: Tell me about the learning community and how you all interact. IQ5: Tell me about how you learn from each other. IQ6: How has the platform facilitated or hindered your learning? IQ7: What do you perceive as benefits of the EdChat setting? IQ8: What do you see as the limitation? IQ9: What motivated you to join this PLN?
Research Question 2: What are the different roles that participants assume within #MTedChat and how do these	2Q1: What are the different roles you assume in the EdChat? 2Q2: In what ways do you help other teachers learn? 2Q3: In what ways do other teachers help you learn? 2Q4: How do you learn together?

shape their learning experiences?	
Research Question 3: What experiences do the participants in #MTedChat bring to their professional practice?	3Q1: How has your practice been shaped by participating in #MTEDCHAT? Possible follow-up prompts: Can you give me an example of that? Tell me about any resources that you have taken away from the group. How did this new resource affect your teaching? Tell me about any teaching practices that you have learned from the group. How did this new teaching practice(s) affect your teaching? 3Q2: Tell me about any varied perspectives that you have learned from the group. 3Q3: How did this new varied perspective affect your teaching?

Data Analysis Strategies

I chose a Hermeneutical analysis to align with the intent of a phenomenological study. Initially, I considered a thematic analysis as it also aligns in its guard against pre-conceived concepts, which allows use of the researcher's intuition during the process to help guide the data analysis. While thematic analysis also seemed appropriate for this study, Hermeneutic analysis continues the consistent thread woven through a phenomenological approach, from research questions, through data collection and analysis, and ultimately through representation. Savin-Baden and Major (2012) describe the Hermeneutic analysis purpose as an Interpretive Phenomenological Analysis (IPA), "to interpret the general meaning in the context which it occurs" (p.442). As the researcher, I sought to study the lived experiences of the K-12 teachers within their #MTedChat environment. This approach encompassed my interpretive co-researcher

role aligning with social constructionism, yet also deeply emphasized the focus of the participants' lived learning experiences (Savin-Baden & Major, 2012).

Bazeley (2013) shares that often our representation as qualitative researchers can lack beyond delivery of participants' relayed quoted themes. The researcher extends the importance of representing the data in a visual or narrative way which values the participants' stories and lived experiences. In addition, transitioning the data from raw verbatim text to visual representation extends the understanding for the researcher. Bazeley asserts, "In displaying data, the researcher moves from describing to explaining, through a 'ladder of abstraction'" (p. 9). For this study, it was my primary aim to cohesively share findings in a manner that is interesting for the participants and future readers, in addition to extending my own understanding of the findings. As a researcher, this is my responsibility in sharing participants' stories, with the purpose to ultimately improve educator learning in Professional Development.

I used *Nvivo 12 Mac by QSR International* for my audit trail, analytical memos and tracking, and methodological tracking. Among the tools that I selected, I utilized Nodes functionality for data buckets, project logs, project maps, hierarchies, and analytical memos. I recorded my reflexive journaling within *Nvivo Memos* and through a physical notebook which I locked in a file cabinet. I used a reflexive journal for the purpose of transparency, and to reflect on potential bias, examining my reflexivity. Of significance, the auto-coding options proved to be notably beneficial in data management organization and time efficiency. The software provided strong tracking and

organizational capabilities that span each stage of research, including the literature review and beneficial reference software synchronization.

Table 3. Categories and subcategories identified.

Meta theme: Learning Communities

Theme	Sub themes
Interpersonal	Community and foundational support • Encouragement • Trust • Personal • Reciprocity, Roles & Equity
Intrapersonal	Inquiry based learning & Problem Solving Perspectives • Edu variables • Varied Geography
Social Capital	Reflection Resources • Articles, Journals, Current educational trends, Technology, Educational Practice, Others to follow
	Outside/extended network Just-in-time & archived
Access (as it applies to all three themes above)	

While *prefigured codes* were considered in potential specific labeling of the three Community of Inquiry constructs (*social presence*, *cognitive presence* and *teacher presence*), it was determined that emergent codes should be allowed to reveal themselves; therefore, open emergent coding labels was used until emergent themes were discovered. An additional concern with solely using *prefigured codes* is that participants may not be

familiar with the specific *in vivo codes* or exact language of the Community of Inquiry model.

As the process continued and later funneled, axial coding proved useful in extension of initial codes to provide connections between concepts and causal relationships (Savin-Baden & Major, 2012). I quickly discovered in metacognitive reflection how use of broad codes proved more useful than narrow codes. As an example, I initially began categorizing nodes under “TweetDeck software,” yet I found that there was a broader, overarching emergent theme of “Technology.” I also found significant overlap between themes, so it was helpful to be able to identify a code as more than one category (e.g. “Perspectives” and “Geographic proximity” were analyzed individually and relationally). Additionally, I discovered that I needed to analyze the codes more broadly and holistically until I began to identify notable patterns. As an additional example, I was drawn to one participant’s share that focused on #MTEdChat and change agency. The participant’s share was relevant, but not on a wider scale and did not connect underneath other saturated discoveries. Miles and Huberman (1988) extend how data is funneled during data reduction, which is relevant to this study specifically:

What orienting ideas does the researcher – even one with a strongly inductive or hermeneutical bend- bring to the inquiry? We have found that making such initial frames explicit, usually in the focus of a simple graphic structure of major variables with arrows showing relationships between them, substantially aids focus. (p.232)

Creswell (2013) provides similar support, with findings that data categorization and theme conversion allow the researcher to interpret and make meaning from the data. While coding classifies the data into smaller groupings of information, interpretation of the coding and classifications applies it to a larger context and understanding. Often, the

researcher finds value in crafting a visual representation of the data, such as a comparison chart or hierarchical tree. Hsieh and Shannon (2005) extend that through qualitative research, the researcher is not only evaluating how many times a word or concept is being repeated in content analysis, but also examining how that word is being used and how it is related to other constructs and relationships. Creswell (2013) warns that qualitative researchers need to be mindful of the risk associated with reporting the actual number of times that a theme is reported, which could result in a greater weight or significance being placed on one theme over another. This could potentially favor a “lesser” factor, when the qualitative focus should be placed on the meaning of the theme. For purposes of this study, the number of coding and theme occurrences will not be reported.

Data was analyzed primarily from video conference interviews and observations. Supportive observations and review of Twitter archived chats proved purposeful. After transfer of Zoom video interview transcriptions, I imported and cleaned transcripts within Nvivo. With my guiding research questions as a frame, I began to analyze and code (“nodes” within Nvivo) the transcripts into subcategories. This process required more time than projected, as I restructured codes due to identifiable overlap.

As more codes emerged, my initial direction and plan changed. Initially led by my own preconceived biases, I expected to discover themes which focused on specific technological tools and resources, and I was surprised to discover the role that encouragement and trust played in the participants’ learning. Additionally, this study provided insight as to the value of social capital in a way that I had not anticipated.

Further categorization of themes provided an overlay of connected and interwoven themes.

As shared previously, my data design represented my bias and pre-conceived perceptions of the #MTedChat virtual learning community. I placed unnecessary bounds on the criteria based on role, geographic location, and length of teaching experience. I quickly recognized my assumptions and sought a more diverse representation, capturing a more inclusive representations of data from #MTedChat. This challenge proved insightful and unexpected, representing the true functionality of the virtual PLN

Ethical Considerations

As the researcher of this study, I gained Montana State University Institutional Review Board (IRB) Human Subject Approval. I completed my Collaborative Institutional Training Initiative (CITI) training and submitted my IRB application. The Consent Form (Appendix A) follows the IRB template and indicates: (1) the study's purpose, (2) the study is voluntary, (3) the participant can leave the study at any time, (4) there is no harm or risk associated with the study, (5) the study will hold the participant's information securely, confidentially and anonymously, and (6) there are no known benefits to the participant aside from furthering research findings that will help #MTedChat and similar PLNs.

As the researcher, my primary ethical consideration was protection of a participant's confidentiality and anonymity. As with any research study, ethical considerations and anonymity are of critical concern. Heightened with additional concerns prompted by contemporary technological tools, increased guards for anonymity

are necessary. As technology advances, the empirical studies on anonymity in the Information Age struggle to keep up. Tilley & Woodthorpe (2011) state, “the implications for anonymity in the dissemination of social research in the online environment, including the prospective longevity of web pages and potential lack of control over the way in which information is utilized by others in the public arena created via the Internet, has been little explored” (p.204). With this study as a primary example, the use of Zoom video conferencing can prompt new challenges to anonymity and security, which I designed for accordingly. As mentioned, I paid for and implemented additional Zoom research-level security, during the video conference invitation and during the interview itself, which included secure and confidential video storage on an external hard drive (password protected and encrypted), which I locked in a file cabinet daily. During times of usage and loading, I accessed the video files on my personal computer, which is stored at my home office, and for which no one else has the login password. While I had selected technologies that I use every day without additional thought, I needed to evaluate additional considerations specific to their research capabilities, limitations, security, and ethical concerns.

Through observations, interviews, and transcripts, participants needed to know that they could trust me with sensitive and confidential data. There were many areas for which I identified potential issues. In order to better our practice as educators, sharing perspectives and stories confidentially among peers becomes beneficial. During analysis of #MTEdChat, the original creator of the EdChat PLN stated that the group does not steer away from difficult topics and conversations and has shared that the EdChat covers

topics such as Common Core, limitations in practice, student challenges, classroom management, parent challenges and administrative challenges. Given that understanding, teacher participants could have been leery of confidentiality breaches in terms of potentially revealing student data, their practice, their weaknesses, and administrative information. It was imperative that I created a trusted space where educators felt that they could safely share confidential information. As the researcher, I aimed to help develop this space by explicitly stating that all information is confidential.

Authenticity, Confirmability, Trustworthiness, Credibility, and Transferability

Given Montana public schools' specific resources, the selected sampling proved to be representative of school districts who are afforded new technologies and resources at a mid-range standard. While this was purposeful in studying use of technological resources, it may limit transferability for other regions of the country that do not possess the same state funding and technological resources that Montana has possessed. Often validity concerns in qualitative studies involve sampling limitations. Gobo (2004) illuminates this contrast:

In social studies representativeness is often a practical matter, hardly ever an outcome of automatic (statistical) procedures, which are often useless (as well as difficult to implement) because in social research we look at the social significance of samples instead of a statistical logic (p.436).

Therefore, it can be difficult for qualitative samplings to represent the generalized population. Recognizing the sampling intent is often a necessary consideration in evaluation of qualitative design, and yet qualitative studies arguably focus less on validity design concerns and more on findings (Merriam, 1988). Consistent through qualitative

design, triangulation serves as a significant verification tool, as it pulls data for one phenomenon from multiple sources and formats (Patton, 2002). Specific to this study, I collected data through interviews, video recordings, observations, and document collection, for the purpose of triangulation. By interviewing a number of different participants, I increased triangulation efforts as a way to include varied perspectives of the same phenomena. Triangulation is also improved thorough a thorough literature review, which aimed to provide a foundational understanding of existing research and again, varied perspectives from peer review journals. Yin (2011) extends that utilizing triangulation assists in grounding credibility of the study.

For the purposes of this study, and specific to its interpretive approach, Morse (2016) delineates helpful design constructs as they aim to safeguard internal validity concerns. She stresses the significance of saturation within interpretive research. Morse delineates, “Saturation is more than seeking replication. Saturation links similar concepts and processes in different instances, experiences, contexts, and events” (Morse, 2016, p. 812). It was my aim in research design to reach saturation in findings, to demonstrate the validity of the discovered findings. Morse asserts that a thorough audit trail is an additional internal validity tool purposeful in interpretative studies as this. By establishing a comprehensive audit trail from the onset on the study, it provided the researcher documentation of decisions at different stages of the research study. Utilizing Nvivo from the start of this study, and my own physical notes, ensured an effective audit trail, for tracking, reporting, and documenting. As with any system, it is a beneficial best practice for the researcher to have the processes and audit trail system in place at the

onset. Additionally, analytical memos and reflective journaling provide the researcher ongoing opportunities to evaluate un-bracketed subjectivity and biases (Smith, Flowers, & Larkin, 2009).

Given that this study adopted a Hermeneutic lens and seeks saturation in findings, Morse (2016) conversely states that member-checking is not useful or validating in interpretive studies as this. Alternatively, she encourages peer review as a helpful tool throughout the research process, as a method to share interim findings and talk through decisions. Savin-Baden (2012) recommends specific reflexivity techniques, as they apply to this study: (1) keeping a field diary, (2) noting reflections that occur into a digital story, (3) writing biographical accounts, (4) drawing data maps, (5) free writing ideas, biases, and feelings of troublesomeness, and (6) using poetry or the art of creative writing to represent researcher biases (p. 90). I had not considered Savin-Baden's recommendation of *(6) using poetry or the art of creative writing to represent researcher biases*, but all other reflexivity techniques aligned with my study.

The use of thick descriptions aligns well with multiple perspectives of this Hermeneutic Phenomenological approach, while also aiding in verification. Myers (2018) shares the value in detailed descriptors which "show rather than tell," and further extends that they are, "interpretive frameworks to inform social events and actions." A significant objective in using thick description is to capture multiple meanings of an experience or phenomenon. Specific to this study, and the multiple perspectives, thick description was used and aligns well.

Chapter Three Summary

As exhibited in a Hermeneutic Phenomenological methodological approach, data design is focused on participants' lived experience. Data collection, analysis, and interpretation serve the purposeful research questions to be answered. What are the lived learning experiences of the educator participants of the #MTEdChat, Twitter-based EdChat Professional Learning Network? How are these experiences informing their practice in the classroom? Creswell (2013) disseminates a step-by-step, process-by-process, systematic phenomenological approach to data methodologies. A clear pragmatic data designed plan should progress from initial data collection, to data management and organization, to reading and rereading initial data verbatim to form initial codes, to open coding, because each stage is critical to discovering emerging themes. As Brazeley (2013) shares, we need to move beyond the quickly coined "identifying themes" to a richer understanding and connection to the data. In later stages, Creswell (2013) delineates classification of the data into codes and themes, by further explanation of developing "significant statements and grouping statements into meaningful units" (p. 190). As data analysis can trail off, Creswell wraps with critical components of interpretation and representation. The focus of data interpretation is on: (1) developing a textural description of "what happened", (2) structurally describing "how" the phenomenon was experienced, and (3) developing the "essence." In a full cyclical process, representation should serve as our core intention of research. It is our duty and responsibility to ethically and accurately share the experiences of the participants as their qualitative story tellers. However we can narrate the true "essence"

of the participants' *lived experience* through tables, figure, or discussions, it is the end result that is produced as the final synopsis of the research journey.

CHAPTER FOUR

RESULTS AND RESEARCH FINDINGS

Introduction

The purpose of this phenomenological study was to gather insights of the overall experience of #MTedChat participants. This study is framed by guiding theories from both a Social Constructionist and a Constructivist lens. This study examined the reported learning experiences from the voluntary PLN participants, and further evaluates the application to their practice as educators. This chapter serves to discuss the discovered research findings derived from the following overarching research questions:

- Research Question 1: What are the participants' experiences in #MTedChat?
- Research Question 2: What are the different roles that participants assume within #MTedChat and how do these shape their learning experiences?
- Research Question 3: What experiences do the participants in #MTedChat bring to their professional practice?

In this chapter, I outline the analytical process for how I made meaning from the data in order to better understand the professional development experiences within #MTedChat. Figure 4 displays the holistic organization of the themes that emerged from the data analysis. The overarching theme of community of learners was identified and aligns with Kilpatrick's model. To be discussed further in Chapter 5, Kilpatrick (2012)

asserts that social capital is built by groups of individuals with common goals and purpose, who work collectively to learn. The three primary themes that emerged included interpersonal, intrapersonal, and social capital. These three themes correspond to the participants' three meaning making processes of social constructionism, constructivism, and application. The themes and their meaning making systems interact with each other and are iterative as participants make sense of their experiences within the MTedChat forum. The following section presents each theme with its associated subthemes from the participants' experiences in the MtEdChat forum. Each theme is represented as a pillar of the holistic model of community of learners. A pillar is an appropriate construct as it depicts a "thing regarded as reliably providing essential support for something" (Dictionary.com). In this case, the pillars (vis-à-vis, themes) are central to the community of learners

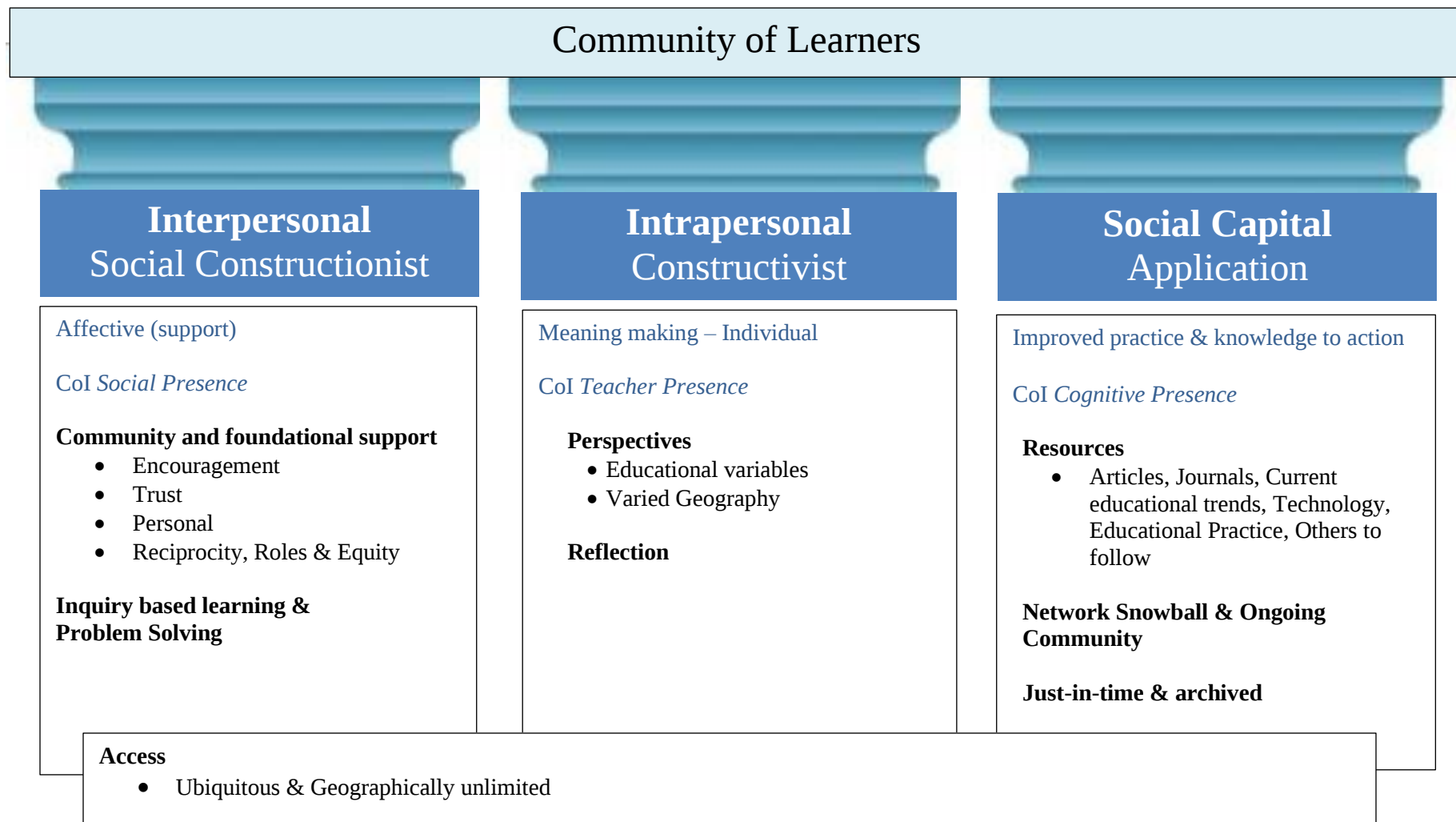


Figure 4. Graphic representation of emergent themes and subthemes: Interpersonal, Intrapersonal, and Social Capital.

Interpersonal

The first theme, interpersonal, is the initial pillar of the community of learners as noted in Figure 5 , with the following associated subthemes: Community and foundational support (Encouragement, Trust, Personal, Reciprocity, Roles & Equity), Inquiry based learning and Problem Solving.



Figure 5. Graphic representation of emergent Interpersonal themes and subthemes: Community and foundational support (Encouragement, Trust, Personal, Reciprocity, Roles & Equity), Inquiry based learning and Problem Solving

The broad theme of interpersonal was further characterized by subthemes including encouragement, trust, and personal connections. These subthemes were described by the participants in a variety of ways to communicate the different perspectives. For example, the subtheme of encouragement was characterized by common goals, sense of community, comforting, and empathetic responses. Further, the

subtheme of trust was characterized by the participants as pertaining to the ability to share honestly in curated safe spaces. All of these subthemes are important qualities to a learning community, as they result in a community grounded in reciprocity and equality.

The interpersonal theme was found to be highly representative of the literature review and social constructionism. Ever teetering between social constructionist and constructivist learning attributes, participants reported experiences which reflected both in overlap. Categorization of interpersonal included community and foundational support, as identified through encouragement, trust, reciprocity, and equitable roles. For purposes of this study, inquiry-based learning and problem solving are categorized under interpersonal and social constructionism, yet they clearly represents a constructivist underpinning as well. Scardamalia & Bereiter (2010) demystify the fluidity between social constructionism and constructivism as it applies to constructed knowledge building:

Intentionality. Most of learning is unconscious, and a constructivist view of learning does not alter this fact. However, people engaged in Knowledge Building know they are doing it and advances are purposeful.

Community knowledge. Learning is a personal matter, but Knowledge Building is done for the benefit of the community. (p.2)

While the literature review served to frame this study, an unanticipated supportive theme emerged which aligned with Kilpatrick's (2012) seminal theories. Kilpatrick's (2012) connections will be fleshed out in depth in Chapter 5; they are introduced briefly here due to their direct alignment to the interpersonal theme. The theme of interpersonal is revealed in Kilpatrick's (2012) framework through the foundational concepts of common groups and collective learning. As discovered through interviews, participants

placed significant value on the community support they received from other #MTEdChat members and they identified how this aided their learning. For PBG, #MTEdChat served as a place where a sense of community was created through shared purpose with others. These interpersonal associations provided a way for individuals to support one another's professional development. She extended that they shared a common purpose and comradery:

PBG along with feeling like you're not alone like there's so many people that are going through exactly what you're going through. We're all at different stages but at some time or other you're you've all gone through the same stage and so you're all working towards being a better professional and knowing the best ways to teach the kids

Another aspect of the interpersonal theme was the importance of social capital within the community. RBM explains a sense of community enables effective learning and ultimately lends to social capital. She extends that #MTEdChat's community thwarts feelings of isolation in practice.

RBM I've seen it as self-care and mental wellness, connecting with people like minded people *that lift you up and give you feedback, and inspire* you. I think that's been a big part. I mentioned the *isolation I felt before in my room when I stepped into this new role. I'm* the only one in my workplace that has an educational background, and who works with teachers on a regular basis. Everybody else is in TV production, PBS, so my people are still on Twitter. You know my community of practice is still out there and so being in the chat is just like stepping into a room with good friends

As PGB and RBM eloquently share, their described interpersonal experiences prevent isolation and encourage learning. This foundational construct of community ultimately lends to social capital (the third pillar shown in the emergent themes chart). When we talk about social capital it usually refers to access to resources and access to relationships. Participant shares reveal their appreciation for the access to professional relationships developed within #MTEdChat, and all the support that they provide.

Encouragement One consistent aspect of the interpersonal theme that emerged was the role that social encouragement played within the community. Teacher efficacy, support, and learning networks are all critical components of success of new teachers and veteran teachers alike. The advantages of said *encouragement* aligns with Kilpatrick (2012)'s supported assertion that social capital cultivates an environment of effective learning. Encouragement developed as a theme overwhelmingly in response. RBM and LSJ share how they connect with other educators, and how valuable this connection is to their own learning:

RBM. We are all talking in a positive way about teaching and learning. I found it to be really uplifting and motivating. And it just became something that I needed every week, was to connect with these other educators.

LSJ. It's a really good positive supportive learning environment. It's laid back casual, almost like you're hanging out with people and just talking about teaching — so it's very accessible. It's helpful just to know that there are people out there that go through similar things,

PBG shares how these relationships are trusted beyond a superficial cursory connection, and she describes how she has a core group of educators that she can turn to, beyond a mere resource share. She honestly shares that genuine support is essential in her own learning:

PBG. I'd rather learn from somebody that I know kind of has my back, rather than somebody who doesn't. So I have a few select people across the country that I am really open with. I can tell them some of the hard things I'm going through and they can help me to problem solve from there. It's not like a negative, nobody's trying to step over me and get my job.

Beyond how PBG benefits from a supportive community, she shares a reciprocal spirit as she explains how PBG in turn encourages the same community:

PBG. but I'm always posting things on my own page about new and upcoming ideas and cool things I see from other teacher platforms within Twitter and I just I feel like being the encourager and empathetic.

HFC shares an example that highlights educators understanding educators, in a "pact like" community. She provides comparative examples of how after a long day at work, her husband cannot fully understand what she has experienced that day. Even after a hard day, HFC shares that she leaves #MTEdChat rejuvenated and motivated by fellow educators:

HFC. I come home and talk to my husband, but he doesn't know. So I think one of the main benefits for me was talking to people who know. And in my last few years in the classroom, I didn't really feel like I had a team, within my grade cohort that I trusted or that I really worked well with. So it was nice to make those

connections with people beyond my school.

When I go into them, I'm feeling just tired from teaching all day, but then in the past, when I've done the chats; I always end up feeling rejuvenated and kind of inspired again. You know, sometimes it's just people understanding what you're going through.

Evident within these quotations are descriptions of encouragement as motivation, comforting, personal connections, and positive coaching. LSJ expanded on how #MTedChat has personally inspired him, fueling his passion and practice. Interestingly, note the fire analogy in his first remark, and the description of shared governance between group inspiration with self-motivation:

LSJ. It is inspiring, it's kind of like putting wood on the fire – if you own the fire.

EdChats are way more helpful than they sound like. When you first hear about Twitter EdChats, I think people probably are still laughing, but it's like an addiction a little bit. Because you are more excited about going to work on Monday and who wouldn't want that.

Highlighted as a unique response, PBG shared an anecdotal comparison between Twitter tweets and Facebook posts and varying attitudes. PBG's statement called out the salient topic that whether individuals or groups, it is important to consider how the technology is being used, in content and attitude. Often, it is not the technology platform itself, but the content, discussions, and use of technology as a *tool* to leverage learning. The tool can then be evaluated as a vehicle for consumption, entertainment, learning, creating, or connecting. Of additional relevance, PBG demonstrates ownership of her

own Professional Development path in her comment on the “chosen path.” Participants provided direct comparison between positive encouragement within Twitter EdChats and the negativity of Facebook. While recognizing that this is a generalization that cannot be attributed to the platform itself, it was interesting to hear of reported differences according to platform. PBG asserts that #MTEdChat provided a positive, encouraging, and supportive environment:

PBG. I was told all the time that I should be on Twitter, reaching out to people and learning from each other. And it's not like Facebook, where you get criticism from a lot of people. I've put something on Facebook of what I'm doing in my classroom and I can get a lot of negative feedback from whoever's following me. But here, because I've chosen the path that I want to be on with Twitter, those people are most likely going to encourage me and help me grow.

PBG. It's weird because like with kids you know there's all these like everything that we hear is bullying online it's like as an adult educator it's totally opposite, like you're fighting this group of people and you're learning from them.

Prior to data collection, as the researcher, I admittedly had not considered how different personality types and styles would factor into the comparative experiences of the participants. As a reported introvert, HFC shared the advantages of the “behind the screen” format of EdChats. HFC had a different perception for how the community could be discouraging by promoting feelings of comparison. While HFC touted #MTEdChat as a supportive and inspiring group, she also provided an interesting point that EdChats can prompt comparison, feelings of inadequacy, and perceptions of imposter syndrome. While HFC was the only participant to share this issue and it is unknown if other

participants have had similar experiences, this issue presents a potential for future comparative studies. HFC's share again speaks to how technology and social media are used, and concludes by explaining how she "just needs to step away" at times.

HFC. Another great benefit, I actually consider myself to be someone who is quiet and very introspective and reflective, an introvert; and so if I'm in a situation and a big conference or in a big boardroom, I'm not going to probably chime in much, just because that's not my comfort level. So these Twitter chats allowed me to share things in an easier way in a more comfortable way. And then getting that feedback, "yeah that's a great idea." Because I might not get that feedback in person from people, because I don't always feel like sharing.

HFC. A social media type professional development is always a double-edged sword for me. I end up getting really great ideas, but then sometimes I end up feeling like I'm not doing enough. You know that, "comparison is the thief of joy" quote? There are times where I have to step away from EdChats or from Instagram, because I compare myself too much and I think, "Why? Today I could barely get my kids to listen, let alone do this fabulous lesson that you're showing."

Trust

While the word encouragement may conjure a warm environment, PBG stated that this encouragement needs to be tempered with honesty and trust. Essentially, for interpersonal constructs to be effective, they need to also be honest and transparent. Respondents share what literature supports; to be effective, a learning community needs to be a "safe space" and embody trust. Snyder (2009) frames trust: "Establish trust and rapport: Devoting adequate time to building relationships by establishing trust and

rapport with members early on helps them to feel more secure and comfortable in an online learning community” (p. 51). The undercurrent of trust is interwoven in some themes discussed above and exemplified by the shared response of #MTEdChat being conducive for introverts. As an underpinning of trust, PBG shared the role that feedback contributes, as she stresses the importance of honesty:

PBG. I personally try to just be very genuine and open with my own experiences, because I feel like that’s what teachers need right now. They don’t need the mushy gushy, “everything’s going to be fantastic every day,” because that’s not the reality of any life or any career.

PBG’s share is of particular interest, as it states that honesty is foundational within encouragement, and calls out that encouragement is not simply “hearing what we want to hear.” PBG exemplifies our understanding as educators that effective feedback is a cornerstone of good teaching, and quality teaching cannot happen without quality feedback for the learner (McKeachie, 2013). Data analysis of emergent themes reveals that feedback is interwoven into multiple thematic constructs. In #MTEdChat, feedback would be considered as peer feedback, yet it may also relate to the reciprocal roles and whomever is serving as the MKO at a given moment.

PBG. I feel like I’m very open to growth and to change, and to kind criticism. Kind criticism. So I like I like learning from other people, even if it’s an indirect learning thing. I feel like it’s just it has really helped me grow much faster than I probably would have on my own

HFC suggestions mirror PBG’s earlier statement, that trust and vulnerability can be by-products of the virtual environment, and that the online environment can breed trust.

Again, with the understanding that technology and online environments can be utilized in different ways with different intention, they are also dependent on the context.

HFC. I think that a really a big benefit is that it's a little bit easier to be vulnerable, or to be honest, because you know that you're hidden from seeing someone face-to-face.

STF shares the advantages of trust within the EdChat:

STF. The thing that was surprising to me from the beginning, is how much trust there seemed to be. And how much willingness there seemed to be, to really learn with and from each other. So I was just amazed at it, how quickly that *sense of trust was built* and how *giving this group of educators* were.

Kilpatrick (2012) identifies this type of described social capital and sense of belonging, as it encompasses encouragement and trust as foundational blocks, “as essential to healthy emotional development: the need to belong. Typifying this concept within a classroom, school or campus setting is this definition “of school as community” (Kilpatrick 2012):

A learning community is any one of a variety of curricular structures that link together several existing courses—or actually restructure the curricular material entirely—so that students have opportunities for deeper understanding of and integration of the material they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise. (Gabelnick, MacGregor, Matthews & Smith, 1990, p. 19)

Reciprocity, Roles, and Equality Reoccurring interpersonal themes of reciprocity, roles, and equality overlapped in responses, and provided insight as to how participants of #MTedChat learn according to which roles they assume. Each are interwoven

throughout the findings of social capital within this study, and how they align with Kilpatrick's (2012) definition of Learning Communities, Social Constructionism, Vygotsky's (1978) MKOs and Zone of Proximal Development, and *social presence* and *teacher presence* within the Community of Inquiry. The theme of reciprocity was not siloed to one identifiable area, as it relates deeply to roles and equality. Kilpatrick (2012) identifies the integral role of reciprocity, suggesting that "reciprocity is strong. People are able to affect one another and the group as a whole directly. Changes can propagate easily. Coordination is tight. Ideas and knowledge may be distributed across the group, not held individually. These groups allow for highly productive and creative work to develop collaboratively" (Brown & Duguid, 2000, p. 143).

The design behind Research Question 2 yielded different results than intended, and yet, the participants' answers organically developed through other questions and varied verbiage. Research Question 2 focuses on the different roles that the participant assumes in the course of a #MTedChat setting(s): whether mentor, student, or co-learner (Charbonneau-Gowdy, Capredoni et al. 2016). While each participant is an educator and considered a teacher, for purposes of this study, the intention was to focus on whether the participant is essentially leading the learning, receiving the learning, or both as co-learner. A discovered limitation in my questioning on assumed roles was prompted by their ingrained understanding of the #MTedChat defined roles of Facilitator and Participant (instead of mentor, co-learner, or student). I discovered this gap in my first two interviews. I then adjusted for the subsequent eight interviews, as I defined the different roles of mentor, co-learner, or student. I explained, "given #MTedChat is comprised of all educators, of teachers, those roles change while you are learning

between mentor, co-learner, or student. Please keep that in mind, in response to the next three questions relating to roles.” As I explained this, participants spoke and showed non-verbal cues, quickly confirming that they understood this delineation between roles. There were still responses related to #MTedChat defined roles, but again, participants’ responses on roles were captured significantly in other areas.

Even with some misunderstanding of described roles, participants answered interview questions on roles and their overarching reported experience by organically describing recursive and fluid roles between student, co-learner, and mentor. The following three participants assisted in developing the theme of reciprocal learning, as highlighted:

HFC. I’m always kind of on the lookout for if someone makes a comment or answers a question that I agree with or that I have advice for. *I usually try to offer a reply, because I know from my personal experience, that when someone replies or gives feedback to what you’re saying, it makes it all the more motivating.* And then you can have kind of a conversation within the edge chat, which I think makes it feel a little more personal — when you’re when you’re talking to one person.

STF. We share, it’s the same thing they do. With shared resources, and sometimes just asking a good pointed question that gets people to think more deeply is another way great to learn.

PBG. We reciprocate. I learn by them being so open and willing to help. I really try to interact the people’s post. If there’s something that comes up and I’ve never thought of, I would just make a note like “wow I never thought of that like really creative”.

RBM aptly described how roles within #MTEdChat were ever-changing and fluid. She furthered that changing roles helped to shape her learning overall experience, and how she specifically adapted her role to the needs of the group. RBM explained her role, as defined by #MTEdChat (facilitator or participant), and she extends an additional understanding of her role as a co-learner. RBM was one of two participants who shared that she had facilitated. The majority of remaining respondents shared that they prefer to be a participant, and not facilitate.

RBM. I know I facilitated one or two times. It's kind of exciting, just to be able to. I'm happy to facilitate, and I feel like I connected with more people that way. Being the facilitator and running the questions and trying to make sure I was answering all of them. And most of the time, I would say I'm probably a co-learner. Hopefully *it's just ping pong on whatever topic*, and then contributing "what I can", "when I can".

PBG and KFH share their experiences and involvement as co-learners. They provide helpful examples of the vacillating teacher and student role, and PBG reintroduces the reciprocity thread:

PBG. I would say most the time I am a co-learner. I've never taken a facilitator role of leading a chat, but I feel there's kind of like a flex between co-learner and student though. A lot of us are learning together, but there's definitely times when I feel like "whoa I don't know as much as the about this is somebody else". So it's a fluid system, there's not really anything that's linear.

KFH. My role goes a little bit of each way, but I feel like I am always asking questions. I want them to tell me more about what they've said. I'm always asking questions that I want the answers to that they haven't elaborated on, or that I have

heard about, but I may not be on board all the way because I don't understand it. Or I'm not on board because they're talking about it from an English perspective, and I want to know how that would be applied in my situation. I always feel like I'm asking them to give me more information about what they're saying.

HFC extends the discussion roles, pointedly sharing that her role is responsive. By reading the needs of the group, she changes as the group changes:

HFC. I know I've said that I like to be a passive observer, but I've noticed that when there's not a lot of people in the chat, then I know that I need to chime in more. Because if everyone is just passively observing, then there's no discussion. It takes a group effort to keep things rolling by answering questions, comments and want each other stuff to keep it keep it valuable

Equality An unanticipated theme, I was pleasantly surprised to discover the emergent theme of equality. The theme of equality examines the different roles within #MTedChat as discussed, and it provides valuable insight as to the reported "level playing field" of the EdChat. The topic of equality also speaks to varied perspectives; when we have an equal platform, we have more opportunity to hear varied perspectives. The theme of equality also lends to the topic of accessibility, these are two crossover themes that we will discuss further in Chapter 5. The lack of hierarchy within #MTedChat, independent of years of experience or role, provided valuable insights:

LSJ. It's open and very welcoming. I don't ever get the sense when I'm in there that somebody's saying, "you should do what I do because I have this many years experience." I think everyone that's in that chat is very cognizant of that, especially in Montana where you go from a Bozeman to a Savage. We have a

wide array of teaching and learning experiences that go on in the state. Because of that, what works in one area is not necessarily going to work in another — but we can all learn from each other in a good way.

Aptly shared, LBD provides an insightful connection between equality and opportunities for leadership:

LBD. I think one of the biggest things that I feel I have learned through the whole experience, especially with Twitter — is that you get to be this invisible leader. You can guide. And you can chat, and you can support, and you can send information here and there. Then you can walk away and let other people step into what their role as leader is.

Particularly poignant because of his role as a superintendent, AME shared that he appreciates the equality because he gets to hear the “teacher’s voice” in a rare equitable setting. An additional note of equality that I discovered during data collection is the fact that I received a response from AME within an hour of posting recruitment information to Twitter. This was not the norm, and it also served as one example of accessibility through #MTEdChat. I interviewed AME the very next day.

AME. I don’t know if this is right or wrong — but it’s kind of like we’re all equal, and that’s really unusual. It’s unusual, especially in our hierarchy of bureaucracy of school districts.

I don’t ever get the chance to just sit down and talk with teachers. I mean I don’t have enough of a chance; obviously I try to as much as I can but because of our hierarchy and structure I don’t often get to hear from teachers unless I purposely set up a group or go out and talk to them.

And so what I really loved about this PLN is we were all equal; it didn't matter that I was a superintendent and there was somebody else that was just starting their student teaching. It's like we were all equal, and we all had an opinion and thoughts to share, and everybody's thoughts were valued.

So that to me is a perfect example of a PLN. We can disagree with each other or push back against each other, but we're all equal. Just because I'm the superintendent doesn't mean that people can't say "hey, why did you write this?" or "tell me more about this." Because they didn't understand what I was saying or I didn't understand what they were saying so I liked how that the Twitter EdChat.

It removes all of the hierarchy removes barriers, and we were all just kind of equal in that discussion.

It definitely removes the hierarchy. I remember one particular EdChat, going way back where Denise Juneau participated. That was kind of a shocker, to have the State Superintendent participate in an EdChat, that showed me, "wow, we're really all equal in this and we all of us can participate."

That's huge, when you can remove those barriers and people can share ideas. Share ideas in an atmosphere that's not only comfortable, but they can take a risk and share an idea that may or may not fly.

I think that it just provides a real comfortable way to do that. It's less fear that you're going to get criticized or that your idea is going to get shot down, it's more about "what can I learn from you."

As shared previously, my own processes in preparing the IRB and Consent form demonstrated my preconceived biases and perceptions. I initially bound criteria in order

to seek Montana residents, roles of teachers, and in-service teachers of a year or more. This platform of equality and lack of barriers prompted me to change the participants' criteria so that it is more representative of #MTEdChat itself.

The emergent alignment of reciprocity, roles, and equality directly reflects Vygotsky's (1978) theory of MKOs and the Zone of Proximal Development. Vygotsky's seminal theory was a foundational precursor to the technology platforms that could facilitate the rotating roles of MKOs, and yet highly evident in virtual learning spaces such as #MTEdChat (Churcher, Downs et al. 2014). Connecting to the Community of Inquiry's tenet of Teacher presence, the Venn label *teacher presence* embodies the breadth of the teacher's participation in an ever-changing rotating role, fluid between members of #MTEdChat. While studies have framed and measured a multitude of e-learning environments using validated CoI instruments, this study may differ in the definition of the teacher role and *teacher presence*. The teacher role is highly identifiable, and essential to the learning within #MTEdChat, yet it is ever changing and recursive between participants. The designated MKO becomes the teacher(s) for that span of time, question, or topic within the #MTEdChat.

Inquiry based learning and problem-solving Arguably, inquiry based learning and problem-solving has direct relevance with all three of the thematic pillars: interpersonal, intrapersonal, and social capital. This aligns strongly to all three areas as the emergent themes are rooted in a cognitive connection. As Scardamalia & Bereiter (2010) express, "Learning, cognitive development, inquiry, and invention are probably as old as our species" (Scardamalia & Bereiter, 2010, p. 3). This cognitive theme is scaffold from

Dewey's (1938) influence and is highly recognizable in the Inquiry based model that was reported in the #MTedChat study. Dewey (1938) focuses on the value of experience and critical inquiry (reasoning, questioning, and reflection). He shares that critical thinking and critical inquiry involve, "(re)constructing experience and knowledge through the critical analysis of subject matter, questioning, and the challenging of assumptions" (Dewey, 1959, p. 2). Dewey asserted that we *learn by doing* (McCaughan, 2013).

As themes began to emerge, it quickly became purposeful and rewarding to identify how constructs align with the framed Community of Inquiry. Highly reflective of Dewey (1938) and learning through inquiry, Bangert (2009) shares "critical inquiry which is a pre-requisite to deep and durable learning is more likely to occur in online learning contexts when instructors facilitate discourse that involves reflective questioning, model responses that represent complex cognitive processing, and restructure tasks that promote differing perspectives" (Bangert, 2009). While deeper examination and comparison with the Community of Inquiry will be discussed later in greater depth, this section serves to illuminate questioning, inquiry, and discussion types within #MTedChat. Participant responses overwhelmingly indicate that the Q and A, Question and Answer format of #MTedChat prompts inquiry-typed discussions, reasoning, and problem solving.

How the individuals characterized their responses speaks to a broader theme of cognition. Represented in their reported experiences, the theme of cognition emerged from responses related to: multidimensional thinking, empathetic thinking, problem solving, and metacognition. Many responses reported specifically on problem solving:

RBM. Being connected through Twitter and through this chat expanded my confidence and my ability to solve problems. It strengthened my ability to think about things in a more three-dimensional way. Suddenly, instead of being frustrated if I couldn't figure something out, my response was "Well, I'll go to Twitter and pose a question to somebody, or 'I'm not sure what resource to use for this activity,' I'll throw that out into the chat."

PBG. It's a nice place to get a lot of input from other people to know if you're doing what you should be doing. And if things are working if what you're doing works well in other classrooms, and if not, what did they do to problem-solve?

PBG. In my responses, I'm very genuine and I generally tend to be on more empathetic side of things. I try to help people problem-solve and really help them dive into ways that they can improve their practice.

RBM reiterates the captured sentiments shared within roles, and the need to be responsive for the collective in group learning:

RBM. Occasionally the topic will be something that all of us are not very experienced in, and so in an in the spirit of complete participation, I will, most of us will google on the side to look things up and throw out, "here's what I found...I know another teacher who does this" and so it is sort of an inquiry based investigation. We're lucky that most of the time there's somebody on the chat that can offer some experience and a place to start, but a lot of times that's exactly what we're doing in every chat — is learning together about a topic by sharing experiences and asking questions.

AME provided relevant examples of an inquiry-based community, as he explained that through the discourse of the group, the questioning and discussion forced

him to be able to support his ideas. AME highlighted this reasoning as essential to learning and improved practice.

AME. So it really forces you to put your ideas out there, but then also be ready to defend your idea or talk about your idea, which I think is healthy. So that's what I learned, questioning and inquiry about what people have posted and then learning more about what other things that they posted.

Equally important, STF characterized cognition in his explanation of how #MTedChat prompted him to think and reflect more deeply:

STF I like to think that I'm good at asking probing questions; they get people to think more deeply about the issues that they're facing — so I like to ask probing questions.

LBD touched on the cognition theme as she explained that improving her communication skills by working through problems improves cognition:

LBD. It's helpful to try to articulate something that I'm trying to work through, some sort of thing in education... lots of Ed influences have helped me to articulate what really I'm trying to get to the bottom of.

KFH. There is only so much you can learn on your own. I feel like that, and we are in the understanding now that collaboration is really how people learn better because there's only so much you can do by yourself.

AME further extends that discussions and critical thinking help categorize cognition, and are later scaffold from those initial responses:

AME. I think the Q&A format is a really good strategy for inquiry. Having a theme is a good idea because it gives you some time to think about that theme and then the facilitator posing questions and then we're all responding to. I think that's very helpful; it's so a sort of a virtual discussion.

Then, people will say "tell me more about that thought, why did you answer that question that way? How do you use that in your classroom?". So I think it really allows you to expand or go deeper into a particular topic.

Wrapping the themes of interpersonal communities, the importance of social capital and its social constructionism, they lead into the next emergent theme of interpersonal and how the individual processes this new collected information and makes meaning of it. It is important to recognize that all of these main themes are on a continuum and in turn in form the next (e.g., revisiting that Inter and SC, prompt Inter, Constructivist and individual meaning making) The last theme in the cycle is social capital, which involves the application of the gained understanding and knowledge. Cyclically, this process can begin again, elevated, as the practitioners bring their applied experience back to the social/learning community, and if effective, the process continues. Through analysis of the reoccurring theme of social capital and the sub themes of encouragement, motivation, reciprocity, roles and equality, it was possible to align findings and identify emerging socially supportive learning communities. Outcomes from a cultivating learning community should serve as a springboard that provides the environment and the opportunity for effective learning, transferable to an individual level to try to construct meaning and connect learning individually.

Exhilarating in discovery, the reported social capital of #MTedChat indicated a community support system that breeds learning. Kilpatrick (2012) summarizes, “see the essential role that relationship, participation, reciprocity, membership, and collaboration must play in any theory of human development that aspires to guide us.”

Intrapersonal

The second pillar of the community of learners is intrapersonal. Figure 6 shows the theme of intrapersonal and the associated subthemes (perspectives and reflection) that described the participants’ experiences in MTedChat.

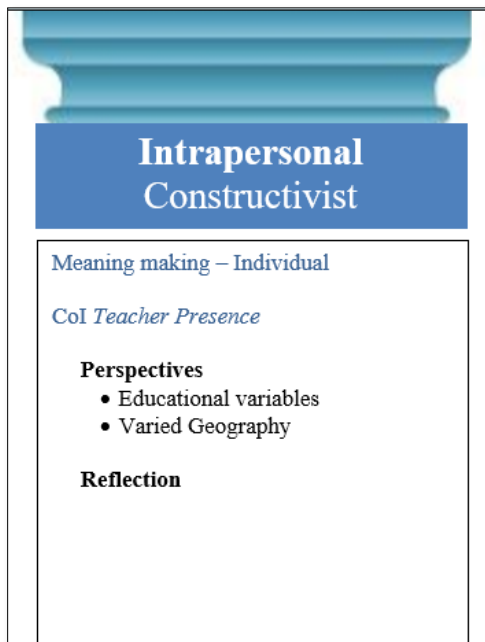


Figure 5. Graphic representation of emergent Intrapersonal themes and subthemes: Perspectives and Reflection.

The participants characterized intrapersonal outcomes of the community of learners in terms of varied perspectives and reflection. The following section outlines each subtheme with participants' descriptions of how they characterize the two different subthemes. Foundational to this study, Dewey (1938) states, "We do not learn from experience... we learn from reflecting on experience" (Dewey, 1938). In the last section, we discussed the importance of inquiry. Inquiry carries over into intrapersonal, and *how* we use that inquiry to make meaning individually. In transferring from a collective learning space to individual meaning making, Kilpatrick (2012) shares a Vygotsky and MKO centered theme related to individual contributions, "Collaboration amongst/between specialists, then, is seen as vital, for it is not possible for an individual to understand all the complexities of this modern age without drawing on and accepting the contributions of others." A constructivist approach to professional development is well aligned in purpose. Ostashewski, Reid & Moisey (2011) connect online teacher education professional development as a constructivist exemplar, "The opportunity to actively engage with these online tools for the purpose of creating online resources and artifacts and then sharing them with other teachers to support their learning (an example of constructionist pedagogy in practice) provides teachers with an authentic experience of how online technologies can be used in their own classrooms" (Ostashewski, Reid & Moisey, 2011, p. 45).

Perspectives A fundamental quality of a community of learners is the advantage of hearing different perspectives on different topics. The participants described a number of advantages to their own learning by hearing different perspectives from the community

members. These advantages focused on the educators' improved learning and are described below. Educator variables, including geographic region, pre-service or in-service, grade level, and discipline, provide examples of variances that drive different perspectives.

As educators and learners, we know that hearing varied perspectives help shape our individual learning. Kilpatrick (2012) extends how diversity and varied perspectives elevate out learning:

Respect for diversity enhances the learning capacity of a community. This is apparent from the literature that links learning communities and community development (the broader definition). Acceptance of diversity is an indicator of willingness to entertain new ideas and accept change, both prerequisites for community development (Flora, Flora & Wade, 1996) and learning. Organisational structures that include representatives of all affected sections of the community, including women, minority and less powerful groups, have been found to be more effective for community development in Europe (Geddes, 1998) and the United States (Aigner, Flora & Hernandez, 1999).

Kilpatrick (2012) furthers that “respecting diversity fosters learning by building a climate of trust and encouraging risk-taking.” Varied perspectives reflected these differences, ranging from different educational positions (teacher, coach, or administrator), to teaching experience (pre-service, in-service or veteran), to discipline (e.g. Math, Science, English), to grade level teaching, and to geographic proximity (school district size, town or city size, and rural or urban classification). Prompting reflection, the opportunity to listen to others' varied perspectives aids and builds our own individual learning. Advantages to varied perspectives were identified throughout MTedChat findings, as captured from participant responses:

LSJ. Oftentimes there are some good conversations on there, and it gets you thinking about things that maybe you otherwise wouldn't. Teaching is a really busy profession, as you know, and some of the questions they ask would easily get lost in the shuffle of our day-to-day stuff. And so, it's really important, I always think that reflecting is as good as a big part of our practice.

RBG. I think always having those different perspectives, thinking outside of ourselves, and what we deal with – that helps me as I'm sharing with other teachers and in classrooms.

TDB. While one of the biggest for me, was reassurance from people that have similar ideas; it's also really important to talk with different ideas we haven't considered. Most of my learning stuff from those people I don't normally think the same way, because I got some great ideas that I applied.

STF. It helps in the sense that when you're talking to groups of other educators, you're able to identify with the kinds of experiences they're having in a more effective way. The EdChat has given me an updated sense of perspective and grounds my work in the reality of at least some educators.

These shared narratives provide primary examples of how hearing others' perspectives can prod effective learning. RBG exemplified thinking in new ways, while TDB demonstrated metacognition reflection as a pre-service teacher, and veteran teacher STF shared his newly adopted perspectives. Archived document analysis of indexed tweet logs provided communications which support participants' shares on the value of learning through varied perspectives.

Perspectives: Educator Variables The different roles and perspectives contributed to additional opportunities for community members to learn. Participants held various professional roles (e.g. teacher, EdTech coach, superintendent) and demonstrated fluid roles (shifting between student, co-learner, or mentor) during #MTEdChat's designated meeting time. The reciprocity of roles developed a platform of equity between educators. Fletcher (2002) aptly supports this premise, "reciprocity caters for the diversity that exists among members of a learning team and recognizes that each member offers individual and idiosyncratic benefits that are useful at different learning moments. It enables members to assume control of the learning direction as expertise and experience dictates" (p. 9). The different roles of the individuals within the community contributed to the diverse perspectives shared.

AME shared that as a superintendent, #MTEdChat provided a rare opportunity to hear the teacher's perspective (in a way that is less guarded and filtered than through district meetings). He states that #MTEdChat, "became sort of my go-to resource for current educational topics, especially from a teacher's perspective. So many times when you get into an administrative role you sort of lose that perspective of a teacher." He further extends that the teacher's voice is broadened through the EdChat, with access to varying school district populations, rural and urban demographics, disciplines, and grades. As a salient example, AME shared how group discussions and inquiry prompted valuable self-reflection and a self-check as to whether his voice (and content) are relevant.

RBM shared how her experience as a coach enabled her to provide helpful

perspectives on technology integration. In turn, RBM benefitted from shared teacher perspectives, as she works to find innovative solutions to real world classroom problems. She shared, “There are a fair number of people in our chat who are in a similar role that I am, as a tech integration specialist supporting teachers. I would say the majority of us now moved into those roles and so there are times when it really does become a conversation about how to support teachers.” Acting to connect curriculum with technology for improved learning, #MTedChat provided a “give and take” community of learning.

STF from Seattle expressed how differences in regional proximity create differences in perspectives, and that learning from these differences can only make us better educators. Unexpected from my own biases, ST reveals his opinion that the feeling of isolation is not limited to rural demographics.

LBD provided insightful examples of how #MTedChat provided access to educational leaders and mentors, in a way that is often blocked in traditional Professional Development models. She shared, “There with huge educators that I just admire, beyond admire, and had become mentors of mine.” LBD reiterated other narratives and shared how participants from varied disciplines contribute varied perspectives, which ultimately deepened her practice as an educator. Mentorship was an integral part of LBD’s account. Highly visible throughout participants’ accounts, varied perspectives are essential in effective Professional Development and elevation of practice. Participants shared insightful accounts exhibiting this theme of roles and perspectives.

Teacher experience: Pre-service, In-service, and Veteran Recognizing that

#MTedChat serves pre-service teachers, veteran teachers, coaches, and administrators, a University of Montana Western education student, TDB, shared his telling experience in #MTedChat during his teaching practicum:

TDB. It has built some of my confidence up, as a future educator. A lot of that positive feedback comes in, and it's going to scaffold each other's teaching abilities.

Cross – curricular perspectives As educators, we know the inherent value of teaching and learning through cross-discipline platforms. Cross-curricular teaching and learning provides context and an opportunity to learn in breadth and depth (Kirsten, 2019). Discovery of varied perspectives led to support that cross-curricular development elevates effective learning. A contemporary trend supported by research, Birsa (2018) expounds, “teachers achieved better learning outcomes by using teaching strategies with cross-curricular integration in sculpting tasks as part of the learning process” (p. 174). Unprojected, the subtheme of varied perspectives prompting cross-curricular development emerged.

LSJ. #MTedChat is not an ELA chat. Or Science, or Math; so just seeing how different things work in the different content areas is really interesting. Someone was sharing about technology in the classroom, so it was how that can be utilized across different platforms. It is really unique and interesting. I think that teaching by its nature is a very closed or isolated profession. So this is a way to do cross curricular stuff, and show my kids how English can have impact in other places. You can ask things like, “hey, how can I connect what we’re doing in English to

Math?” or “how can we our science teacher, and do more writing across there?” And people have some good ideas or resources. The more chances that you have for cross curricular work in your schools.

LSJ further extends the relevance of cross-curricular studies and their value beyond K-12 preparations:

LSJ. Anyone who goes to a university knows, if you’re going to be an engineering student, you’re going to have to write a lot of papers. So that’s Math, Science, and English right there. Or how much you know History do you need to know in order to you know DO Science and building off that. So cross curricular stuff in the high school setting is really important. I think chats like #MTedChat offer an avenue for teachers to go to.

You know, I wasn’t really taught how to do cross curricular stuff as I was getting ready to teach; so, “How do I do it? What are some strategies that I can use?”

Now obviously one of the limitations might be, that I’m the only one in the school that has ever done #MTedChat. So it’s not like our History teachers are going to go, “yeah I saw that”, but I think that if you can get access *to how other teachers and disciplines do what they do*, then you as an English teacher (or whatever teacher) can go to that other teacher. You know a little bit about maybe what they’re trying to accomplish and if we work together, we can benefit one another. This is something that I think really helps to bring that online very open atmosphere into the school.

As discovered from participant interviews, an emphasis of cross-curricular benefits emerged from analysis of #MTedChat. For example, there are references to learning new assessment techniques, technology, multidisciplinary learning, as illustrated in the

findings below. KFH illuminates how she gains and contributes to varied perspectives from different disciplines. She explains how she has learned of new assessment options from others that are not in her typical Biology teacher pool.

KFH. It's fun to come across someone that's in your subject area, but it's not the only thing that I seek.

I don't think all biology teachers teach the way I do. I don't think all biology teachers are worried about instructional strategies. I think they're mostly interested in, "here's my lecture, here's my notes, here's the worksheet, there's the lab" and I am all about ***best practices for instruction***. So that's why it helps me to talk to people who are in tech, or people in English, and how would you assess? So I am always asking questions, even cross-curricular, so that I can develop a better way of instructing and assessing in my subject area (even though I'm not necessarily talking to someone in my subject).

KFH. At my first #MTEdChat, I was only looking for science teachers, and looking for science teachers to follow. But after the first one I thought, "oh but the stuff I'm actually wanting to know more about isn't from the science teachers." Surprisingly, they'll post stuff and I'm not as interested in that, as I am in what the Tech person is saying, or the English person is saying, or the History person. I got one of my best ideas from last year from a History teacher from California.

TDB. I got like a lot of insight from people that I wouldn't normally run into. So getting feedback from a wide range of subject matters is nice to have. I usually stick to my fellow English majors and teachers, so it's kind of nice to have that kind of interaction —with people I don't usually run into.

Participants revealed how they learned from varied grade levels and disciplines.

As an exemplar, KFH was inspired by an educator in a different discipline, to promote student meetings within class and time management techniques. Not specific to a certain discipline, KFH has identified that she has a significant amount to learn from non-science teachers.

KFH When you're talking to people, especially in Montana EdChat, there are probably more elementary teachers than there are high school teachers in it. So sometimes that can be hard, "okay, well how is this is going to help me?". But stretch your thinking, and they're sharing things like *teacher conferences*. I have heard other people with perspectives about meeting with students during classroom time, and that has changed my thinking too. I think, "how could I make that happen within the classroom?" instead of just glossing over that and saying, "I don't have time for it."

You think of what elementary teachers have to go through in a day and how they have to plan every five minutes, not just "here's what I'm doing for this period". So you're thinking about getting that perspective, "wow, they are probably more busy than me and they're still fitting it in". So it kind of gives you this idea that *I have a problem and someone else has found a way to solve it*. There is a way to make it happen in your classroom, if it's something that you deem as important.

RBM. I found teachers that were interested in kindergarten and first-grade and technology, but not everybody that I connected with was in the same teaching role. It was a surprise for me that I could collaborate with a high school teacher around the same topics, and that I could learn just as much.

RBM. For me I work mostly with K-2 teachers, so there's a lot of high school teachers and that kind of thing on there. So even to have the different grade levels is really helpful.

In order to understand the participants' contextual setting, it was essential to consider their proximal demographics, what resources are available to them, and the advantages and challenges specific to their location. Participants reported several benefits to shared perspectives from varying rural and urban demographics, and larger and smaller school districts respectively:

PBG. I'm in a very rural area of Montana, so it's nice for me to be able to speak with other educators and see what's happening across the country. Where I live, I'm one of the only teachers in second grade, so I don't get a lot of opportunities unless I reach out on my own to learn from others that are doing the same things. I am with educators who are growing, or who are already in areas where I want to be growing into.

AME. I found it as a nice way for me to just stay involved with educate topics across the state.

RBM. I think again perspective. You know outside of our classrooms outside of our district. Sometimes being in a large district, here in this giant state, it's easy for us to get caught up only in "what's happening here." So just the perspective of "what's happening outside of Billings," in districts similar to us. A lot of those rural districts, it's really nice to have those contacts outside of Billings to ask, "how are you guys handling this?" or "do you have ideas?"

While participants offered insights on how we as educators can learn from varied disciplines, they also highlighted how different regions and demographics promote varied perspectives. Specific to varying demographics found in Montana, there are seven federally recognized Indian reservations and the state-recognized Little Shell Tribe of

Chippewa Indians in the state, as well as the Indian Education for All program; all of which have direct relevance to the topic of varied perspectives. Unexpected yet meaningful, open-ended questions on varied perspective and geography organically yielded subthemes on Indian Education for All, and how it pertains regionally:

HFC. I grew up in Wyoming, right next to a reservation. It's really embarrassing to think about how little understanding I had of that culture, but when I came to Montana for college, and they had it, I found myself feeling guilty that I didn't know about their culture and Wyoming and it kind of made me upset.

LSJ. I've gotten some of the national writing project stuff-and IEFA. For IEFA, I've gotten some resources on that, some places that I can go to get a good collection of Indian poetry or pathologies or folklore. For IEFA, that's something that I found at MSU when I went into the teacher program. We touched on it and we talked about it, but I do know that there are people on #MTedChat that are REALLY into it they have a lot of really good information.

These selected posts from #MTedChat support participants' shared responses concerning Indian Education for All, and related resource connections.

Fully unpredicted, PBG shared how learning from other perspectives helped to challenge her own biases in research. I found this particularly interesting as I conducted my own #MTedChat study and recognized in reflection how varied perspectives can both lead and check pre-conceived biases. PBG aptly shares:

PBG. Where I live, you don't have a lot of variability in mindset or even perspective. I did my Masters years ago, but I recently had a conversation with something on Twitter and they brought up biases in research. I didn't even think of that. "I'm like, of course I know there are biases in research, but where I live, I

would say almost a hundred percent of our population are Caucasian and so that is a huge bias in research. When you're in such a tiny little place, it just makes you really start to think about larger global issues that are happening across States.

How the things that I have to deal with in my classroom on a day-to-day basis are completely different from what other teachers are dealing with, and so some of the things that I deal with might seem really small, compared to somebody's like much larger issue. Getting those perspectives has really opened my eyes to a whole different world of education. Because I don't get to see those issues every day; their perspective also helped me come up with things that I wouldn't have thought of, to help solve problems all myself

Reflection Reflection proved to be a key construct of the Intrapersonal theme, as relayed by participants. Following a constructivist focus, reflection of learned experience is critical in our learning and individual meaning making. If effective, varied perspectives should prompt reflection, which then leads to deeper understanding, learning, and improved practice. AME shared this experience of perspective and reflection:

AME. I have learned about different angles of an educational issue. So sometimes you approach an educational issue, and you assume you know what's right and wrong about that. But you may not know all the different angles and evidence. The PLN really forced me to think about it in a different way which was really helpful.

LSJ. I think the amazing thing is it causes you to reflect on what you do. And that depends on the week, their topic, and stuff like that, but a lot of times when they're talking about your classroom practices.

PBG. it just really helps me reflect on what I'm doing and what best practices I'm following. Just because the questions that come up in the Montana EdChat especially, a chat that's specific, like a targeted conversation. It really helps me think about what I'm doing in my classroom and how I'm impacting my students. So just tons of reflection. Overall, they all helped me grow as an educator and they all helped contribute to my own reflection of practice and learning.

STF. Because it's a Twitter chat there's a lot of brief suggestions or shared resources it's not a bad form of learning. But sometimes people just ask a good question, to get you to think more deeply about the issue that you're facing, and that's an effective form of learning.

TDB. I've done my field experience as pre-service, and I think it gives me insight to realize the things that I'm good at, and also things and to pay attention to – to think about what I'm teaching.

Participants shared how personal reflection yielded learning benefits: AME expressed how he thinks in different ways, LSJ shared how reflection of his practice prompts necessary analysis for improvement, PBG stated that she reflects on her best practices, STF thinks more deeply, and TDB realizes his strengths and his area of focus. Supportive tweet communications were highly representative of the theme of reflection within #MTEdChat, and how prompted reflection elevates our practice as educators.

Social Capital

The third pillar of the community of learners is social capital. Figure 7 shows the theme of social capital and its subthemes from the participants' associated subthemes

(resources, ongoing snowballed network, and Just-in-Time Learning) that described the participants' experiences in MTEDChat.

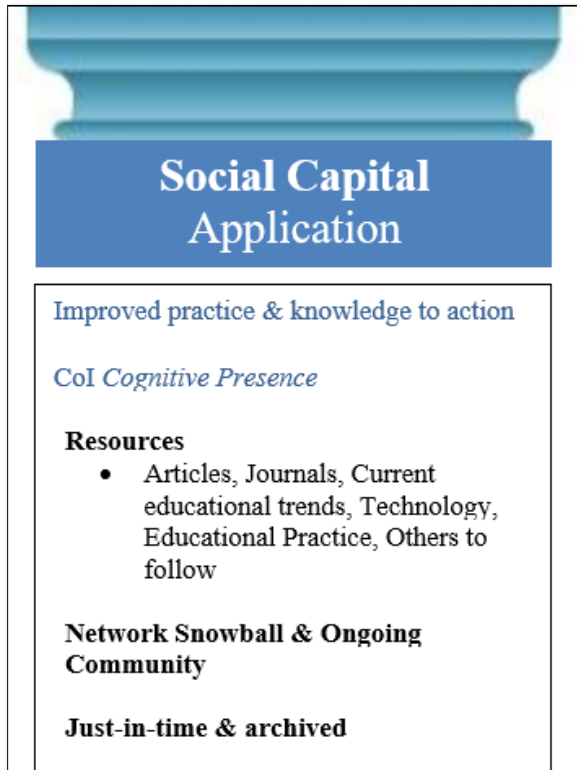


Figure 7. Graphic representation of emergent Social Capital themes and subthemes: resources, ongoing snowballed network, and Just-in-Time Learning

As exhibited through responses shared in intrapersonal and interpersonal sections, all ten respondents reported observable benefits and improved practice due to: (1) group social capital and learning community support, (2) inquiry based learning and problem-solving, (3) varied perspectives, and (4) prompted individual reflection and meaning making.

Ferriter & Provenzano (2013) summarize the flow from interpersonal to intrapersonal, which together can be harnessed as social capital. Provenzano shares that he is,

“constantly exposed to new thinking. By making connections with teachers around the

world and seeking professional development specific to him, Provenzano has been able to grow in the areas he needed, not the areas his district decided the majority needed.

Personalization has left Provenzano better prepared to help every student in his classroom” (Ferriter & Provenzano, 2013, p.16). In deconstruction of this holistic share, it’s the accrued social capital that matches Provenzano’s improved classroom practice. For purposes of this section, it serves as the analysis of the culminated social capital section, as the practical application of what has been learned in the first two columns, in an often cyclical model. The members of the #MTedChat community accrue social capital through increased access to resources and relationships with others.

Dependent upon the social constructs and individual meaning making, Kilpatrick (2012) connects that in application of knowledge/learning, the ability to take risks is necessary. Interwoven throughout discovered themes, #MTedChat responses exemplified the safe space for these risks in practice. Kilpatrick (2012):states how collaborative learning ultimately improves practice with taking risks: “this feature has also been evidenced in creative collaborations where a key advantage of collaboration is that “...by spreading the risk a little bit, it encourages you to take more chances” (Gruber in John-Steiner, 2000, p. 19). LSJ exemplified this in his share, which connects recently discussed reflection with applied improved practice. He explains:

LSJ. you reflect on what you’re doing and you take in what other people say is it can I you know can I do something like that in my classroom can I make that work or maybe it’s finding a website or a tool. I think I’ve been directed to a couple of national writing project things and so you know either reflecting or kind

of getting resources I because that the main the main things that she'd get out of it.

Resources and Influence on Practice The subtheme of resources emerged as a working construct of social capital and practical application to the classroom. Again, identifiable in the first two pillars of interpersonal and intrapersonal, the theme of resources is being attributed to social capital, in recognition of the fact that it's how resources are used in the classroom that is of value.

The types of resources and the ways in which they were accessed varied across five areas including technology, research articles, high impact leaders, professional development recommendations, or overall educational practice. Through each of these influences, participants revealed how participating in #MTEdChat has elevated their practice. Responses exemplified the transfer from learning to actual application. Participants identified helpful resources and stated how specific tools gleaned from #MTEdChat have had direct influence on their practice. RBM offers a myriad of examples of resources and technological tools that she has applied in her classroom practice, and in furthering her own Professional Development:

RBM. We then moved into more topic focused technologies. Mystery Skype was one of the first tech resources that showed up in EdChat, or the Global Read Alouds, and attending EdCamp (that I didn't know about). The first EdCamp I ever attended, someone shared that in the chat. And invited people from the chat to go to that EdCamp. So that was that was transformational, getting to be a camp model and taking what we did in the Twitter chat and making it into a live in-person experience in now my post-EdCamps. So it has really come a long way.

The Global Read Aloud showed up in a Twitter chat and I did that for a couple of years, and then even collaborated with one of the other Montana participants; we had our two classes do that work together.

Things like flexible seating, that was a chat topic and it was exploring that topic with Montana chat folks and seeing some examples; and then doing some of my own research that told me to embed that into my classroom.

Every sentence of KFH's response on resources and how she transfers them into actual practice serves as a salient example:

KFH. The one from today it was about assessing writing and about getting feedback and having the students give their self-reporting on their on their own writing or their own work.

That example will definitely shape what I do, because I want to incorporate more of that self-reporting, I know it's best practice, but knowing in my subject area no one in my building does that, I've never seen it happen and no one taught me how to do it. So I literally have thousands of questions of "how to do that?" and these are the people that I can get my resources from.

I'm assuming eventually it'll probably take like three or four months for that to be something that I am comfortable using in my classroom but to get the idea and to start thinking, "okay, well that fits well with what John Hattie's research says, and it fits with what I should be doing. How can I change or tweak what I am doing, to make that happen my classroom?"

As identified in the previous quotes, main resources such as research, platforms, and student self-assessments were gleaned from #MTedChat shares. The benefits of

improved practice and application in the classroom were common among all participants. Highlighted responses from RBM, KFH, and AME are selected for the thorough descriptions. AME states:

AME. I mentioned earlier I think it's the strategy so what I found most interesting is hearing how some of the initiatives were implemented and how strategies impacted kids. You know, real simple ideas, "hey this is something I tried in my classroom that really helped" or "this is something our school district is doing that has really helped our students." So learning this some of the "boots-on-the-ground strategies" really helped me, because I could go back to my own district and say "have we thought about this?" or "is anybody trying this?" It really kind of pushed me to think more broadly, beyond just my own community or my own district.

HFC speaks to improved practice but also shares the importance of *how* technology is used as a tool. She provides specific details on using technology that provided dual purpose in her learning and her students. She shared how she used it to: differentiate instruction, improve student learning, and improve her own technological skill set as an educator.

HFC. I've always used technology in my classroom. For the most part, you know it's come a long way, even in my 11 years. But I think one of the things that EdChat has really helped me with is that *lessons that are valuable, not just because it's technology but using technology as a tool to make it an engaging and a tool for differentiating.*

HFC. I feel like it's kind of beefed up my teaching with technology, which then is you know a direct benefit to my students in my classroom.

PBG expounds that #MTEdChat enables her to stay current on educational trends, charging her practice as an educator. She extends that this is not consistently possible within her team at her building:

PBG. It helps me how I'm working to *keep up to date with technology and think the way things are changing*. I don't feel like I have that in my group of teachers at my building, that are somewhere between veterans and incoming teachers. I've seen the effects of what happens when you choose not to grow and I've seen the effects of what happens when you're coming in with so much excitement that you don't know where to go.

PBG. So what I found out with Twitter is, I kept going back there for my most current information on educational topics and educational research because it was just updating so often.

AME. I've learned specific strategies that might be working really well in other settings, that I can use in mine.

RBG. I was an early adopter of technology, and not a lot of other teachers were doing similar things. So it was really nice for me to have a network of people to reach out to, and ask questions, or kind of problem-solve and *get best practices*. And then it's also just a nice place to get ideas. I'll see that somebody is *you know doing this kind of formative assessment or that kind of thing like something that then I can bring back to the teachers* here use in classrooms here. So it's getting those really *tangible ideas* to use from that network of people.

RBG. Then to have that network to be able to reach out to I'm just thinking of one example, it's not tech related, but one of the teachers is an instructional coach in Bozeman and they were looking at ***new curriculum***. So then she would

message me and I think, Shelley too and just asked like, “what kind of curriculum are you guys using?” So even outside of technology and the chat, that kind of thing, just to be able *to connect and get a perspective* on what other people are doing in our state is pretty great. So I think those conversations and asking direct questions are really useful.

LSJ. Some *national writing project* stuff I’ve gotten from there. Honestly, I think I might have heard of the teacher to burn up through EdChat as well and I’ve done some facilitated courses through there and I think definitely with IEFA.

In compiling specific technology, applications, and software, participants listed resources that they had learned of through #MTedChat.

HFC: a lot of resources and lessons through hyperdocs, Wonderpolis

PBG: Flipgrid, Seesaw, Adobe products

KFH: Slidedeck to gif

RBM: Seesaw, Kickblog,

I found it telling that during data collection, I as the researcher jotted side notes of suggested resources that I could use in my own practice. While it was not my goal to seek out new technologies, it was easy and useful to acquire new resources through #MTedChat that have direct relevance to my needs as an educator. At first, my goal was to learn #MTedChat functionality for the sole purposes of the study itself. However, I found myself using the same tools that were being touted, and also using the hashtags to search indexed tweets specific to my own personalized learning needs.

Highlighting one teacher/coach in particular, as her linked blog and resources stood out as exemplar, BTA provides an astounding amount of resources weekly. While

these resources are from her curated blog, they are linked to and easily accessed from Twitter posts.

RBM. I like to *ask probing questions or inspire reflection* but my favorite is to share resources especially I'm in a position with my work at Montana PBS where I have a ton of resources at my fingertips and so if a teacher wants more information about this or that it's I really like being able to post a link really quick of something that they can use -- circle back and delve in further about her specific resources -- killer blog.

Definitely an unexpected sub theme, the use of images and pictures was discussed as a helpful learning tool and cataloging feature of #MTEdChat. PBG extends that shared resources are often easier to identify when the post is a visual representation of some sort, particularly if sharing a specific technological tool. Naturally, an example of the tool itself, in which the user can see it, provides a greater understanding of the tool:

PBG. I follow a few teachers and they post a lot of things they're doing through images or video which is also really helpful.

LBD. But also I think like a lot of the *photo documentation* that we do through the chat and so if we're talking like we have a certain topic then we can you know send photos so then you've got that little photo documentation to remember how someone did what they did with their group of people kiddies.

Articles Journals Suggested and shared educational articles and journals served as yet another valuable resource building participants' social capital toolbox and showed measurable influence on practice. Superintendent AME shared his experience and

reported shift in how he utilized #MTEdChat as an index of peer reviewed articles and journals. He extends that #MTEdChat enabled him to access more current research and identify important articles based on the number of retweets, with easy access to articles through provided links.

AME. And then what I found out is I stopped reading my paper copies of my Ed journals because I was getting more relevant and more current articles on Twitter and so I would often tell people you know I recently read this and they'd say where'd you find it I said well it popped up on Twitter.

And what I really liked about Twitter is it kind of sorted through all the I guess sort of the garbage and really only brought to the top you know things that people had retweeted or commented on a lot so once I saw that a lot of people had commented or retweeted it it got me thinking I probably should read this particular article.

HFC. My favorite way that they've helped me to learn is the links to the articles I should read, or books that are recommended books or other educators I should follow – those have been helpful to me those recommendations

Unexpectedly, one of the most influential resources attributed to social capital is categorized as high impact leaders. Participants shared that they were provided access to key educational leaders who they typically would not have access to in traditional professional development models. Quickly apparent through sampling recruitment and in initial interviews, the expanding network and “snowball” effect of #MTEdChat generated representative responses of “others to follow.” Participants shared how contact with one

#MTEdChat member would lead to the contact with another influential educator.

Knowing “who to follow” provides not only a larger network, but also drives and expands the content that the educator receives. HFC introduces the topic of following others, with her explanation of a new contact, Jo Boaler, a Professor at Stanford and an expert in the field.

HFC. I think I learned about Jo Boaler from EdChats, who is an amazing math educator. And so then I’m able to find books or articles or other educators that I should follow that I wouldn’t normally have known about.

HFC. I think another big way is actually, even just learning about other educators that I should follow and learn from.

RBM. Again, I kind of started dabbling with Montana EdChat, and then you know I’ve gotten more followers, and other chats on Twitter, and that’s really expanded my network – even though this was sort of my first experience. I think it’s so widely used in education, that it’s a really nice platform to connect and share that way.

KFH. I’ve found times of sharing with others, wow you should watch this you know podcast or whatever it is and then then that’s like opens up this whole new resource.

LSJ. I think the amazing is you know it causes you to ***reflect on what you do*** and I mean that depends on the ***week kind of their topic*** and stuff like that but a lot of times you know when ***they’re talking about you know your classroom practices.***

Network Snowball – Ongoing Social Capital and Ongoing Community

I found it fascinating how #MTEdChat expanded beyond the synchronous

Tuesday nights, and into meetings at professional face-to-face conferences and ongoing “networking.” As the researcher, much of my initial review of literature focused on the distinct differences between traditional Professional Development models with contemporary models of E-Learning and M-Learning models and virtual space. In distinguishing the two, a natural binary comparison unfairly developed. Through data collection, emergent themes prompted me to recognize that traditional Professional Development models and new PD models are not insular, and rather complement each other. The participants shared their experiences of how their involvement in the #MTEdChat virtual space carried over into face-to-face networking, professional mobility, conferences, and reported overall elevated face-to-face Professional Development. Highly identifiable in connecting participant responses, social capital contributes to individuals’ upward mobility. The more capital you have in terms of access to resources, relationships, and opportunities, the more it contributes to this mobility.

Unexpected in responses, reported connections between participants and shared experiences illustrated how meeting within the #MTEdChat created a PLN which is truly not bound by the virtual space, and curated an extended face-to-face community. During data collection, I reveled in the connections, as reported name references of other participants. I felt privy to the sense of community of support, and how each participant was interconnected to others within the learning hive. It became challenging to keep my responses fully objective and unfaltering in response; as an example, one participant mentioned that joining #MTEdChat due to the motivation of another said participant. This reiterates that the connections within #MTEdChat extend beyond the virtual

platform and into face-to-face connections and opportunities. Much of the contemporary research on teacher education Professional Development indicates that best practice is simply giving teachers time to talk to each other. EdCamps and unconferences could be considered face-to-face models that are similar to self-directed learning in EdChats.

Ferriter & Provenzano (2013) expand:

Unlike traditional conferences that can inadvertently stifle innovation by lining up predetermined slates of sessions months in advance, Edcamps start with blank agendas. While participants arrive, practitioners use sticky notes to suggest ideas for sessions. Once strands of interest start to take shape, popular topics are identified, meeting rooms are assigned, and facilitators volunteer to lead individual sessions. After the agenda has been filled, teachers select the topics they want to learn more about. Edcamps are different because presentations are openly discouraged. Instead, sessions are designed to be conversations between like-minded peers (p. 16).

Notably, this is quite different than traditional Professional Development models ten years ago, where speakers spoke, and teachers listened to transactional buckets of “knowledge.”

Touching on earlier discussions of equality, participants also shared that their curated network includes access to participants who may not have been accessible without the #MTEdChat (e.g. Superintendents, OPI administrators, and high-level key educational players). While not analyzed in the current study, access to some of these key players could arguably offer increased opportunity for professional mobility and increased job opportunities. Two of the ten participants shared their experience as nominated PBS educators, and also indicated that they did not know each other personally before joining EdChat. Without further details of their backgrounds, I would question from their experience, and from others’ shared, if exposure to administrators

from OPI, superintendents and other leaders is beneficial in connections and opportunities beyond the weekly one-hour virtual space. As the researcher, I had a keen sense of a snowball effect between participants, and how one meeting could then lead to another opportunity, between global read alouds, face-to-face conferences, and possible job opportunities. Findings revealed how individuals' increased capital from #MTEdChat contributes to their upward mobility. The PLN that is created spans beyond the time and space constraints on #MTEdChat one-hour meetings Tuesday evenings, into a formidable PLN. Participants shared their experiences of the "outside" PLN: RBM shares how face-to-face opportunities and conferences have increased as part of social capital:

RBM. When we get an opportunity to go to conferences outside of our hometown, for instance the recent educators conference here in Belgrade that happened, it's a good time to connect with somebody and talk to them. I had a booth set up for Montana PBS and ARP came to the booth and was talking to me. I know her from the chat and at the same time KSO walked up, I know her from the chat. They were chatting and I said, "Have you two met each other in person?" and they both looked "Oh from yeah you know they didn't simply connected so you know."

It's exciting to have people that you know little names and avatars, become real and I've been lucky enough to a lot of the people that are regulars on the chat are now real people to me too that I.

When I travel for work or collaborate on projects, I see them in person, and I have more than just their Twitter handle in my phone.

The above account from RBM pointedly speaks to the discovery of the

complementary connection between #MTEdChat and professional face-to-face PD.

Garrison and Vaughan (2008) describe benefits and outcomes of blended learning as it applies to similar higher education communities:

This type of CoI program attempts to model effective blended course practices and provide faculty with a hands-on blended learning experience through a series of face-to-face, online, and independent activities. The ongoing face-to-face sessions allow personal relationships and a sense of community to develop that fosters the sharing of ideas and experiences among participants. The online component of the blended design creates an opportunity to extend and sustain this type of discourse and community (p. 52).

Arguably, since Garrison's writings in 2008, findings from the #MTEdChat study indicate that some of the "sense of community" outcomes can be derived from virtual spaces as well (not limited to face-to-face). Yet the underpinning of CoI blended models has direct relevance to the #MTEdChat in focus, and the fact that face-to-face and online communications complement each other. Through the research for this study, it became evident that Twitter-based EdChats are not aimed to fully replace traditional PD models, but to rather complement, supplement, and extend the other modality. PBG explains how #MTEdChat has prompted subcommittees that transcend between virtual #MTEdChat space and face-to-face:

PBG. Because I was able to reach out to educators on Twitter, I've gotten to meet a lot of them in person. We are starting to build these little sub communities that are somewhere between the cloud and somewhere between real life.

AME. I think it was helpful to hear from everybody a few times. Like I said, we had the state superintendent participate, or other folks from OPI. Do you know

Colet Bartow? She is a frequent participant and has that OPI lens. She has been there long enough to give us some perspective from OPI.

LBD. To put a network together, you know I felt that I was rubbing elbows with huge educators. Because I got in at the ground floor, there with huge educators, that I just admire, beyond admire, and had become mentors of mine.

LBD. Through talk, dialogue, and then of course conferences. Over the years I've been able to get to a lot of the different big conference so that I can actually meet people face-to-face. That's been huge, and important, so if I know that people I followed on Twitter will be there, I'll go to their speaking event.

I found many reoccurring connections between participants' shared narratives and their connected exemplar tweets. Demonstrating a face-to-face aspect which extends beyond #MTEdChat's established virtual space, AME posted community events which illustrate this real world connection. In a separate tweet within the same day, AME announced a job opening, which yet again extends #MTEdChat connections beyond the one-hour virtual space.

Just-in-Time Learning Just-in-Time Learning (JiTTL) was developed as an underlying theme of social capital, as it serves as an ongoing established form of learning beyond the weekly one-hour synchronous meeting. The structure, usability, and functionality of how the Twitter platform is used also lend themselves to the ongoing use of #MTEdChat as a platform beyond the synchronous virtual time. In literature review and data design, much of my focus as the researcher examined the importance of synchronous spaces. This was a salient point, as virtual spaces provide different

advantages and challenges than meeting face-to-face. As a core common denominator tying together virtual spaces and face-to-face spaces, the fact that #MTEdChat is a synchronous weekly meeting became an essential component in analysis. Initially, I mistakenly considered #MTEdChat to be solely synchronous in structure and of primary benefit. I considered synchronous learning revolutionary in this context, in its rarity that it is both geographically unlimited, but also synchronous. Comparison of geographical proximity with virtual spaces because purposeful. Fully unexpected was the consideration that the #MTEdChat synchronous space had significant asynchronous benefits after the #MTEdChat's meeting time, as an ongoing resource.

The EdChats' Twitter platform automatically indexes conversations, which allows for Just-in-Time Learning, and ongoing learning references. By typing the #MTEdChat hashtag and a specific topic (e.g. "Common Core"), archived discussions and resources are accessible at a later time, whenever the teacher/learner "needs" the information. While posts are easily referenced within Twitter any time during or after the #MTEdChat, there are also capabilities to download an archived copy of the entire chat, using specific proprietary software (Storify and Tweetdeck as current examples). Easy access to these curated resources proves purposeful for future learning needs, as it applies to Just-in-Time learning. Exemplar of the synchronous to asynchronous findings, PBG and LBD illustrate how Just-in-Time learning is an identifiable form of social capital which provides ongoing access to educators and knowledge:

PBG. If it happens in a conversation, and then three months later you're like, "oh yeah I remember talking to somebody about this and then you use it."

LBD. Even though that was the challenge once the network is built then you have these people that you can throw up emergent questions, *“this is going on in my life, could you... you... you... and you speak to it for me?”* and then when you have time, *I can go back and read about “oh yeah okay I’ll give that a go.”*

LBD. We definitely interact through the different hashtags, you pick three things hashtags and in a way that’s a huge, huge benefit. Then you can know how to find all that information, when you want to go to it as well.

RBG. I think a huge benefit is how that hashtag is created. We are facing all sorts of resources, questions and answers, and then that all is curated. So if people know what the hashtag is, they’ll be able to search that, and they’ll find a lot of really great stuff just under that hashtag. So I like that is organized, there’s a nice sort of curated list under that hash tag of all of these ideas and discussions.

Ultimately, participants of #MTEdChat are provided an ongoing arsenal of resources.

Whether acquired during the synchronous Tuesday night meetings, or later, #MTEdChat is a Just-in-Time learning opportunity that provides an ongoing support to their growth as an educator.

In fleshing out earlier constructs and themes of interpersonal and intrapersonal, recursive overlap is identifiable. The earlier presented constructs have direct connections with the last column, social capital. Highlighted examples, previous sections on social constructs, learning through sharing varied perspectives, and the inquiry-based settings are of direct relevance to the themed social capital column and true application of learned knowledge (from the first two columns). The columns serve to delineate characteristics

thematically, but clearly are not insular, and serve each other. Notwithstanding, the first two columns and their relative responses could arguably be read through the lens of application, practice, and applied knowledge of the last column, social capital. In review of each main theme, interpersonal, intrapersonal, and social capital, an understanding of the recursive nature between each is highly identifiable.

Demonstrating the overlap between these three pillars intrapersonal, interpersonal, and social capital themes, the following example discusses intersections among accessibility, social collaborative learning, inquiry, and reflection. RBG cohesively shares:

RBG. I think that what's interesting on in the chat is you know our topics we ***try to keep general so that anybody in the education field could participate***. It's really great when someone comes on and shares a ***resource shares an image of something*** that they did in their classroom even better when someone comes ***with a real honest challenge or a question that*** other people can jump on and share, We try to write the questions in a way that they do require ***some reflection*** for the people that participate but often I find myself reflecting and kind of figuring things out as a participant as well.

RBG's relevant share indicates that social capital is an outcome of learning through #MTEdChat and serves as the opportunity for practical application in the classroom and ongoing extended learning opportunities.

Access

As it applies in a recursive nature to all three primary themes (interpersonal, intrapersonal, and social capital), the significant emergent theme of access is interwoven throughout. With observable overlap to earlier discussed themes, the fact that #MTedChat is ubiquitous and not constrained by proximal geographical location helps to facilitate a highly accessible learning community. For purposes of this section, the focus will be on reported benefits as they pertain to non-geographical constraints and the ubiquitous learning space. The theme of access intersects with themes of perspectives and resources, given that varied perspectives often follow different geographic regions.

#MTedChat allows access to a broader geographical spread through the use of technology, so greater access to varied perspectives and resources becomes an invaluable benefit. Differences in geographic spread and external environments notably influence our shaped world view and inherent biases. As an exemplar, different geographic regions are comprised of varying demographics, ethnicities, race, socioeconomic status, rural and urban characteristics, each with influence on our shaped perspectives, and how we see the world. KFH's share exemplifies this access:

KFH. My Master's is in learning and education with technology, so I really gravitate towards the technology stuff that's new and upcoming. But because also where I'm at rurally, I can't attend every conference in the entire United States, That costs a lot of money. So I have people all over Montana that are going to cool things and coming back and then they share on Twitter.

Supporting the premise that varied perspectives come from different regions, KFH states:

KFH. I mean I got one of my best ideas from last year from *a history teacher* from *California*.

TDB also extends the concept of access within #MTEdChat as a virtual community, as compared with the resources necessary to bring all participating educators from different regions into the same shared space:

TDB. It's definitely convenient, because wherever I'm at, I can participate. You communicate with like people around the state, now if you were like, "oh well we're going to all meet it Havre at 8 tonight," but we can all meet there on the computer.

RBG. Montana chat has led me to connect with other teachers in Montana but also across the country who are interested in a lot of the same things that I'm interested in.

I was the only K teacher at my school at our small rural school just outside of Bozeman. I had great teachers that I worked with, but we all taught different things. So I was really hungry to connect with anyone on the other side of my classroom, specifically around topics of Kindergarten and first grade, but also about using technology in the classroom. And so all of a sudden, there was this big wide world open, and teachers that were sharing what they were doing in the classroom, but also celebrating things that were happening in the classroom.

KFH. You're talking with people in your own building, but you don't necessarily connect with people who have the same passion for your subject matter or for your love of teaching. Not everybody wants to spend five hours on a Saturday researching more ideas, so there, is maybe more interested in something else I don't consider.

AME. You don't have to be in the same room or even in the same town or in the same school. You could be across the state and still participate.

As it relates to the previously discussed theme of community support, many of STF's reported experiences address the benefit of #MTedChat as a counterforce to isolation. STF lives in Seattle, and insightfully shared an unexpected claim that isolation for teachers is not unique to rural.

STF. Sometimes I think they believe that they're kind of unique because there's not very many educators in Montana, and geographically the state is large. But they could be in Chicago Public Schools or New York Public Schools and I think repeat exactly that same sense of frustration and isolation. And if you want to be innovative and produce change, you're frequently feel isolated like you're working alone

I don't think it's Geographic at all I mean it's something unique about Montana but the more time I spend talking to teachers about isolation the more I realized that it's common everywhere I just spent some time in July in Sweden working with Swedish educators and they talked a lot about that sense of isolation so it's not unique to rural educators – it's not unique to American educators.

RBM. I get to step into thinking outside of my school, or buildings, or whatever – just being able to have discussions and share ideas and learn from other teachers from across the state. It's been a really positive experience.

The ubiquitous theme was represented not only by where participants are in the state, or where in North America, but reinforced by the statement that #MTedChat is accessible from home, in pajamas, with family. As social media and virtual PLNs have become more prevalent, the access is still remarkable in comparison to the geographical limitations of bringing all educators to one auditorium at the same time (and definitely

not on a Tuesday night for an hour). As discovered from the results, participant shares seem to indicate that lines between work and home became blurred as individuals gained more capital:

RBM. Access in your own home, you can wear whatever you want. You can have things happening in the background, my family is used to me being on either zoom calls like this, or Twitter chats. It's nice that you can sit there, you could have a beer while you chat your friends and no one knows. You don't have to be very efficient I think Krista stops sometimes on the side of the road and participates on her commute home. I've certainly done it in hotel rooms when I've been traveling for work, so it's a Anytime Anywhere at your convenience, kind of thing.

HFC. But what was really nice is that that time I had a baby at home, and so leaving her to do PD for a Saturday just didn't seem like something I wanted to do. This allowed me to do small chunks of PD at home and it was much nicer.

LSJ. You can just jump in, it's more laid back casual, almost like you're hanging out with people and just talking about teaching so it's very accessible.

PBG. It's nice that you can kind of hop in and hop out whenever works for you.

LBD. I am self -disciplined and I like to do lots from home, and so it became quite a benefit.

LBD. You can do it wherever you are and on whatever, any device and whatever platform – as long as you have some kind of service that is huge. I can remember waiting for appointments at a place, “okay I'm going to slip in and do this.”

Unexpected Challenges

The focus of this study was to understand the educators' experiences in MTEDChat. In the process of analyzing the data, a number of unexpected and interesting insights emerged about the challenges within the learning space. These challenges included time, technology access, Twitter proficiency, lack of depth on topics, and level of engagement; they are described in more depth in the following section.

Time Educators' scheduling constraints and limited time available for EdChats reoccurred as a theme when asked about challenges of #MTEDChat. BTA highlighted an interesting point in her explanation that consistent weekly meetings provide a predictable pattern and help her to remember that Tuesday night is associated with #MTEDChat. A consideration that I had not projected, BTA stated that even if she was not able to attend on a given Tuesday night, the fact that #MTEDChat meets regularly prompted better attendance from BTA overall.

BTA. It's hard, I definitely don't join it weekly, I think that's difficult, but I also love that they do meet weekly — it's so consistent. With some of the other EdChats, it's just once a month or sporadically, so you kind of forget about them. I appreciate the consistency of it, even though it's difficult to have the time to join, all of the time.

RBM is one of the moderators. Given her own busy schedule, she shared that the three main moderators need to cancel the chat occasionally. From further analysis of the archived #MTEDChat log and weekly topics, a few #MTEDChat meetings were cancelled by the moderator, and all seemingly the "day of." Further details are shown in Table XX

#MTedChat Topics.

RBM. Challenges that we're having now as moderators, is that some weeks are slower than others. And we are also really busy, like we had to cancel this week, because all three of us were so busy that we couldn't get on there and moderate.

Addressing others' responses on scheduling, RBM also shares:

RBM. Obviously we hear a lot of people say, "You know, I wanted to get on, but I just couldn't." The fact that we have it at 8 p.m., for anybody with a family, that's bedtime, getting kids ready for bed. And there are times when that's problematic for me as well. That's why I've just committed to participating in only Montana EdChat — otherwise you could participate in one every night if you wanted to.

KFH, LBD, and BTA share their challenges with making time for #MTedChat:

KFH. It's a challenge finding a time to take time away. For me it's from two sets, to set aside time from your family and set aside time from your teaching. But to fit that time in, to communicate with people who want to talk about teaching is worth it. Time is the biggest challenge for me.

LBD . You have to be self-disciplined because you could just choose not to go. And so I began to write it in in my day plans, as you know every Tuesday night or whatever night for that EdChat. Every "whatever night" that's for that period of time, that would be my PD.

BTA. I think just having the time to participate is always a challenge. I definitely don't participate as consistently as I would like. I would say that's probably the biggest challenge.

Technology This study focused on the educators' experiences within the MTEDChat and not the technology itself. Yet, the educators' use of technology to access the forum influenced their learning experience. Participants shared their experiences with technology and specifically how the Twitter platform challenged their access and learning. Not all participants shared technology as a challenge, but enough participants reported technology as a hindrance that it became an emergent theme. For those shared experiences of technological challenges, most explained a progression, and conveyed that the Twitter platform, hashtags, and EdChat QA format were challenging during their first meetings, but reportedly became easier with time. Participants explained how their comfort level increased after the first few #MTEDChats. Greene (2016) shares advice from EdChat veterans to educators first joining, "Start with a chat in your comfort zone, like your grade level or content area. Move to larger groups once you get the format down. As example, I started simple with #1stchat (first-grade chat) and just sat on the sidelines!" (Greene, 2016, p.1), Reported challenges of time and technology spoke to the importance of the individual being self-directed and self-regulated in order to participate.

Limited Depth Additionally, three participants shared that a drawback or challenge could be limited depth within #MTEDChat. Notably, the participants who objectively questioned the depth, also touted #MTEDChat in other areas of learning. Potential future studies could explore deeper saturation with a primary focus on depth of topic, and depth of knowledge. Overall, this appears contradictory of some of the other responses, which suggest that inquiry, reflection, peer review articles, and reported improved practice, could be considered attributes of, or contributors of, deeper learning.

Also of consideration, the highlighted discussion was provided by RBM, who seemingly objectively, compared both limitations and benefits of #MTedChat. She serves in an active role, often facilitating #MTedChat, as a PBS Educator, and as a key player of #MTedChat. Therefore, she has earned credibility as an educator who uses and analyzes the EdChat.

RBM. I think sometimes it's easy to say the right answer in a chat, trying to get likes, and to get people to retweet you. It's easy to get caught up, so sometimes it doesn't feel like we always have real conversations. It's also sometimes feels like scratching the surface, and we're not getting into a lot real deep learning. Sometimes we're maybe just sharing resources and lifting each other up, which is also important. But I'm not sure we improve anyone's skill development. You probably improve professional knowledge from time to time, and we definitely change attitudes for those teachers that join us.

STF. Sometimes you'd like to go farther than an hour's worth of Twitter chats can provide, and I know a number of the participants in this Montana EdChat will arrange to talk to one another outside of a Twitter chat. I haven't always been able to do that, but sometimes the constraint of an hour are limiting.

KFH. It depends on how personal you want to get with the people that you're talking with. A lot of times they're just as busy as you are, and they don't have time to get back to you. But I don't know if that's any more of a limitation than it would be for someone in your building because you know the bell rings and they have to go to where they need to go to.

Technology itself and how accessed An understanding of the Twitter platform and Tweetdeck software are purposeful in analysis of *how* participants are accessing and

using technology. Also of importance is the examination of how the content is facilitated and delivered, the formatting of topics, the Q&A question and answer format, posts, and use of hashtags. Pertinent as it relates to the participants is the emergent topic of members who participate with variables such as active posts or by “just observing” from the side. Another variable is a participant’s duration, whether intermittent participation or active for the entire hour. The following section, introduces the Twitter technology itself, including Tweetdeck, topics, hashtags, QA formatting, and the duration of participants’ presence during the synchronous meeting. These topics will also be revisited in greater depth for discussion and evaluation in Chapter 5.

Noting that Twitter is a type of social media, the platform can be utilized for a myriad of purposes, ranging from entertainment value and consumption, to learning in communities, as showcased in this study of #MTEdChat. Shared “posts” or “tweets” are limited to 280 characters in length (doubled from a 140-character limit in October, 2018). EdChats are often developed to categorize region (#MTEdChat, WYOEDCHAT, COEdChat), discipline (e.g. Math EdChats, STEM, English, Tech, etc.), grade (e.g. Kindergarten Chat), or overall theory (e.g. #DitchThatTextbook). The use of hashtags is essential in order to index and group topics, and to create virtual grouped spaces. EdChats are structured using the identifying hashtag (#MTEdChat), and the use of “Q”s and “A”s to identify questions and answers. As example, the moderator often begins with an intro tweet, welcoming the group, and with an explanation of the evening’s topic. The moderator will then prompt with the first question, and the question number (e.g. “Q1 How do you use formative assessment in an innovative way?”). Respondents will then

respond with “A1” as Answer one (e.g. “A1 I used flipgrid for the first time this week and found it...”). Abbreviations are popular and helpful in tweets, as I discovered that “Ss” represents “Students” and “Ts” represents “Teachers.” Brevity is necessary and appreciated in the EdChat environment. As the researcher, I discovered in my own communications for the study that my additional “lead-ins” and cursory “thank yous” were not the norm and seemed superfluous. Specific to the technological platform, Twitter access, and Twitter comfort level, participants espoused:

LSJ. I’d be curious to know how many people know how to use Twitter, or use Twitter. I know my wife is like, “Oh, I don’t have the app on my phone”, the other day when I told her she could look something up on Twitter. They might have put together a tutorial on how to start a Twitter account and join the chat, but I think that might be one of the biggest hindrances, how many people know how to use Twitter or will regularly use Twitter that’s the main one.

TDB. I’d never had a Twitter before so that was a thing that was about it everything was easy to navigate and figure out and then.

KFH. Learning how to use *Twitter* at first was a little tricky. I didn’t really get how to use Twitter. And then I didn’t really get with the EdChat, so it took me a little while to figure out how to use the Qs in the As and to type fast enough, was kind of an obstacle too.

AME., As I said before, I was never really an online learner, so that took me a little bit to understand Twitter and to figure out exactly what, but I could get out of Twitter. And I made some mistakes along the way, I had to either repost or pull something off, if I typed something incorrectly or made a mistake. Twitter is all about learning from your mistakes and trying to tailor your message. I mean you really have to be concise and get exactly what you want to say out there. That was a learning lesson for me too. I tend to be pretty verbose in my answers, especially when people ask me questions. Getting that whittled down to 280 characters was a challenge, but also something that helped me grow as a communicator.

PBG. I use it on my phone. I actually didn’t even know what TweetDeck was until a few weeks ago.

KFH. I've used TweetDeck to spend some time crafting what I would say to answer those questions. I really like how TweetDeck allows that to go deeper, you're posting what you're said and then you're just really concentrated on the conversation instead of the question of the answer.

RBM I think most people use TweetDeck to keep track of the chat in their columns, and we use it for scheduling the tweets when we're moderating.

EdChat Conventions The structure of the virtual space on the Twitter platform is highly dependent on the use of hashtags, posts, and the Q&A format, as mentioned above. Although participants were not directly asked about the technology used, the open-ended interview question on how the Twitter platform helped or hindered their learning organically prompted the following sub-themes of the technological "how":

LSJ. It's casual, anyone can join it. You really just need to know about a hashtag, if you're savvy with Twitter, you can get on there. It's not like you have to go to the learner hub website and go through a facilitated course, the result-based portion for that matter.

PBG. Essentially, we just get on Twitter once a week, and we follow the same hashtag. Most of the ones I've participated in is in a Q&A fashion so someone will ask a question, they'll answer with a number.

PBG. With hashtags it's kind of nice, you can kind of start to sort what you're doing or where you wanted to go, based on what you'll be working with. I feel like that that aspect of it is really nice, to be able to learn what you want to learn from somebody else.

Related to posts and responses, participant shares arced with earlier discussions on *how* and *what* is shared between participants, and social cues. AME shares that his responses to posts have evolved as he has learned to use the technology and posting format:

AME. I've learned how to make sure that I wasn't saying something that maybe may be offensive to somebody or something, that maybe somebody didn't agree. I had a couple of those experiences where I'd throw something out, and somebody I didn't know from you know outside the usual PLN would kind of chime in and push back a little bit. I think that's helpful in an online discussion.

While not an emergent theme, LBD provided an interesting share on how the Twitter character limit impacted her:

LBD. Limited to those few characters, 280 **character** and being Canadian, I have to say I always wanted to make sure I would not omit my "U"s from the words, you know? I really was quite insistent on remaining Canadian.

Discovered challenges as shared by the participants provide opportunity for further discussion and recommendation in Chapter 5. Participants provided detailed relevant accounts of challenges in time, technology, and depth of topic. These shares provided significant insights to possible barriers of their learning, prompting the need for possible suggestions. Characterized through challenges, self-regulated and self-directed learning appear crucial for learning within #MTEdChat.

Noted Phenomenon: How participants listen and participate

While not categorized as a challenge but rather as a phenomenon experienced, participants shared the variances between their approaches and involvement ranging from observing and "just watching" to being an active participant who posts questions, comments, and answers. HFC, AME, and LBD share their level of participation and how it evolved from initially "just watching" as observers to becoming active participants:

HFC. I feel like I'm mostly a I'm mostly an observer, but then when I have something like pretty important I want to share then I chime in. But for the most part I'm kind of a passive observer when I am involved.

LBD. I joined first initially to listen. I just found it fascinating that I could be with this group of people like-minded people. And I could just listen. And then I felt confident enough to just delve in, so I felt that we became quite tight collaborators throughout the years.

AME. I first started off just sort of being that outside watcher, watching what people were saying and watching what people were commenting on. I was not really participating, just watching and learning. I didn't quite know how the nomenclature worked, you know here's your question and your answer I kind of just watched for a little bit.

I learned by observation and kind of watching some of the major players, who organized the chat, and what the theme was. So I learned a lot just by watching the facilitator.

Of value, two participants shared differences in how long they accessed during the hour, and detailed whether they participated intermittently or if they stayed uninterrupted and undistracted for the entire hour.

LSJ. I think you get the most out of it if you follow it throughout the hour. I've done this before, when I put a kid to bed, I'll check every few minutes answer the last question, and then I get busy doing other stuff. I don't get as much out of it, as when I do have the time to be able to give into discussions with people and follow for the entire hour. That's where I get the most out of it, and I would hope that's when I hope that I add to that conversation on the other side.

HFC. Sometimes with the EdChats, I even just hover, and I don't even really respond. I am kind of in the background to see what those people that I admire are doing. That helps me if I need to step away with the kids, I don't feel like I'm really in it, and then I don't have to excuse myself I can just step away and do something else if needed.

BTA was the only participant to share this insight, but it's deemed highly insightful from her experience. While the tendency for the user might be to respond and

post on each question, BTA shared that she now only posts when she feels like it's of use and a contribution.

BTA. I try to only respond when I feel like I have something to say like. Sometimes when I'm on there, I feel like some of the first EdChats I did, people are responding and it's filling up but they're not really offering anything. That sounds terrible, but you know what I mean, sometimes you feel obligated to. But now I try to skip when I feel like I don't have anything genius to contribute, and just read what other people are contributing.

Touching on multiple components of the Twitter platform and how it is used by the participant, AME connects:

AME. You get out of it what you put into it. I realized that early on, because I was kind of just watching and I wasn't participating. I wasn't really getting much out of it, but when I started participating and putting up ideas, sharing research articles, sharing my thoughts, then I got a lot more out of it. And questioning other people, like, "tell me more about this" or "what did you learn from this?" It's one of those platforms where you can just be in an observer and you're probably not going to learn very much but the more you participate the more you get out of it.

Chapter Four Summary

This chapter summarizes the results and research findings collected from ten participants of the #MTEdChat Professional Learning Network. The purpose of this phenomenological study was to examine the overall experience of #MTEdChat members through the following guiding research questions:

- Research Question 1: What are the participants' experiences in #MTEdChat?

- Research Question 2: What are the different roles that participants assume within #MTEdChat and how do these shape their learning experiences?
- Research Question 3: What experiences do the participants in #MTEdChat bring to their professional practice?

The discovered findings align with the framed literature discussed in Chapters One, Two, and Three. Constructs and themes as they relate to Social Constructionism, Vygotsky (1978), MKOs and Proximal Development, Constructivism, Dewey (1938), and the Community of Inquiry model, all emerged in fascinating and informative ways.

Unexpectedly, data findings prompted an overarching emergent theme, which led to discovery of Kilpatrick's (2012) literature on the value of social capital and learning communities. As themes emerged, attributing them to separate buckets proved challenging, with many themes recursive of the previous and next. A logical delineation defined major emergent themes as interpersonal (social/learning communication), intrapersonal (individual meaning making), and social capital (application of learned knowledge). Identification of the three themes also illustrated that these constructs and their subthemes do not operate separately, instead they often overlap, are recursive, and intersect with the rest.

Informed by a phenomenological approach, codes and categories led to meta themes, themes, and subthemes. As mentioned, initial coding within Nvivo showed a significant amount of overlap, so separating these constructs initially proved challenging. Ultimately, a broader mapping of themes and their connections became more

understandable, with an underpinning logic. Admittedly, it was exciting to find connections between themes and to discover the unexpected significant findings.

Results emerged into an overarching meta theme of “Community of Learners,” which branched into the previously identified themes of interpersonal, intrapersonal, and social capital. Coding and categories of subthemes led to deeper emergent specifications. The interpersonal theme focuses on Social Constructionism, the “social presence” of the Community of Inquiry, and social capital of Kilpatrick (2012). Characteristics of social capital evolved as subthemes: encouragement, trust, personal social capital, reciprocity, roles, equity, and lastly, inquiry-based learning and problem solving. The learning from interpersonal learning communities charges the individual reflection meaning making and Constructivist approach, as demonstrated by the emergent theme of interpersonal. Interpersonal informs intrapersonal, which both collectively inform social capital, all in a recursive and often cyclical model. For purposes of this study, intrapersonal encompassed perspectives and reflection. Arguably, these constructs could also fall within interpersonal and social community, with significant crossover. We have identified these themes as intrapersonal, as they apply to the individual meaning making and learning. The last column, although not siloed, is the social capital theme, which aligns with the educators’ reported improved practice. How did their experiences participating in #MTEdChat help shape them into better educators? How has their practice improved, and what are they using from #MTEdChat? As they directly relate, this study focused on reported tools and ongoing resources. Social capital subthemes focus on concrete

resources that improve their practice: articles and journals, current educational trends, technology, educational practice and other educators to follow.

An additional unexpected theme, I was astounded by the connections between participants and the “outside” network that was created beyond #MTEdChat’s virtual space. As discussed, interviews connected participants, in responses, in what motivated them to join, in job opportunities, and face-to-face professional conferences. Revisiting the earlier discussed theme of reciprocity, roles, and equality, the developed network spanned across teachers, administrators, and superintendents – seemingly providing increased mobility and access.

Completely unexpected, as I touted synchronous virtual spaces pre-data collection, the unexpected subtheme of Just-in-Time learning emerged, because of the indexing structure of Twitter. This discovery means that educators can quickly and easily find previously shared resources and discussions, indexed organically from the use of hashtags. Perhaps you don’t need a digital story-telling toll at the time of the Tuesday night #MTEdChat, but three months later, you identify a need for it (which could have been prompted from earlier discussions).

As an observation, the topics of Twitter chats can vary between sought resources and “browsing.” Reportedly, some of the most significant improvements in practice are found when we are not seeking a specific solution, but rather by being open to discussion and other’s shares, we can stumble upon new perspectives and new solutions. #MTEdChat expands from “You don’t know what you don’t know.”. Conversely, many responses indicate a very specific “seek and find” approach to finding resources and

solutions from a community of educators. Multiple educators reported that when they need a tech resource or a specific lesson, they tweet to reach out to their MKOs on #MTEdChat as a call out for very specific solutions.

The emergent theme of access applies to all three constructs of interpersonal, intrapersonal, and social capital. The fact that #MTEdChat is ubiquitous and not limited by proximity geographically— accessible “anytime and anywhere,” is an overstatement but also revolutionary. Recursive in nature, findings that #MTEdChat is accessible without geographic confines (constrained to Internet access and an electronic device), provides greater access to different geographic regions and therefore, varied perspectives. Confines of geography do not confine meetings, discussions, and sharing. As TDB shared, “what would it take for us all to meet in Havre?”

Constructs of reported challenges and Twitter technology also intersected. These themes were introduced in this chapter and will be further discussed in Chapter 5. Naturally, initial review of literature organically led to the Community of Inquiry by Garrison, Anderson et al. (2000), as an established seminal theory with valid instruments, used as an established measurement of best practices in online learning for the past two decades. Without exception, emergent themes aligned with each delineated construct of CoI, social presence, teacher presence, and cognitive presence. While no outliers were identified, notably, a greater emphasis on social presence was discovered in this study. Further analysis and comparison with the Community of Inquiry will be discussed in Chapter 5’s Discussions and Recommendations.

CHAPTER FIVE

CONCLUSIONS, LIMITATIONS, AND IMPLICATIONS

Overview of the Study

The goal of this phenomenological study was to examine the reported experiences of participants in the #MTEdChat Professional Learning Network. A constructivist and social constructionism lens were used in combination with Vygotsky's MKO theory and Dewey's CoI model to explore teachers' experiences within an EdChat Twitter based PLN. The main thematic findings revealed a much larger overarching meta theme of learning communities, and categorized major themes within interpersonal, intrapersonal, and social capital. Demystified, each of these pillars represents learning by connecting group learning, individual meaning making, and application to practice. In this chapter, I examine each of these scaffold constructs (interpersonal, intrapersonal, and social capital) and emergent themes, in order to connect their meaning back to the guiding research questions and the arced purpose of this study.

From the onset of this study, it was assumed that the EdChat twitter-based PLN provided a forum to support the core elements of the Community of Inquiry model including supporting discourse, setting climate, and regulating learning. The goal of this study was to better ascertain how the participants used this framework for group learning, individual meaning-making, and application to practice. The findings revealed a meta theme of learning communities that was further categorized into major themes including interpersonal, intrapersonal, and social capital. Chapter Five will examine the findings

more deeply with how they align, or don't align to the framed CoI model. Findings provided an enlightened perspective of asynchronous and synchronous attributes. In this chapter, I also address limitations of the study, and how these limitations provide opportunities for future studies. Lastly, implications and considerations will be discussed, with resulting recommendations for educators and EdChats. Chapter Five will close with final thoughts on the discovered experiences of #MTEdChat participants, with a focus on the intersection of participant's experience, learning, and application.

This study explored the reported experiences of ten #MTEdChat participants, through guided research questions:

- RQ1: What are the participants' experiences in #MTEDCHAT?
- RQ2: What are the different roles that participants assume within #MTEdChat and how do these shape their learning experiences?
- RQ3: What experiences do the participants in #MTEdChat bring to their professional practice?

In exploration of these grounded research questions, I conducted 10 interviews via Zoom video conferencing. I used the questions above to structure these interviews on their overall experiences, the roles that they assumed (student, co-learner, or mentor) (Charbonneau-Gowdy, 2016), and ultimately reflection on application to their educational practice. Upon completion of the interviews, and after initial transcription and cleaning, I analyzed the data through Nvivo. Through multiple rounds of coding nodes, my ultimate grouping and categorization changed. Initially, I identified significant overlap between constructs, and I had some difficulties in determining connections.

Ultimately, the identified major themes, themes, and sub-themes, emerged into often recursive constructs; and while overlap still exists, the discovered themes could be properly categorized into meaningful concepts.

As noted above the EdChat Twitter-based PLN was assumed to operate as a Community of Inquiry. Therefore, the following section provides the background to the community of inquiry model. I intentionally present the related theory and models used to frame this study prior to answering the research questions. The purpose of this is to provide the reader with a broader contextual understanding of the EdChat structure and function before explaining the specific experiences of the participants.

Community of Inquiry (CoI)

Widely regarded as a valid way to frame effective online learning, Garrison, Anderson, and Archer's (2000) Community of Inquiry has served as the logical and trusted framework for this study since my earliest days in research. For the past two decades, CoI has proven seminal as a validated model, theory, and measurement of effective online learning, E-Learning and in contemporary M-Learning. Previously introduced in Chapters 1 and 2, The Community of Inquiry measures three main components in online environments: social presence, teacher presence and cognitive presence.

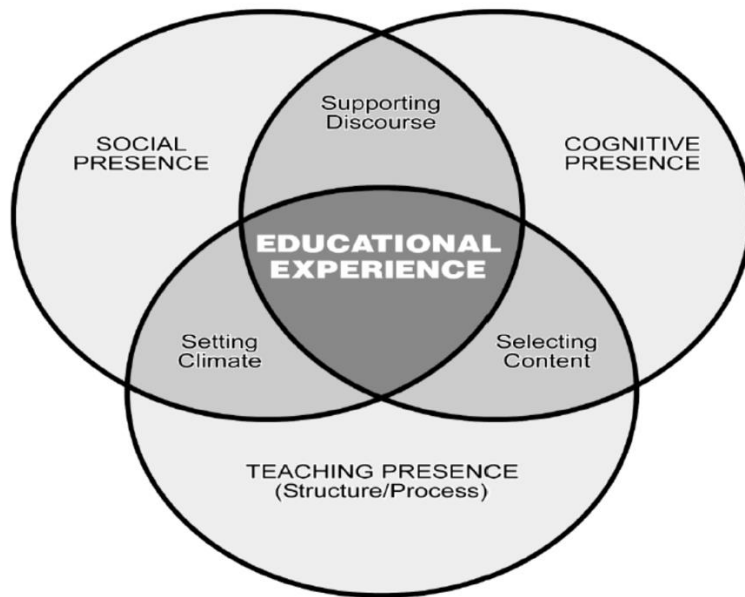


Figure 8. Community of Inquiry Framework.

Notably, educational experience is listed at the center where all three major Venn circles intersect, representative of this study’s individual participant experience. The major themes of this study, interpersonal, intrapersonal, and social capital; each align directly with the Venn primary representation of the Community of Inquiry. Findings from this study also reveal how #MTEdChat aligns with CoI’s related subthemes: *supporting discourse*, *selecting content*, and *setting climate* relate, which will be further discussed later in this chapter.

Please refer to previously introduced *Figure 4. Graphic representation of emergent themes and subthemes: Interpersonal, Intrapersonal, and Social Capital*, which presented in detail how the themes from the findings connect with the overall CoI. This study’s emergent theme of interpersonal aligns directly with CoI’s *social presence*. To revisit, CoI delineates social presence as, “the collaborative inter-personal

communications of an online course; it's the students' connection with the course's community as a safe and trusted environment." The #MTedChat learning community proved exemplar of *social presence*, through demonstrated social constructs of encouragement, trust and support.

The emergent theme of intrapersonal aligns with CoI's categorization of *teaching presence*. Additionally, CoI's *teaching presence* is represented by the fluidity of roles within #MTedChat: student, co-learner, or mentor (Charbonneau-Gowdy, 2016). *Teaching presence* is the teacher's design, facilitation and course management that are directing the students' cognitive and social processes. Earlier studies measured against CoI often focused on the role of the teacher representing one teacher at a time (e.g. professor, teaching assistant, K12 teacher). Increasingly, online learning communities using social media platforms are demonstrating a more reciprocal model consistent with Vygotsky's More Knowledgeable Other.

The emergent theme of social capital aligned with CoI's construct of *cognitive presence*. Social capital represents the knowledge and resources gained within the community, how individuals made meaning from this, and applied it to their own practice. This cognitive process of discourse, reflection and application occurred as a result of the interactions and reflections of the participants within the #MTedChat community.

Since the onset of this study, my design has focused heavily on the Community of Inquiry and was framed by the three dimensions of that construct: *social presence*, *teacher presence*, and *cognitive presence*. In analysis of the findings and further

reflection, I recognized that I needed to consider how these three constructs overlap and inform one another. Findings revealed interesting connections where these three primary constructs intersect. With further reflection, the importance of the intersections logically represent the equality of the Community of Inquiry. As an example, best practices in online learning embody all three constructs, so the importance of their intersection follows.

Setting Climate is the overlapping intersection of *Social presence* and *Teaching presence*. As discussed, #MTEdChat participants' responses were highly representative of both *social presence* and *teacher presence*. During analysis of *social presence* and *teacher presence* intersections, I found *setting climate* fascinating as it was collectively built by #MTEdChat. Not one "mentor" dictated the climate of #MTEdChat, but it was built by the group together. Setting climate was exemplified through shared accounts of encouragement and support. Nuances emerged through shared accounts, ranging from the shared "encouragement" and "support" of the group, to HFC's share that they get an occasional "naysayer." #MTEdChat participants shared some individual insights that indicated the responsibility they took to help shape the culture. In her example, HFC shared that when it's a "slow" or quiet night, she knows that she needs to chime in and encourage more. Arguably, the original moderators may have more of an influence than participants, but participants clearly have agency in the developed culture. Interviewing the participants led to an understanding that the #MTEdChat meetings vary from week to week and are highly dependent on who is present on any given Tuesday night.

Selecting Content is the overlapping intersection of *teaching presence* and *cognitive presence*. Content is initially determined by the three main moderators, but the #MTedChat participants help guide and direct content of the evening's meeting. Naturally, some prompts will generate more feedback responses than others. Initially planned content might prompt relevant off-shoot branched discussions. This is another example of how #MTedChat participants are directing their own content and learning.

Supporting discourse is the overlapping area where *Social presence* and *Cognitive presence* intersect. Unexpected and yet directly relevant, supportive discourse was exemplified in this study. Reoccurring in response, the theme of inquiry and problem solving emerged. Yet again representative of Dewey and Garrison, the value of inquiry and discourse proved evident. Inquiry driven, KFH shared how she adjusts her questioning based on the needs of the group. Given KFH's scientific background, she shared her enthusiasm for asking more questions, for her own knowledge and for encouraging other participants to go deeper into the topic and think critically. Much of KFH's response focused on his follow-up questions within the #MTedChat given hour. This study provided the opportunity for me to connect the constructs of the Community of Inquiry model within a holistic view of #MTedChat.

Aptly, the center of the Community of Inquiry is the cornerstone of this study. *Education experience* is the core where *social presence*, *teacher presence*, and *cognitive presence* equitably intersect. Fundamentally, this phenomenological study seeks to discover the education experience of #MTedChat.

Holistic Model: Community of Learners

One strategy I used to develop the connections among the thematic constructs was analytical “plugging in” (Jackson & Mazzei, 2018). Analytical “plugging in” involved analyzing the data using Kilpatrick’s community of learners theory in an effort to understand the findings more holistically and how they intersect.

As underlying themes emerged, collectively they contributed to a broader theme of Learning Communities. The learning communities model bridges Dewey’s CoI and Vygotsky’s MKO by accounting for the reciprocal nature of constructivism and constructionism in the learning process. My studies’ larger encompassing theme of learning communities is aligned with Kilpatrick’s seminal research on learning communities. As themes and subthemes began to develop, an unexpected overarching meta-theme emerged from coding. Reoccurring themes discovered in narratives focused on social capital and the importance of a “sense of community” integral to learning within #MTEdChat. Withstanding common usage in a variety of applications, the term *learning Communities* is loosely attributed and can be overused in meaning. Auckland and Kilpatrick (2018) provide the seminal Learning Communities framework, which aligned holistically with emergent constructs found in the results of this study. Although not discussed in Chapters 1-3, the Learning Community theory aligns remarkably with these earlier developed constructs and how they intersect. The unfolding of the Learning Communities theory not only connects Social Constructionist, Constructivist, and Community of Inquiry together, it also connects germane theory to the findings of this story as described next.

Auckland and Kilpatrick (2018) define Learning Communities based on two key tenets: (1) the human element of communities, and the outcomes that are developed from a synergetic community, and (2) the actual curricular structures which bound them (e.g. an inanimate structure such as the curriculum itself) (Kilpatrick 2012, Auckland and Kilpatrick 2018). Historically, this cornerstone theory has been applied to individuals sharing common interests, understanding, goals and geographical locations. Yet, as it pertains specifically to the virtual context of this study, Auckland and Kilpatrick (2018) expound that, “as learning communities that are geographically defined, there has been growth in accessing learning through participation in “communities of common purpose.” Information and communication technologies have facilitated the emergence and rapid growth of learning communities whose members interact from remote corners of the globe to form online learning communities” (Auckland and Kilpatrick 2018).

Conceptually and specifically, themes from this study consistently represented constructs from Kirkpatrick’s Learning Communities model. Recognizing the direct connection, KFH shared in a January 9, 2020 neighboring tweet, “If you’ve got ideas come share them, if not let’s learn together”. KFH’s seemingly simple statement is highly representative of the Learning Communities theory at its core. The direct connection developed by Kilpatrick (2012), “Learning communities, in this first use, not only facilitate the sharing of knowledge, but have the potential to create new knowledge that can be used for the benefit of the community as a whole and/or its individual members” (Kilpatrick 2012). Of additional relevance, The Learning Communities theory mirrors the environment which it serves, as it is often modeled in K-12 schools. Kilpatrick (2012) cites researchers Larivee and Dreikurs (2000), as exemplar in their foundational concept that a school is a

community. Throughout Kilpatrick's developed literature over the past two decades, she espouses that learning in communities transcends many variations, as her studies have focused on governments, organizations in Australia, and academic settings for both teachers and students (Kilpatrick, Bell et al. 1999, Kilpatrick 2012, Auckland and Kilpatrick 2018).

Arguably of most significance to this study is Kilpatrick's (2012) sound connection that bridges Social Constructionism and Constructivism. Often interwoven and overlapping theories, Kilpatrick successfully delineates how an effective Social Constructionist community informs a Constructivist lens of individual meaning-making. One facet is not operational without the other. As learners, we learn in communities, which then require reflection and individual processing. Seminal theories by Vygotsky (1978) and Dewey (1938) are not independent and do serve each other reciprocally. Kilpatrick states that learning theory transitioned from an individual focus to a community focus, and asserts that Vygotsky charged educational theory from an "Age of the Individual to the Era of Community" (Feldman, 2000, ix). The researcher furthers that effective learning occurs in a synergetic balance between individuality and social connectedness. Highly representative of Social Constructionism, I marveled at how Vygotsky's (1978) theory of the Zone of Proximal Development was directly represented in the virtual learning communities being studied today. Contemporary learning communities embody the characteristics of Vygotsky's theory, while utilizing contemporary platforms, which enable more people to connect with fewer accessibility issues. Discovery of Kilpatrick (2012) further connected Vygotsky (1978) and Dewey (1938) directly to the findings of this study.

The three pillars of this study—interpersonal, intrapersonal, and social capital – are fundamental to the overall community of learners. Kilpatrick’s (2012) research is deeply interwoven within each of the three categorized themes of this specific study. The interpersonal theme is heavily reliant on Kilpatrick’s lens on Learning Communities through the concepts of social capital, shared goals, and sense of belonging. For example, Kilpatrick’s (2012) research and findings delineate how social capital foundationally leverages different learning communities including government, social reform, and educational environments. In this study, the participants’ knowledge was gained through their interactions with others and the meaning they derived from their experiences within the community (vis-à-vis, MTedChat forum). The knowledge and resources gained by the individual could then be used by all participants in their practices.

Representative of the literature as it aligns with this study, Kilpatrick (2012) introduces her referenced chart as a tool. Kilpatrick (2012) aptly describes characteristics of learning communities: “common or shared purpose, interests or geography; collaboration, partnership and learning; respecting diversity; and enhanced potential and outcomes” (Kilpatrick 2012) . Findings yielded an identifiable connection between interpersonal connections and effective learning.

The community of learners provided a holistic model in which the interpersonal, intrapersonal, and social capital themes became situated within Kilpatrick’s (2012) Composite Definition of Learning Communities. Figure 8 below shows #MTedChat’s specific alignment with an overlay of Kilpatrick’s (2012) Composite Definition of Learning Communities.

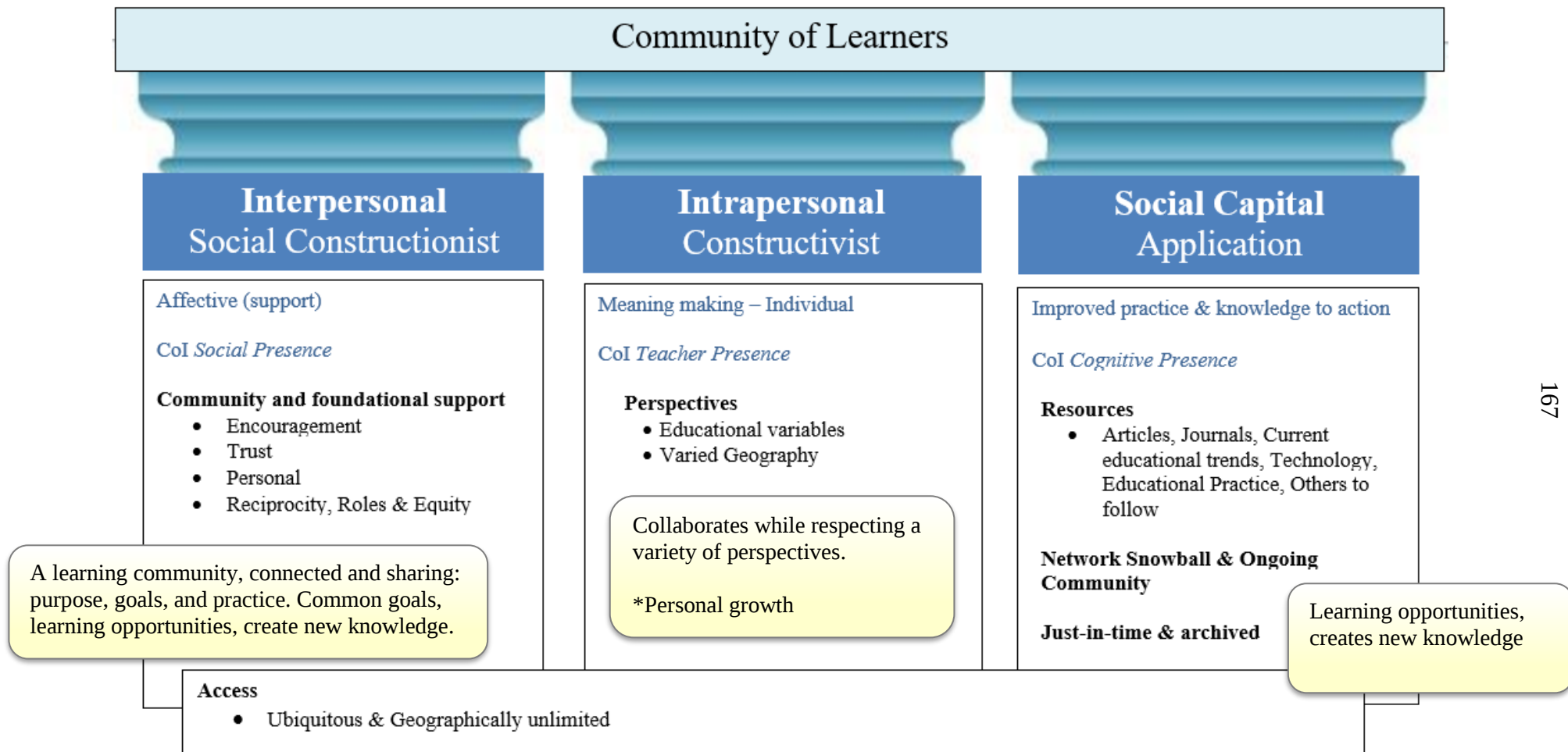


Figure 9. Aligning #MTEdChat findings with overlay of information from Kilpatrick's (2012) Composite definition of learning communities as it applies to MTEdChat

The majority of components highlighted in the prescribed #MTEdChat overlay fully align with Kilpatrick's (2012) Composite Definition of Learning Communities. Of particular interest, the geographical piece sets #MTEdChat apart from the model. This connection resonates deeply, as it indicates that #MTEdChat provides the community factors and characteristics, while not being limited by proximal geography. This provided yet another exemplar of how EdChats expand the traditional model with potential for a broader extended community. Further, this broader community enhances social capital through the increased participation of individuals and the diverse knowledge that comes from individuals from different geographical locations.

Kilpatrick's (2012) foundational Composite Definition of Learning Communities (Figure 29) addresses key components discovered in the findings of this study. In simplest terms, the guiding research questions of this study focus on: *Research Question 1, Experience; Research Question 2, Roles; and Research Question 3, Application to Practice*. Findings from the study connect back to the intentioned research questions, as designed to address identified gaps in the literature of EdChats. In Figure 9 above, the emergent themes were presented and introduced. Here I use this figure to connect the themes with the guiding research questions and relevant literature.

Research Question 1

What are the participants' experiences in #MTEDCHAT?

The goal of research question 1 was to understand the different ways in which the participants explained their experiences within the #MTedChat. Research question 1 is couched heavily from the Community of Inquiry model as it speaks to overall experience, which is at the very core of CoI model where all three spheres connect (*social presence*, *teacher presence* and *cognitive presence*). The participants identified a number of benefits for how the technology aided their professional development. One example is the flexibility of when and how they accessed the technology. This finding is consistent with Ferriter & Provenzano (2013), who also found that technology leveraged teachers' time, "Time spent sharing on his blog, learning from others on Twitter, and participating in nontraditional education conferences called EdCamps have left him constantly exposed to new thinking. By making connections with teachers around the world and seeking professional development specific to him, Provenzano has been able to grow in the areas he needed, not the areas his district decided the majority needed" (Ferriter & Provenzano, 2013, p. 16). Findings of this study illustrated how professional development through EdChats compares with traditional professional development models, through identifiable benefits and challenges.

One important element of social capital is the access to knowledge and resources. The participants identified a number of benefits associated with the access to #MTedChat. Results indicate that participants' experience is naturally connected to their ease of use, and comparatively to their barriers in using the technological platform itself.

Reoccurring through seven of the participants' responses, TweetDeck was reportedly utilized as an effective tool to access Twitter, organize posts and chats, and streamline categorized Questions and Answers within the synchronous chats and asynchronous indexing. Although not specifically stated, the use of TweetDeck suggests that participants often accessed #MTedChat through their laptop. Overwhelmingly cited as the preferred way to access, participants reported that TweetDeck was a highly effective tool in accessing EdChats.

Relevant and unexpected, one of the themes that surfaced was user processes within Twitter. Specifically, participants shared specific functionality and formatting, as it relates to Posts, Hashtags, and EdChat Q&A. How participants utilize these functions determines a great deal, as use of hashtags can create an archive system for easy search and reference long after the EdChat meeting and also proved extremely helpful during the hour long EdChat. Subsequently, the participants' use of Twitter tools affects their reported experience. Lastly, it prodded an additional unanticipated theme of variances in how the user chooses to access and participate. Ferriter & Provenzano (2013) share how EdChat Professional Development compares:

At the most basic level, Twitter allows users to curate content for one another. Drawing from a collection of over 500 education specific hashtags, thousands of practitioners are posting links, blog entries, and lesson plans at any given time. Want to learn more about project-based learning? Visit Twitter and search for #pblchat. Care about school leadership? Try #cpchat or #edleaders. Teach elementary school? Your digital colleagues are using #elemchat to organize (p. 18).

In literature review and data design, much of my focus as the researcher examined the importance of synchronous spaces. This was a salient point, as virtual spaces provide different advantages and challenges than meeting face-to-face. As a core common

denominator tying together virtual spaces and face-to-face spaces, the fact that #MTedChat is a synchronous weekly meeting became an essential component in analysis. Initially, I considered #MTedChat to be solely synchronous in structure and of primary benefit. I considered synchronous learning revolutionary in this context, in its rarity that it is both geographically unlimited, but also synchronous. Comparison of geographical proximity with virtual spaces because purposeful. Fully unexpected, was the consideration that the #MTedChat synchronous space had significant asynchronous benefits after the #MTedChat's meeting time, as an ongoing reference.

The EdChat's Twitter platform automatically indexes conversations, which allows for Just-in-Time Learning, and ongoing learning references. By typing the #MTedChat hashtag and a specific topic (e.g. "Common Core"), archived discussions and resources are accessible at a later time, whenever the teacher/learner "needs" the information. While posts are easily referenced within Twitter any time during or after the #MTedChat, there are also capabilities to download an archived copy of the entire chat, using specific proprietary software (Storify and Tweetdeck as current examples). Easy access to these curated resources provide purposeful for future learning needs, as it applies to Just-in-Time learning.

While #MTedChat was developed with the purpose of replicating a synchronous environment, one of the most valuable benefits discovered from #MTedChat was its asynchronous capabilities. Indexing of #MTedChat creates an accessible archived collection of resources for later use, and therefore highly relevant to Just In Time learning

It also aligns heavily with Scardamalia & Bereiter's (2010) developed work on "knowledge building communities". They found that technology-mediated workspaces with individual knowledge growth happened as a "by product" of the creation of artifacts representing collective knowledge growth. Furthermore, Scardamalia & Bereiter (2010) share a similar example of wikis and how their development can be used past the original curation. They state: "the advent of technologies such as the wiki, which are frequently heralded as environments supporting knowledge building, although the technology itself can as readily be used for knowledge telling as for knowledge transforming, depending on the goals of the writers and the socio-cognitive context" (p. 4).

The researchers' literature is also framed from recursive social constructionist and constructivist lenses. Of note within this description are the various ways in which the individuals accessed MT Chat. They demonstrate the diversity in what social capital includes (e.g. resources) and the ways in which it is accessed, including synchronous, asynchronous, just in time, and archival records. All of these points of access are unique to users of the Twitter-based forums.

Research Question 1 provided insightful information about the participants' experiences, and additionally reported some of the challenges of participating within #MTedChat. As participants recounted their experiences with Twitter, TweetDeck, and the technology itself, reports of initial challenges using the technologies organically unfolded. An additional arched theme of technological challenges illustrated how Twitter was a particular hindrance at the onset of accessing #MTedChat. Participants helped distinguish the differences as EdChat novices. Repeatedly, participants shared this in

response, as a technological challenge which they worked through as an understood learning curve. Does this again reflect on the Technology Adoption Model (TAM), and do participants persevere through these barriers with an identifiable pattern related to their level of comfort and adaptability with technology?

As previously mentioned in the vein of technology itself, participants reported challenges while accessing Twitter the first few times. Their shared narratives illuminated the struggles they experienced while figuring out the technological platform and its functionality. Participants shared that these technological challenges ebbed after practice and are often a part of the initial learning curve as novices participating in EdChats. Beyond the stated challenges of learning the technological platform, participants detailed additional challenges through themes of time and depth.

Undeniably, time is a limited resource for educators. I heard this sentiment echoed through multiple participant responses. While EdChats are regarded as an effective use of time, as compared with face-to-face traditional models; participants also reported the same constraint of time as a challenge within #MTEdChat. Many participants offered self-regulated solutions, ranging from marking it on their calendars, to respecting the carved out space as a necessary environment, to the commitment of solely one EdChat (there are many out there, so whatever the chosen EdChat is, “show up and participate”).

The concept of time surfaced in another important theme, as shared previously in discussions concerning archived posts using hashtags and the “Just-in-Time” teaching that it provides. As addressed, this unanticipated benefit demystifies #MTEdChat as not exclusively a synchronous space, but also an asynchronous space. This dual shift

provides extended learning and support for the participants, which does not bound them by time parameters.

Highly aligned with participants' reported positive experiences from #MTEdChat, an unanticipated theme of emotional connections and encouragement was revealed. Findings focused on community support as a primary benefit, which was integral to their reported experience. Admittedly a theme I had not projected, my preconceived biases led to the assumption that EdChats are primarily used to share technological resources. Yet overwhelming, responses yielded a primary theme of encouragement and trust at the core of learning environments. Highly representative of Kilpatrick's (2012) assertion, supportive environments foster effective learning. The advantages of said encouragement aligns with Kilpatrick (2012)'s supported assertion that social capital cultivates an environment of effective learning.

Effective learning communities require a level of trust and personal connection, which establishes a safe space in which participants can share without feeling judged. I found this particularly relevant in AME's share; as a superintendent, he does not often have the same trusted safe space within the school wide meetings in the cafeteria or district wide meetings in the auditorium. Trust is often negated by barriers of position within traditional PD models, team meetings, and faculty development. The connection between the construct of trust will be discussed further as it pertains to themes of equality, roles, and reciprocity.

PBG corroborated this concept of a safe space, in her share that she isn't concerned about competition within the group, because she doesn't fear with

#MTedChat, “someone is going to take my job”. LBD rounded out the theme with an insightful share, that #MTedChat participants share in between ”putting kids to bed.” This share about a safe space is said to connect the group, in a unique way which offers professional bonds yet also respects personal lives. I found this share particularly relevant; Using the same example of putting a child to bed can be compared with an interruption from family member during a traditional face-to-face model of PD, which may not be as well received.

Research Question 1 yielded results that encompassed both interpersonal and intrapersonal categorizations while focusing on the reported learning experience. As exemplar, Interview Question 1 asked, “How do you learn together?”, pinned from a Social Constructionist lens of social communities. Yet Research Question 1 simultaneously seeks a participant’s reflection with an individual focus, in seeking personally reported experience. This recursive shift between social constructionist and an individual constructivist lens is at the crux of this study and established literature (Keiny 1994, Turner and Blackburn 2016). What is unique to this study, is that it examines this shift between group learning and individual meaning making in a new innovative learning space. Kinnucan-Welsch (2007) extends, “the professional development of teachers is that constructivism is a theory of learning that suggests that individuals make meaning of the world through an ongoing interaction between what they already know and believe and what they experience” (p. 143).

In simplest terms, collaborative learning spaces can provide an opportunity to learn; but it’s not valuable without the individual reflections and ability to construct

meaning of the material. Bridging both interpersonal and intrapersonal themes, Interview Question 1 asked participants, “How’d you learn together?” In answer to this guiding question, findings demystified how shared perspectives and individual reflection lend towards learning collectively. The majority of participants shared a cornerstone theme, illustrating that learning is elevated when we learn from diverse perspectives. Closely tied to the fact that #MTedChat is not geographically bound, opportunity for increased varied perspectives is leveraged through the #MTedChat platform. Illustrated through a myriad of responses, in different contexts, participants shared exemplars of how varied perspectives from others in various regions within Montana and beyond, have directly influenced their own learning and application. Aptly addressing all three contributing components, Kilpatrick (2012) furthers “respecting diversity fosters learning by building a climate of trust and encouraging risk-taking.” Varied perspectives highlighted in Chapter 4 illustrate differences, ranging from different educational positions (teacher, coach, or administrator), to teaching experience (pre-service, in-service or veteran), to discipline (e.g. Math, Science, English), to grade level teaching, and to geographic proximity (school district size, town or city size, and rural or urban classification). Prompting reflection, the opportunity to listen to others’ varied perspectives aids and builds our own individual learning. Remarkably, #MTedChat demonstrated characteristics that are simultaneously both global and intimate.

Research Question 2

What are the different roles that participants assume in the EdChat?

Research question 2 connects with the Community of Inquiry model by framing *teacher presence* and *social presence*. Seeking to answer *what are the different roles that participants assume in the EdChat?*; the participants identified reciprocity, roles, and equity as central to their participation in the EdChat space. Specifically, Research Question 2 aimed to find defining data through the specific constraints of *teacher*, *learner*, or *co-learner* (Charbonneau-Gowdy, 2016). These constructs overlapped to inform how participants learned within the EdChat community.

As detailed findings in Chapter 4 reveal, reoccurring themes of reciprocity, roles, and equality overlapped in response, and provided insight as to how participants of #MTedChat learn by which roles they assume. These themes are important for building social capital in a network as they rely on trust, relationships, and curated safe spaces, all critical elements of an effective social network. In a study by Daniel, Schwier et al. (1969) of virtual learning spaces, they assert, “Trust is then an enabler of social capital” and “Social capital refers to the stock of social trust, norms and networks that people can draw upon to solve common problems” (Daniel, Schwier et al. 1969). The design behind research question 2 yielded different results than intended, and yet, the participants’ answers organically developed through other questions and varied verbiage. Research question 2 focuses on the different roles that the participant assumes in the course of a #MTedChat setting(s): whether mentor, student, or co-learner (Charbonneau-Gowdy, Capredoni et al. 2016). While each participant is an educator and considered a teacher, for purposes of this study, the intention was to focus on whether the participant is

essentially leading the learning, receiving the learning, or both as co-learner. A discovered limitation in my questioning on assumed roles was prompted by the participants' ingrained understanding of the #MTEdChat roles of Facilitator and Participant (instead of mentor, co-learner, or student).

Themes of reciprocity, changing roles, and equality are each interwoven throughout the findings of social capital within this study. Also evident is how they align with Kilpatrick (2012)'s definition of Learning Communities, Social Constructionism, Vygotsky's (1978) theory of MKOs and Zone of Proximal Development, and *social presence* and teacher presence within the Community of Inquiry. The theme of reciprocity was not siloed to one identifiable area, as it relates deeply to roles and equality. Fletcher (2002) aptly describes the intersection of Professional Development, reciprocity of roles, and changes in practice. The researcher summarizes:

A shift is required from traditional 'top-down' models of professional development to a situated work-embedded model that is based on reciprocity in professional learning. An innovative approach where all learning partners work collaboratively as members of professional learning teams has been trialled in two schools in Brisbane, Australia with positive outcomes. (p.1)

Echoing Fletcher's (2002) focus on reciprocal roles in Professional Development, Kilpatrick (2012) identifies the integral role of a reciprocity: "reciprocity is strong. People are able to affect one another and the group as a whole directly. Changes can propagate easily. Coordination is tight. Ideas and knowledge may be distributed across the group, not held individually. These groups allow for highly productive and creative work to develop collaboratively" (Brown & Duguid, 2000, p. 143).

Speaking to Research Question 2's focus on roles, through the specific constraints of *teacher, learner, or co-learner* (Charbonneau-Gowdy, 2016), the overarching role of the self-regulated learner emerged. Self-regulated learning was interwoven through the findings of all three research questions, as it pertained to experience, roles, and application. Situated in the literature, EdChats are highly connected to self-directed and self-designed learning. The benefit of self-directed EdChats is that they therefore require additional self-discipline from the learner. Evidence of self-regulated learning emerged, particularly through the challenges presented by time and technology. Time and technological challenges can provide barriers to learning within #MTEdChat and require the participants to persevere. Given the example of time, educators need to be self-disciplined and motivated enough to plan and design their own PD model of learning. They choose which EdChat to participate in, they carved out time in their schedules to participate, and they voluntarily choose to participate for one hour of their week. Findings about self-regulation directly align with the teaching presence component within the CoI model. Teaching presence focuses on the design and facilitation of the cognitive and social processes in online contexts, as highly evident in #MTEdChat; whereas the #MTEdChat participant takes on an active role and direction in their own learning. Arguably, the participant bears some of the teacher presence role in his or her own learning. Revisiting LBD's relevant share illustrates the active self-regulated learner role she has chosen, "You have to be self-disciplined because you could just choose not to go. And so I began to write it in in my day plans, as you know every Tuesday night or whatever night for that EdChat. Every 'whatever night' that's for that period of time, that would be my PD." Specific to findings from #MTEdChat, participants' self-

determination is not typically motivated by external motivators or mandatory district requirements; it appears instead to be self-motivated. Ross, Maninger, LaPrairie, Sullivan, (2015) make the following connection:

Access to community learning through social networking allows for self-directed, voluntary, and informational learning that rejects isolated learning experiences in favor of “dynamic collaboration and dialogue inherent to life-changing online professional development.”

#MTEdChat participants shared that their motivations were internal, with the primary purpose to improve their practice as educators, a concept that present in all ten of the participants’ interviews, even though the responses varied somewhat. One notable finding was the way in which participants used self-regulation and determination to overcome the challenges of time and technology and stay active within the community. Indeed, this intrinsic motivation suggests a form of volition for members to stay active in the community. As a result, these findings may indicate the strength of social capital and responsibility for each other among the community members.

Research Question 3

What experiences do the participants in #MTEdChat bring to their professional practice?

The goal of Research Question 3 was to understand how participants applied any increased knowledge to their practice as educators. Participants identified how resources, perspectives, and their developed ongoing network improved their practice as educators. Findings had direct relevance to the Community of Inquiry model’s alignment of *cognitive presence*. Cognitive presence is comprised of both knowledge and the

application of that knowledge. That is, the knowledge becomes useful when the participants learned how to apply it to their teaching.

Revisiting Kilpatrick's (2012) foundational theory on learning communities, Kilpatrick extends that social capital is the purposed outcome of earlier described constructs of community (encouragement, trust, and personal). While it bears mention that social capital can contribute to Research Question 1's focus on reported experience, emergent themes of social capital align directly with how educators can use what they have learned from the learning community in their classrooms or practice. Discovered in this study, the participants' purpose and intention of joining and participating in #MTEdChat was to improve their practice. Research Question 3 is couched in the participants' primary motivator to elevate best practice. Connecting emergent themes, educators who feel that their practice has been improved would arguably report their experience as positive and valuable. Similarly, if participants valued their experience, they are going to use it and apply it. Given the time restraints and limited resources of educators, *relevance, application, and the outcome of improved practice* are the purpose of their joining. If #MTEdChat meets their expectation that it has pragmatic application, it would therefore be included in their lens of whether their experience was purposeful. Essentially, learning needs to be valuable in order to be a positive experience.

One of the interesting ways in which participants applied what they were learning in the #MTEdChat was to extend this knowledge to other technology resources and in turn, extend their social network. I discovered responses that spoke to not only classroom application, but also to applications in other aspects of learning, with observable

synergistic effects. In reflection, my biases pre-data collection included the assumption that educators share resources which aid in their practice. Prior to interviews, I did not identify what type of resources were shared or if they were actually helpful in improving practice. Participants shared valuable insights on how resources shared through #MTedChat helped to improve their practice. They provided context conceptually of how different types of resources help their practice, while also specifically identifying certain brands of useful software (e.g. flipgrid, seesaw, hyperdocs). Participants also shared details of how the new technological tools have improved their classroom practice and student learning. BTA shared that her extensive use of Seesaw originated from an initial #MTedChat suggestion, and she has been using it, and extending it, ever since. Findings that suggest participants' deeply varied perspectives on their practice were shaped and improved by their participation in #MTedChat was a surprising result. While Research Question 3 specifically asks about varied perspectives, I did not realize in advance how impactful these perspectives could be.

In another example of the benefit of varied perspectives, I found a post from KFH who connected #MTedChat with #DitchThatTextbook. This stretched the bounds of #MTedChat for me, because this participant demonstrated how connecting two very different EdChats with two hashtags exponentially extends the network yet again, and further expands varied perspectives. In this exemplar, KFH bridges connections between #MTedChat, a “smaller” regional EdChat, with #DitchThatTextbook (by Best Seller Author, Matt Miller). The ability of the participants to extend their experiences from #MTCHAT to these other technology platforms is important as it suggests a synergistic

effect for how a Twitter-based community can use resources to expand the network and impact other communities.

Another way the participants in #MTEdChat informed their practice and expanded their network was through different forms of professional development. Through design of this study, my focus was on the synchronous setting and the bound time of the weekly meeting. I focused research design on the learning and connections within that given hour on Tuesday nights. Unexpectedly, I discovered an ongoing network that existed outside of the hourly weekly meeting, which included network connections for job opportunities, traditional in-service days, shared face-to-face professional conferences, and occasional run-ins at the local middle school performance. This bridging surprised me, and further reinforced the complementary nature of EdChats with face-to-face opportunities. Almost a blended model, the most effective learning seems to embody both digital EdChats with face-to-face or traditional models. Effective examples of this are back channel EdChats during EdCamps. Three of the participants had interwoven connections as PBS Educators, and I was fascinated by how participants named each other casually throughout their interviews. I found it remarkable to observe their interwoven ongoing network, which breached both home and work.

Limitations and Future Studies

The findings from this study provide important insights into the experiences of teachers using a Twitter-based professional development forum. One unique aspect of this study is the voluntary nature of the teachers' participation within the network. The findings of this study should be considered within important contexts of the study's

limitations. There were six main limitations to this study. One, the sampling focused on participants who voluntarily choose to participate in #MTedChat. Two, findings are specific to this one EdChat, #MTedChat. Three, school districts and communities could be potentially divided by those educators who choose to participate, and those educators who do not. Four, this study arguably spotlights the highly motivated educators who participate in #MTedChat. Five, this study focuses on a regional EdChat, rather than subject matter focus, grade level, educational author, or other topic type. Six, this study examines just one social media platform, while a multitude of others exist.

. The first limitation is arguably the most significant, as the design of this study sampled those educators that have chosen to participate in #MTedChat. Dependently, if educators don't find #MTedChat valuable, then they won't be motivated to continue to participate. Conversely, this sampling is solely representing #MTedChat. Earlier conversations with #WYOEDChat creator James Kappte offered insights that EdChats provide the opportunity to "run with the runners." While a charged and proactive group promotes learning within its own community, it also could potentially promote division between those educators who participate and those who do not. BTA shared that a small percentage of #MTedChat participants are from the Billings region. She shared that this disconnection can be problematic as coaches, when they want to share resources and lessons. This highlights the fact that this study examines a specific subsection of those who opted into #MTedChat, and the study's sampling is not representative of the entire educator population. Furthering this consideration, the sampling focused on individuals

who volunteered to participate in EdChat. Had participation been mandated professional development by their district or institution, the findings would have been different.

Additionally, this study focused on a state-specific regional EdChat. While #MTedChat does not require participants to live in Montana, it organically pulls a larger segment from the Montana region. The findings from this #MTedChat study may not be applicable in other state-specific EdChats. A comparison of other region's EdChats would provide interesting insights for consideration. Of particular relevance, I would be interested to study an alternate EdChat, one which provides the discussion "Qs" or questions prior to the EdChat meeting. Without prompting, three respondents of this study shared their positive experiences with receiving questions ahead of time, so that they could prepare ahead of time for deeper discussion during the EdChat. Findings from this study prompt an interest in other EdChats that are not region specific. Comparatively, the EdChat #DitchThatTextbook, by author Matt Miller, currently has 25,300+ followers. Useful data could be collected as to how these larger EdChats operate and how their participants' reported experiences differ. I'm also curious how participants use more than one EdChat to extend their networks even further. I observed #MTedChat participants who included multiple EdChat hashtags, so as to join different groups exponentially, with even greater geographic reach. Also, as this study focused on experience and application, it provides opportunity for future longitudinal studies to examine changes over periods of time. Lastly, there are potential studies examining other learning community platforms: LinkedIn, Google, Teams, Slack, and others that are Community of Practice specific.

Implications and Recommendations

Exploration of this study's findings prompts further recommendations to educators and their EdChat practice. Recognizing that this study sampled teachers, coaches, and an administrator, it illustrated how each role can act as a change agent within their schools or districts. Findings indicated that #MTedChat participants did struggle with technology during their initial efforts to access the EdChat, and many shared that they had to essentially work through the technological challenges themselves. While this experiential learning might be the best approach, it seems that some sort of supportive introductory "how to" guidance would be helpful for first time participants. So much of learning the technology piece is dependent upon exposure. I'd recommend that districts provide initial training, possible face-to-face support, a workshop, or a screencast of instructions. A possible buddy or EdChat mentor tag team might also prove helpful. While this focus is on a technological skill set, perhaps an introduction to the theoretical application could prove beneficial for novice EdChat users. An interwoven EdChat workshop could showcase the technological skills needed while also approaching the learning community from a metacognitive lens. Framing EdChats from literature including Vygotsky's MKOs, the Community of Inquiry, and Kilpatrick's Community of Learners would provide insights for how we learn within EdChats.

Speaking to the possible divide between EdChat participants and non-participants within a given district, I'd recommend encouragement from staff and peers to join an

EdChat. Teetering on similar mandated traditional PD models, it seems important for EdChat participants to have ownership and agency in their EdChat participation, so I would not suggest requiring EdChats. Additionally, it's important to think of options to bridge this divide,

Finally, this study demonstrated how Internet access is a necessary tool in learning. Access to #MTedChat is not possible without an Internet connection. Access disparity and potential digital divide for teachers represents similar barriers for students. Recommendations of solutions for digital divide could be naïve in implementation, and an ever-charged initiative in promoting access.

Final Thoughts

It is timely that I am concluding this section at a point in history which is facing some uncertainty and profound challenges, specifically during the COVID-19 virus in March 2020. I include this for its relevance, as I reconsidered #MTedChat and EdChats today in reflection. I happened upon #MTedChat tweets that were asking others for suggestions and help on transferring some lessons online. This reflection of #MTedChat's post on a digital platform, asking for assistance transferring to online lessons, poignantly marked my day today. Tomorrow I drive to Minnesota to pick-up my daughter early in the semester, to finish her Freshman year of college online from home in Colorado. Today I was told as a State of Colorado employee, that our Staff Development Center will be working remotely from home until further notice. I am astounded how in a time of a pandemic crisis, technology is our viable connecting network.

A little over a month later, on April 26, 2020, I discovered a Tweet from RBM who shares the Montana PBS platform as a way for students to learn. #MTEdChat is an online EdChat learning community developed with the purpose of improving educator practice and ultimately improving student learning, and it is now elevated to real-time tool offering direct solutions for students. In reflection, online learning communities that were once considered secondary to face-to-face learning are now the main viable option of learning during this pandemic.

Chapter Five Summary

This phenomenological study explored the reported experiences of ten #MTEdChat participants and sought answers through three guided research questions as they pertain to Professional Development:

- RQ1: What are the participants' experiences in #MTEDCHAT?
- RQ2: What are the different roles that participants assume within #MTEdChat and how do these shape their learning experiences?
- RQ3: What experiences do the participants in #MTEdChat bring to their professional practice?

Findings of the online Professional Development space revealed themes which aligned heavily with the Community of Inquiry model. Shared narratives of learning experiences represented social constructionist and constructivist lenses. Often present in effective learning, the recursive nature between these two paradigms was ever present in the finding of this study.

Kilpatrick's (2002) meta theme of learning communities emerged as an unexpected theme that was interwoven throughout the study's findings. Themes categorically fell into constructs of interpersonal, intrapersonal, and social capital respectively. Echoing the recursive nature between social constructionism and constructivism, interpersonal and intrapersonal constructs scaffold together, for the purpose of the intended outcome of social capital. Social capital represents an educator's reported improved practice and is particularly valuable in analysis of reported experience to improve practice.

Understanding how each of these themes intersect became essential in evaluation of the EdChat learning community and how they reflect a larger Professional Development ecosystem. While the study of participants' experience is at the core of this study, evaluation of reciprocal roles (student, co-learner, or mentor) proved particularly relevant. Highly evident throughout responses, the underpinnings of self-regulated learning fueled this specific Professional Development model studied, #MTEdChat.

This study identified a multitude of areas for potential future research. Expanding from a specific chat for one region, a possible case study of EdChats in different regions could provide insights and comparisons that are region specific. Additionally useful would be a study of EdChats that are centered on discipline or grade specific studies (e.g. STEM, IEFA, Math, Kindergarten), rather than on a geographic region. I'd also recommend extended longitudinal studies, which could examine changes and practical application over periods of time. Additionally, it would be helpful to conduct a study of participants who are not voluntarily participating in an EdChat. This might prove

challenging for securing participation, but it would provide a sampling that is more representative of the educator population. Perhaps the study could examine first time experiences and focus on the challenges and barriers of participation. Admittedly, the #MTEdChat focused on participants that worked past any barriers. Arguably most telling, through three participants' organic shared accounts, #DitchThatTextbook provides discussion "Qs" prior to their synchronous meeting, which is claimed to prompt deeper discourse.

This study encourages several future implications for improved practice as identified through technological challenges and barriers. My most significant recommendation is to provide support for teachers who are unsure of, or uncomfortable, with Twitter EdChats. Video tutorials could provide useful guidance, as well as in-person in-district short over-the-shoulder support program.

Finally, what resonates most deeply from this study is the potential utility of online learning to overcome emerging worldwide challenges. For example, online learning and other services have become a necessity during the current pandemic. Equipping educators with a support system of trusted emotional support, resources, and varied perspectives is heightened to a level that I had not anticipated when I began this study.

REFERENCES CITED

- Abik, M., Ajhoun, R., & Ensias, L. (2012). Impact of Technological Advancement on Pedagogy. *Turkish Online Journal of Distance Education*, 13(1), 224-237.
- Acosta, D. M. (2014). Tweet up? Examining Twitter's impact on social capital and digital citizenship in higher education. *About Campus*, 18(6), 10-17.
Doi:10.1002/abc.21139
- Al-Zahrani, A. M. (2015). "From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking.(Report)." 46(6): 1133.
- Altınay, Z., & Altınay, F. (2015). Technology, pedagogy, and the Learning Society. In M. J. Spector (Ed.), *The SAGE encyclopedia of educational technology*. Sage Publications. Credo Reference:
http://proxybz.lib.montana.edu/login?url=https://search.credoreference.com/content/entry/sageet/technology_pedagogy_and_the_learning_society/0?institutionId=7751
- Apple, M. W., Noddings, N., Gee, J. P., Cunningham, M., Russell, D., Cherryholmes, C. H., & Pekarsky, D. (1999). Reviews of Dewey, Peirce, and the Learning Paradox. *American Educational Research Journal*, 36(1), 77-114.
- Auckland, S. and S. Kilpatrick (2018). "Leadership and Social Capital: Engaging Small Australian Communities in Development and Implementation of Learning Plans." *International Journal of Lifelong Education* 37(4): 495.
- ASCD. (2017a). Going beyond the Stitch Fix approach to PD. Retrieved from <http://inservice.ascd.org/going-beyond-the-stitch-fix-approach-to-pd/>
- ASCD. (2017b). Leading the learning: Tips to providing an effective In-service to peers. Retrieved from http://inservice.ascd.org/leading-the-learning-tips-to-providing-an-effective-in-service-to-peers/?utm_source=twitter&utm_campaign=Social-Organic&utm_medium=social

Bangert, A. (2008). "The influence of social presence and teaching presence on the quality of online critical inquiry." Journal of Computing in Higher Education **20**(1): 34-61.

Bangert, A. W. (2009). "Building a validity argument for the Community of Inquiry survey instrument." Internet and Higher Education **12**(2): 104-111.

Bazeley, P. (2013). *Qualitative data analysis : practical strategies*. London: SAGE.

Bell, K. (2017). Shake Up Learning. Retrieved from
<http://www.shakeuplearning.com/about-me/>

Birsa, E. (2018). Teaching Strategies and the Holistic Acquisition of Knowledge of the Visual Arts. *Center for Educational Policy Studies Journal*, 8(3), 187–206.

Blumengarten, J. (2020). "Education Chats." from
<https://sites.google.com/site/twittereducationchats/education-chat-calendar/chat-calendar-mst>.

Borba, M. C., Askar, P., Engelbrecht, J., Gadani, G., Llinares, S., & Aguilar, M. S. (2016). Blended Learning, E-Learning and Mobile Learning in Mathematics Education. *ZDM: The International Journal on Mathematics Education*, 48(5), 589-610.

Boulder, O. C. (2019). "Observation Protocol for Learning Environments." from
<https://oit.colorado.edu/services/academic-technology/projects/teaching-observation-protocol>.

Brichacek, A. (2015). 19 education Twitter chats worth your time. Retrieved from
<https://www.iste.org/explore/articledetail?articleid=7>

Britt, V. G., & Paulus, T. (2016). "Beyond the four walls of my building": A case study of #Edchat as a community of practice. *American Journal of Distance Education*, 30(1), 48-59.

- Carpenter, J. (2015). Preservice Teachers' Microblogging: Professional Development via Twitter. *Contemporary Issues in Technology and Teacher Education (CITE Journal)*, 15(2), 209-234.
- Charbonneau-Gowdy, P., et al. (2016). "Brave Forms of Mentoring Supported by Technology in Teacher Education." *Electronic Journal of e-Learning* 14(1): 3-14.
- Chow, A. S., & Croxton, R. A. (2017). Designing a Responsive E-Learning Infrastructure: Systemic Change in Higher Education. *American Journal of Distance Education*, 31(1), 20-42.
- Churcher, K. M. A., Downs, E., & Tewksbury, D. (2014). "Friending" Vygotsky: A Social Constructivist Pedagogy of Knowledge Building through Classroom Social Media Use. *Journal of Effective Teaching*, 14(1), 33-50.
- Cochrane, T. D. (2011). Beyond the Yellow Brick Road: Mobile Web 2.0 Informing a New Institutional E-Learning Strategy. *Journal of Asynchronous Learning Networks*, 15(4), 60-68.
- Collins, A., & Halverson, R. (2009). *Rethinking education in the age of technology : the digital revolution and schooling in America*. New York: Teachers College Press.
- Jamie Colwell & Amy C. Hutchison (2018) Considering a Twitter-Based Professional Learning Network in Literacy Education, *Literacy Research and Instruction*, 57:1, 5-25, DOI: 10.1080/19388071.2017.1370749
- Costley, K. C. (2012). *An Overview of the Life, Central Concepts, Including Classroom Applications of Lev Vygotsky*. Retrieved from <http://search.ebscohost.com.proxybz.lib.montana.edu/login.aspx?direct=true&db=eric&AN=ED529565&site=ehost-live>
- Creswell, J. W. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Los Angeles, CA: Sage.

- Daniel, B., et al. (1969). "Social Capital in Virtual Learning Communities and Distributed Communities of Practice." **29**(3).
- Darling-Hammond, L., et al. (2017). Effective Teacher Professional Development. Palo Alto, CA, Learning Policy Institute.
- Denzin, N., & Lincoln, Y. (2018). *The Sage handbook of qualitative research* (Fifth ed.).
- Dewey, J. (1938). *Experience and education*. New York,: The Macmillan company.
- Dils, A. K. (2004). The use of metaphor and technology to enhance the instructional planning of Constructivist lessons. *Contemporary Issues in Technology and Teacher Education (CITE Journal)*, 4(2), 214-224.
- Edwards-Groves, C. J. (2014). "Learning Teaching Practices: The Role of Critical Mentoring Conversations in Teacher Education." Journal of Education and Training Studies 2(2): 151-166.
- Ekanayake, S. Y., & Wishart, J. (2015). Integrating Mobile Phones into Teaching and Learning: A Case Study of Teacher Training through Professional Development Workshops. *British Journal of Educational Technology*, 46(1), 173-189.
- Everette, M. (2015). "Scholastic: Twitter for Teachers 201: Chatting and Best Practices." from <https://www.scholastic.com/teachers/blog-posts/meghan-everette/twitter-teachers-201-chatting-and-best-practices/>.
- Ferriter, W. M., & Provenzano, N. (2013). Today's Lesson: Self-Directed Learning . . . for Teachers. *Phi Delta Kappan*, 95(3), 16–21.
- Felix, U. (2005). E-Learning Pedagogy in the Third Millennium: The Need for Combining Social and Cognitive Constructivist Approaches. *ReCALL*, 17(1), 85-100.

- Fletcher, Margaret. (2002). Reciprocity in professional partnerships: Outcomes for everyone.
- Gagnon, K. (2015). Using twitter in health professional education: a case study. *Journal of allied health*, 44(1), 25.
- García, S., & Fombona, J. (2015). Approach to the Phenomenon of M-Learning in English Teaching. *Digital Education Review*(28), 19-36.
- Garrison, D. R. (2007). Online Community of Inquiry Review: Social, Cognitive, and Teaching Presence Issues. *Journal of Asynchronous Learning Networks*, 11(1), 61-72.
- Garrison, D. R. (2016). *Thinking collaboratively: learning in a community of inquiry*. New York Routledge.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2), 87-105.
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95-105. Doi:10.1016/j.iheduc.2004.02.001
- Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education : framework, principles, and guidelines* (1st ed.). San Francisco: Jossey-Bass.
- Giorgi, A. (2009). *The descriptive phenomenological method in psychology : a modified Husserlian approach*. Pittsburgh, Pa.: Duquesne University Press.
- Grant, M. M., Tamim, S., Brown, D. B., Sweeney, J. P., Ferguson, F. K., & Jones, L. B. (2015). Teaching and Learning with Mobile Computing Devices: Case Study in K-12 Classrooms. *TechTrends: Linking Research and Practice to Improve Learning*, 59(4), 32-45.

- Greenhalgh, S., & Koehler, P. (2017). 28 Days Later: Twitter Hashtags as “Just in Time” Teacher Professional Development. *TechTrends*, 61(3), 273-281.
- Harrington, K. (2017). The best PD comes from your professional learning network. Retrieved from <https://www.iste.org/explore/articleDetail?articleid=1078&category=ISTE-Standards-in-Action&article>
- Heidegger, M., & Sallis, J. (1978). *Radical phenomenology : essays in honor of Martin Heidegger*. Atlantic Highland, N.J.: Humanities Press.
- Holmes, K., Preston, G., Shaw, K., & Buchanan, R. (2013). ‘Follow’ me: networked professional learning for teachers. *Australian Journal of Teacher Education*, 38(12). Doi:10.14221/ajte.2013v38n12.4
- Hora, M. T. (2015). "Toward a Descriptive Science of Teaching: How the TDOP Illuminates the Multidimensional Nature of Active Learning in Postsecondary Classrooms." *Science Education* 99(5): 783-818.
- Hsieh, H., & Shannon, S. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Husserl, E. (1931). *Méditations cartésiennes : introduction à la phénoménologie*. Paris: A. Colin.
- International Society for Technology in Education. (2017a). Essential conditions: Ongoing professional learning. Retrieved from <http://www.iste.org/standards/essential-conditions/ongoing-professional-learning>
- International Society for Technology in Education. (2017b). ISTE Standards. Retrieved from <http://www.iste.org/standards>
- Jackling, B., Natoli, R., Siddique, S., & Sciulli, N. (2015). Student Attitudes to Blogs: A Case Study of Reflective and Collaborative Learning. *Assessment & Evaluation in Higher Education*, 40(4), 542-556.

- Jackson, D., & Temperley, J. (2007). From professional learning community to networked learning community. *Professional learning communities: Divergence, depth and dilemmas*, 45-62.
- Keiny, S. (1994). Constructivism and teachers' professional development. *Teaching and Teacher Education*, 10(2), 157-167.
- Keskin, N. O., & Kuzu, A. (2015). Development and Testing of a M-Learning System for the Professional Development of Academics through Design-Based Action Research. *International Review of Research in Open and Distributed Learning*, 16(1), 193-220.
- Kilpatrick, S., Barrett, M.S., & Jones, T (2012). "Defining learning communities." University of Tasmania Discussion Paper.
- Kilpatrick, S., et al. (1999). "The role of group learning in building social capital." Journal of Vocational Education & Training 51(1): 129-144.
- Kim, S., Kim, H., & Han, S. (2013). A Development of Learning Widget on M-Learning and E-Learning Environments. *Behaviour & Information Technology*, 32(2), 190-202.
- Kinnucan-Welsch, Kathryn, "Reconsidering Teacher Professional Development Through Constructivist Principles" (2007). Teacher Education Faculty Publications. 9. https://ecommons.udayton.edu/edt_fac_pub/9
- Kirsten, Nils. (2019). Improving Literacy and Content Learning across the Curriculum? How Teachers Relate Literacy Teaching to School Subjects in Cross-Curricular Professional Development. *Education Inquiry.*, 10(4), 368-384.
- Kivinen, O., & Ristela, P. (2003). From Constructivism to a Pragmatist Conception of Learning. *Oxford Review of Education*, 29(3), 363-375.
Doi:10.1080/03054980307442

- Learning Forward. (2017). Standards for professional learning. Retrieved from https://learningforward.org/standards-for-professional-learning#.VhQkn_IVhBc
- Lieberman, A., & Pointer Mace, D. (2010). Making Practice Public: Teacher Learning in the 21st Century. *Journal of Teacher Education*, 61, 77-72), p.77-88.
Doi:10.1177/0022487109347319
- Lindsay, L. (2016). Transformation of Teacher Practice Using Mobile Technology with One-to-One Classes: M-Learning Pedagogical Approaches. *British Journal of Educational Technology*, 47(5), 883-892.
- Lipman, M. (2003). *Thinking in education* (2nd ed.). New York: Cambridge University Press.
- Ludgate, H., Becker, S. A., & Johnson, L. (2015). Engaged learning. In M. J. Spector (Ed.), *The SAGE encyclopedia of educational technology*. Sage Publications.
Credo Reference:
http://proxybz.lib.montana.edu/login?url=https://search.credoreference.com/content/entry/sageet/engaged_learning/0?institutionId=7751
- Mackey, T. (2016). Asynchronous online learning. In S. L. Danver (Ed.), *The SAGE encyclopedia of online education*. Sage Publications. Credo Reference:
http://proxybz.lib.montana.edu/login?url=https://search.credoreference.com/content/entry/sageonline/asynchronous_online_learning/0?institutionId=7751
- Marín, V. I., Jääskelä, P., Häkkinen, P., Juntunen, M., Rasku-Puttonen, H., & Vesisenaho, M. (2016). Seamless Learning Environments in Higher Education with Mobile Devices and Examples. *International Journal of Mobile and Blended Learning*, 8(1), 51-68.
- Maxwell, J. A. (2013). Qualitative research design : an interactive approach. Thousand Oaks, Calif., SAGE Publications.
- McCaughan, K. (2013). Barrows' integration of Cognitive and Clinical Psychology in PBL tutor guidelines. *Interdisciplinary Journal of Problem-based Learning*, 7(1), 11-23.

- McKeachie, W., & Svinicki, M. (2014). *McKeachie's Teaching Tips: strategies, research, and theory for college and university teachers*. Belmont, CA: Wadsworth.
- McLoughlin, C., & Lee, M. J. W. (2010). Personalised and Self Regulated Learning in the Web 2.0 Era: International Exemplars of Innovative Pedagogy Using Social Software. *Australasian Journal of Educational Technology*, 26(1), 28-43.
- Menter, I. (2015). Teacher education. In J. D. Wright (Ed.), *International encyclopedia of the Social & behavioral sciences (2nd ed.)*. Elsevier Science & Technology.
Credo Reference:
http://proxybz.lib.montana.edu/login?url=https://search.credoreference.com/content/entry/estsocial/teacher_education/0?institutionId=7751
- Merriam, S. B. (1988). *Case study research in education : a qualitative approach* (1st ed.). San Francisco: Jossey-Bass.
- Miles, M., & Huberman, A. (1984). Drawing Valid Meaning from Qualitative Data: Toward a Shared Craft. *Educational Researcher*, 13(5), 20-30.
- Montana Office of Public Instruction. Teacher Learning Hub. (2017). More About the Hub & Contact Information. Retrieved from <http://learninghub.mrooms.net/mod/page/view.php?id=12535>
- MT EdChat. (2017). "Montana Education Renewal Units." from <https://sites.google.com/site/mtedchat/-mtedchat-renewal-units>.
- Munoz, L. R., Pellegrini-Lafont, C., & Cramer, E. (2014). Using social media in teacher preparation programs: Twitter as a means to create social presence. *Penn GSE Perspectives on Urban Education*, 11(2), 57-69.
- Murphy, C., Scantlebury, K., & Milne, C. (2015). Using Vygotsky's zone of proximal development to propose and test an explanatory model for conceptualising coteaching in pre-service science teacher education. *Asia-Pacific Journal of Teacher Education*, 43(4), 281-295. Doi:10.1080/1359866X.2015.1060291

National Center for Educational Statistics (2020). "Rural Education in America."

Nedungadi, P., & Raman, R. (2012). A New Approach to Personalization: Integrating E-Learning and M-Learning. *Educational Technology Research and Development*, 60(4), 659-678.

Nicholson, J., & Galguera, T. (2013). Integrating new literacies in higher education: A self-study of the use of Twitter in an education course. *Teacher Education Quarterly*, 40(3), 7-26.

Nolan, A. and T. Molla (2018). "Teacher Professional Learning in Early Childhood Education: Insights from a Mentoring Program." Early Years: An International Journal of Research and Development 38(3): 258-270.

Ordóñez de Pablos, P., Tennyson, R. D., & Lytras, M. D. (2015). *Assessing the Role of Mobile Technologies and Distance Learning in Higher Education*: IGI Global.

Ostashewski, N. M., Reid, D., & Moisey, S. (2011). Applying constructionist principles to online teacher professional development. *The International Review of Research in Open and Distributed Learning*, 12(6), 143-156.
<https://doi.org/10.19173/irrodl.v12i6.976>

Ozuorcun, N. C., & Tabak, F. (2012). Is M-learning Versus E-learning or are They Supporting Each Other? *Procedia – Social and Behavioral Sciences*, 46, 299-305.
Doi:<http://dx.doi.org/10.1016/j.sbspro.2012.05.110>

Park, Y. (2011). A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types. *International Review of Research in Open and Distance Learning*, 12(2), 78-102.

Petrová, Z. (2013). On the Relevancy of Using Vygotsky's Theoretical Framework to Legitimize Dialogic Teaching/Learning. *Journal of Pedagogy*, 4(2), 237-252.

Pitler, H. (2017). Twitter and Your Professional Learning Network. Retrieved from <http://inservice.ascd.org/twitter-and-your-professional-learning-network/>

- Popkewitz, T. S. (1998). Dewey, Vygotsky, and the Social Administration of the Individual: Constructivist Pedagogy as Systems of Ideas in Historical Spaces. *American Educational Research Journal*, 35(4), 535-790.
- Reyna, J. (2016). Implementing E-Learning across the School of Education: A Case Study. *International Journal on E-Learning*, 15(1), 101-120.
- Rosenberg, J. M., Greenhalgh, S. P., Koehler, M. J., Hamilton, E. R., & Akcaoglu, M. (2016). An investigation of state educational Twitter hashtags (SETHs) as affinity spaces. *E-learning and Digital Media*, 13(1-2), 24-44.
- Ross, C., Maninger, R., Laprairie, K., & Sullivan, S. (2015). The Use of Twitter in the Creation of Educational Professional Learning Opportunities. *Administrative Issues Journal Education Practice and Research*, 5(1), 55-76.
- Savin-Baden, M., & Major, C. H. (2012). *Qualitative research : the essential guide to theory and practice*. Milton Park, Abingdon, Oxon ; New York: Routledge.
- Scardamalia, M., & Bereiter, C. (2010). A Brief History of Knowledge Building. *Canadian Journal of Learning and Technology*, 36(1).
- Shabani, K., Khatib, M., & Ebadi, S. (2010). Vygotsky's Zone of Proximal Development: Instructional Implications and Teachers' Professional Development. *English Language Teaching*, 3(4), 237-248.
- Shen, C.-w., et al. (2017). "Analysis of Social Media Influencers and Trends on Online and Mobile Learning." International Review of Research in Open and Distributed Learning 18(1): 208-224.
- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis : theory, method and research*. Los Angeles: SAGE.
- Snyder, M. M. (2009). Instructional-design theory to guide the creation of online learning communities for adults. *TechTrends*, 53(1), 48-56.

- Squires, D. R. (2014). M-Learning: Implications in Learning Domain Specificities, Adaptive Learning, Feedback, Augmented Reality, and the Future of Online Learning. *Journal of Educational Technology*, 11(3), 1-8.
- Stake, R. E. (2010). *Qualitative research : studying how things work*. New York: Guilford Press.
- Swan, K., Garrison, D., & Richardson, J. (2009). A constructivist approach to online learning: the Community of Inquiry framework. *Information technology and constructivism in higher education: Progressive learning frameworks*. Hershey, PA: IGI Global.
- Swan, K., & Ice, P. (2010). The community of inquiry framework ten years later: Introduction to the special issue. *The Internet and Higher Education*, 13(1), 1-4.
- Tallerico, M. (2006). Professional development. In F. W. English, *Encyclopedia of educational leadership and administration*. Sage Publications. Credo Reference: http://proxybz.lib.montana.edu/login?url=https://search.credoreference.com/content/entry/sageela/professional_development/0?institutionId=7751
- Tilley, L., & Woodthorpe, K. (2011). Is it the end for anonymity as we know it? A critical examination of the ethical principle of anonymity in the context of 21st century demands on the qualitative researcher. *Qualitative Research*, 11(2), 197-212.
- Timperley, H. (2008). *Teacher Professional Learning and Development*. *Educational Practices Series-18*. Retrieved from <http://search.ebscohost.com.proxybz.lib.montana.edu/login.aspx?direct=true&db=eric&AN=ED540736&site=ehost-live>
http://www.ibe.unesco.org/fileadmin/user_upload/Publications/Educational_Practices/EdPractices_18.pdf
- Trainor, A., & Graue, E. (2013). *Reviewing qualitative research in the social sciences*. New York ; London: Routledge.

- Tseng, H. W., Tang, Y., & Morris, B. (2016). Evaluation of iTunes University Courses through Instructional Design Strategies and m-Learning Framework. *Educational Technology & Society*, 19(1), 199-210.
- Tufford, L., & Newman, P. (2012). Bracketing in Qualitative Research. *Qualitative Social Work*, 11(1), 80-96.
- Turner, E. and C. Blackburn (2016). "Prospective and Mentor Teacher Perspectives on Co-Learning Events." *Mentoring & Tutoring: Partnership in Learning* 24(4): 271-289.
- U.S. Census Bureau (2020). "Rural and Urban." from <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html>.
- U.S. Department of Education. Office of Educational Technology. (2016). Future Ready Learning: Reimagining the Role of Technology in Education. *2016 National Education Technology Plan*. Retrieved from <https://tech.ed.gov/files/2015/12/NETP16.pdf>
- U.S. Department of Education. Office of Educational Technology. (2017). Reimagining the Role of Technology in Higher Education. Retrieved from <https://tech.ed.gov/files/2017/01/Higher-Ed-NETP.pdf4>
- United States Department of Education. (2016). Non-regulatory guidance for Title II, Part A: Building systems of support for excellent teaching and leading. Retrieved from <https://www2.ed.gov/policy/elsec/leg/essa/essatitleiipartaguidance.pdf>
- Van Manen, M. (1990). *Researching lived experience : human science for an action sensitive pedagogy*. Albany, N.Y.: State University of New York Press.
- Van Manen, M. (2014). *Phenomenology of practice : meaning-giving methods in phenomenological research and writing*. Walnut Creek, California: Left Coast Press.

- Vaughan, N. D., Cleveland-Innes, M., & Garrison, D. R. (2013). *Teaching in blended learning environments : creating and sustaining communities of inquiry*. Edmonton: AU Press.
- Vaughan, N. D., & Garrison, D. R. (2006). How blended learning can support a faculty development community of inquiry. *Journal of Asynchronous Learning Networks*, 10(4), 139-152.
- Vilkonis, R., Bakanoviene, T., & Turskiene, S. (2013). Readiness of Adults to Learn Using E-Learning, M-Learning and T-Learning Technologies. *Informatics in Education*, 12(2), 181-190.
- Vygotsky, L. (2007). Emergent Literacy—Theory, Practice, and Policy *Early Childhood Education: An International Encyclopedia*. Santa Barbara, CA: Praeger.
- Wenger, E., McDermott, R. A., & Snyder, W. (2010). *Cultivating communities of practice: a guide to managing knowledge*. Boston, MA: Harvard Business School Press.
- Whitaker, T. and J. Zoul (2015). What connected educators do differently. New York, Routledge.
- Zawacki-Richter, O., Müskens, W., Krause, U., Alturki, U., & Aldraiweesh, A. (2015). Student Media Usage Patterns and Non-Traditional Learning in Higher Education. *International Review of Research in Open and Distributed Learning*, 16(2), 136-170.

APPENDICES

APPENDIX A

IRB CONSENT FORM

Consent Form

SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY

Examining the Experiences of Teachers in Online Professional Development: A Teacher Education Twitter-Based Professional Learning Network

You are being asked to participate in a qualitative research study which studies your experiences as a participant in the #MTedChat Twitter-based teacher Education EdChat Professional Learning Network. This study serves to help obtain a better understanding of the learning experience and effectiveness of this said learning space.

You were selected based off of your response of interest, as your response indicated in Twitter, either through posting with the hashtag #MTedChat publicly or through Direct Message. You were selected also from the criteria of: (1) being an in-service or pre-service K12 educator: teacher, principal, coach, or school administrator (2) having participated in #MTedChat one time or more.

Procedures for this study will involve one 50-60 minute recorded zoom video conference interview. We will schedule this interview at an agreed upon time which is convenient to you. Your interview responses will remain confidential for the duration of this study, and will only be known by the researcher. Interview data will be stored securely on the researcher's password protected personal laptop. Interview data will be deleted at the time of dissertation completion.

As a participant in this study, there are no foreseen risks associated with your participation in this study. A direct benefit of one ten-dollar Starbucks card will be sent within one-week of participant's interview, via email. You will benefit indirectly, as you will be advancing this study by sharing your experiences as a part of the #MTedChat Twitter-based teacher Education EdChat Professional Learning Network.

Participation is voluntary. If you agree to participate you will be asked to participate in the one 50-60 minute interview concerning your experiences as a participant in the #MTedChat Twitter-based teacher Education EdChat Professional Learning Network. Participation is voluntary and you can choose to not answer any questions you do not want to answer and you can stop at anytime.

If you have any additional questions, you can contact me at beckynusbaum@gmail.com or 720-537-7599. If you have any questions or concerns about the rights of human subjects, you can contact the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 mquinn@montana.edu.

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____ (*name of subject*), agree to participate in this research. I understand that I may later refuse to participate and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _____

Investigator: _____

Date: _____

APPENDIX B

PARTICIPANT RECRUITMENT TWITTER POSTS

Recruitment Tweet

With link to digital recruitment flyer:

Seeking MTedChat participants for a 1-interview qual study examining experience (30-60 min) through Zoom video conference. \$10 Starbucks card Please DM if interested. THANK you. <http://tinyurl.com/yynmelvl>



**Seeking #MTedChat Participants for 1-Interview Study -
\$10 Starbucks's Coffee Card as small thank you for your valuable time**

Are you an in-service K12 teacher Principal, Coach or Administrator, who has participated at least once in #MTedchat?

Becky Nusbaum is an MSU Ed.D. student seeking to examine the learning experiences of #MTedchat participants.

The purpose of this qualitative phenomenological study is to discover group participants' (in-service teachers as learners or co-learners) perceptions of their experiences and learning outcomes as part of a teacher education professional learning group, via Twitter. Participation will consist of 1 interview through a zoom video conference. Interview will go no longer than 1 hr.

Thank you SO much for your consideration and time.

PLEASE Contact

Becky Nusbaum

@beckynusbaum

beckynusbaum@gmail.com

720-537-7599

APPENDIX C

INTERVIEW PROTOCOL

Interview Protocol

1. Tell me about your overall learning experience within the teacher education

Twitter PLN group, #MTEdChat.

2. Tell me about any benefits.
3. Tell me about any challenges
4. Tell me about the learning community and how you all interact.
5. Tell me about how you learn from each other.
6. How has the platform facilitated or hindered your learning?
7. What do you perceive as benefits of the EdChat setting?
8. What do you see as the limitation?
9. What motivated you to join this PLN?
10. What are the different roles you assume in the EdChat?
11. In what ways do you help other teachers learn?
12. In what ways do other teachers help you learn?
13. How do you learn together?
14. How has your practice been shaped by participating in #MTEDCHAT?

Possible follow-up questions:

- a. Can you give me an example of that?
 - b. Tell me about any resources that you have taken away from the group.
 - c. How did this new resource affect your teaching?
 - d. Tell me about any teaching practices that you have learned from the group.
 - e. How did this new teaching practice(s) affect your teaching?
15. Tell me about any varied perspectives that you have learned from the group.
16. How did this new varied perspective affect your teaching?