Exploring Effective Virtual Leadership and the use of

Computer-Mediated Communication Technology on a Virtual Team

by

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Abstract

Virtual teams are becoming more common in the workplace. It is typical for team members to work at a distance from each other and to rely on computer-mediated communication technology as a means of performing work and engaging with their team members and leaders. In some cases, members of virtual teams may never meet in person.

Despite the many benefits that virtual teams bring to the workplace such as the ability to work asynchronously, they also bring unique challenges such as creating a trusting team environment. As a result, it will take a strong, effective leader to ensure the virtual team performs. This includes a leader who uses computer-mediated communication technology effectively to engage with their team and who also exhibits certain leadership qualities that are well suited for virtual teams.

The purpose of this study is to apply qualitative descriptive in a study to explore how one effective virtual leader of a project team within an Alberta Energy Company utilizes the computer-mediated communication technology known as Yammer to engage with the project team. I also explore the leadership qualities exhibited by the virtual leader. My qualitative data collection includes text through posts made to Yammer and interviews with a selection of virtual team members. I then analyzed the data using a conventional content analysis approach.

The findings suggest that Yammer was primarily used for several purposes: project management; communication and collaboration; engagement with a dispersed workforce; and, to improve efficiency. The main leadership styles exhibited by the virtual leaders were a balance between transformational and transactional leadership styles.

Keywords: virtual leadership, computer-mediated communication technology, virtual teams, engagement, leadership styles, Yammer, social network, organization

Chapter 1: Introduction

As a virtual leader within an organization, I have personally witnessed and experienced the challenges of forming and sustaining virtual teams. I have struggled at times to develop team relationships, manage team performance, and maintain open lines of communication between team members. I have also seen my team members struggle with building relationships amongst their peers, feeling overall connectedness to the team, and demonstrating a comprehensive understanding of the team goals. My role as a virtual leader has also emerged over time. I did not join the organization as a virtual leader; however, as the organization changed, my position also changed. As my role evolved, I did not receive any additional training or guidance on being a virtual leader. I am instead carving my own path as a self-taught 'virtual leader'. This path includes conducting this research, which I have designed to explore one virtual leader's success leading a virtual project team in the use of the computer-mediated communication technology known as Yammer. My goal in conducting this research is both to support my own development, and provide resources for others who are learning about effective ways to use computer-mediated communication technology to lead virtual teams.

According to the literature I reviewed, which is consistent with my own experiences, despite the number of tools (i.e. computer mediated communication technology) that an organization has made available to members, the effective use of this technology in virtual teams seem to circulate around the leader. Do they use or promote the use of this technology among team members? How do they use it to build team relationships and overall improve team performance? How are they using it to support or achieve team goals? What type of leadership style does the leader exhibit? What leadership qualities do they have? The literature suggests there are techniques, leadership styles, and behaviors that are consistent in effective virtual

leaders and they can be quite different than those of a traditional leader who leads a team co-located with them (that is, in the same physical space). It is true that organizations are finding new ways to be more efficient by implementing robust technology that allows people across large geographical spans to work together without the added travel costs; however, if those individuals are not able to adapt to the virtual team dynamic, such an approach could negatively affect the team's performance. I have seen this take place in several teams within the Company[1] that have recently transitioned from a traditional structure to a virtual structure. For example, team members who once reported to a leader located in their same area are now reporting to leaders in different states and/or provinces and even different countries. This is also true for the leaders. They now have team members spread out geographically and in most cases this dispersed, virtual organizational structure is completely new to them.

Problem and Research Questions

It is time for organizations to take a strong look at virtual leadership and the use of computer-mediated communication technology. My research explores virtual leadership and the effective use of computer-mediated communication technologies. I want to understand how effective virtual leaders use computer-mediated communication technology within their teams and I also want to understand what leadership qualities makes them successful in doing so. As a result, my research, an exploratory case study, is designed to answer the following research questions (RQ):

- *RQ1: How does an effective virtual leader within a North American energy company use the communication technology tool known as Yammer to engage with their team members?*

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[1] I have anonymized the company that the research was conducted with.

● *RQ2: What leadership styles and behaviors does the virtual leader exhibit?*

For my research, qualitative text-based data was collected in two phases. Phase one involved collecting posts made to the Yammer team page of the virtual team I studied, while phase two involved semi-structured one-on-one interviews with a selection of team members, including the leader. I then examined this data through conventional content analysis, which resulted in several themes emerging in my findings. Overall, this research adds to the current research in the field of virtual teams and leadership and provides opportunities for future research. This study is limited in that it focuses primarily on the virtual leader and not the virtual team members. The qualities of virtual team members can also have an impact on virtual team effectiveness. This study also does not take into consideration personalities and/or generational gaps. It is also a relatively small scale qualitative study, and so findings cannot be generalized.

The next chapter contains the literature review that helped set the stage for my project. As a result, it primarily focuses on several key themes: defining/describing virtual leaders and teams; understanding the communication challenges faced by virtual leaders; identifying the leadership styles and behaviors of effective virtual leaders; identifying strategies and approaches that effective virtual leaders employ within their teams to address virtual leadership challenges; and identifying theories that are relevant to research on virtual leadership and teams.

The chapters following the literature review include chapters that detail the research design and methodology, findings and discussions, and conclusion. Appendices referenced throughout follow the references list.

Chapter 2: Literature Review

Overview

My literature review dives into the world of virtual leadership within the workplace. Organizations are constantly finding new and more effective ways to work and to accomplish their strategic purpose, vision, and goals. One of these approaches is migrating from a traditional leadership approach to a more virtual approach that uses computer-mediated communication (Martins, Gilson, & Maynard, 2004). "Gone are the days when you could work within the comfort zone of face-to-face communication and close proximity" (Kerfoot, 2010, p. 114). Now leaders can find themselves leading groups of geographically dispersed individuals they may never physically meet. The large majority of a virtual leader's work, which includes engagement with team members, is completed via computer-mediated communication technology – and if done poorly the performance of the team can suffer (Balthazard, Potter, & Warren, 2004; Carlson J.R., Carlson D.S., Hunter, Vaughn, & George, 2013; Kirkman, Rosen, Tesluk, & Gibson, 2004; Lin, Standing & Liu, 2008; Robert, 2017).

Organizations however should not expect leaders to automatically assume the role of a virtual leader and effectively be able to lead virtual teams. Virtual teams open up a whole new world of unique challenges for a virtual leader especially as they relate to interpersonal processes such as building team trust, cohesiveness, and relationships with the added challenge of doing so in an online setting (Avolio, Walumbwa, & Weber, 2009; Gaudes et al., 2007; Liao, 2017; Lin, Standing & Liu, 2008; Marlow, Lacerenza, & Salas, 2017; Robert, 2017). As a result, it is necessary to explore virtual leadership and the effective use of these technologies to understand how organizations can set their virtual leaders up for success when transitioning or adopting this

new approach to how work is performed. To help set the stage for my capstone project, my

literature review (LR) seeks to answer the following research questions (Q):

- *LRQ1: How is virtual leadership and virtual teams defined/described?*

- *LRQ2: What communication challenges does a virtual leader face?*

- *LRQ3: What leadership styles and behaviors do effective virtual leaders exhibit?*

- *LRQ4: What strategies and approaches do effective virtual leaders employ within their teams to address virtual leadership challenges?*

- *LRQ5: What theories are relevant to research on virtual leadership and teams?*

To manage my literature review, I developed a high level project plan which is provided

in Table 1 of Appendix A. This approach was based on the SALSA method which is defined as:

Search, Appraisal, Synthesis and Analysis (Booth, Papaioannou, & Sutton, 2016). Although the

dates may have shifted slightly throughout the project, this plan kept my review on track. I also

included a buffer week within my schedule to allow for catch up where needed. This literature

review methodology is organized according to the headings of the SALSA approach.

Search and Appraisal Strategy

I relied on two main databases when conducting my searches. These databases included

Discovery Service (EBSCO), which is available on the University of Alberta's library site, and

Google Scholar which I also accessed through the University of Alberta. I utilized key words

combined with Boolean logic to perform the majority of my searches. Below is a list of key

words I generated to aid in my literature review search strategy. They are organized in four

groupings.

Communication Technology	Work Environment	Organizational Structure	Outcome
Yammer Social network Computer-mediated Communication Technology Social network Online community	Enterprise Organizational Office Global	Virtual Team Leadership Globalization	Engagement Trust Satisfaction

To support the appraisal stage, I developed eligibility criteria and combined it with my search strategy where possible to help narrow down the research articles returned. This helped ensure the articles returned were scholarly and relevant to my research questions. I did slightly modify my initial eligibility criteria as I noticed there was a potential to leave out new research. For example, newer articles may not have been cited within research as much as older articles. As a result, I removed the number of citations from my final eligibility criteria. I also removed the requirement to be from a specific country as I noticed high quality research could have been neglected from my study. The final list of eligibility criteria I applied to my research is listed in Table 2 of Appendix A.

Another strategy that proved useful when conducting my research was identifying potential research from reference lists. Essentially I would read an article that met my inclusion criteria and as I came across referenced research of interest, I would add the referenced article to my list for review. I would then review it against the eligibility criteria to determine if it was a strong fit for my research. I was able to identify several key authors and research articles relevant to my research in this manner.

Literature Review Data Synthesis and Management

A literature review produces a large amount of data which needs to be synthesized in an organized fashion. To aid the data synthesis and management stage, I employed the use of a tool known as Zotero. This tool is downloaded directly to your computer, and adds a button to your web browser for quick and easy exporting of articles and metadata. With this tool I was able to complete my literature review electronically. I executed the following process when using Zotero:

1. Complete search using key words and Boolean logic in database of choice (EBSCO or Google Scholar).

2. Use hot button on browser bar to add potential articles of interest to Zotero tool.

3. Code articles in Zotero with eligibility criteria. The codes applied are also contained in Table 2 in Appendix A.

4. Move articles to included folder or excluded folder within Zotero tool based on eligibility criteria.

5. Read articles in included folder and highlight key information using Zotero highlighting tools. I also added notes to a text file attached to the article directly in Zotero. During this stage, I continuously reflected on my research questions to guide my data extraction process. In order for data to be extracted, it had to relate to my research question (Booth, Papaioannou, &Sutton, 2016).

6. Write the annotated bibliography for the article and save it as an electronic note attached to the article in the Zotero tool.

Zotero was a critical tool in my literature review as it enabled me to search, sort, evaluate, and ultimately perform my review methodology in one place.

Analysis of Research Findings and Themes

As mentioned, Zotero really became my one stop shop for my literature review. Due to the short timeframe, I committed to reading articles once and as a result my analysis had to be systematic in order to do this consistently. As I performed my review process in Zotero, principal topics and themes began to emerge. I later colour coded these topics for my final annotated bibliography. I also added these topics and themes to the coding system within Zotero to allow me to quickly sort articles based on information of interest. This colour coding and article coding proved to be extremely useful when writing the narrative of my literature review.

Discussion

Virtual Leadership & Teams

This section seeks to answer LRQ1. For the purpose of my research, I am interested in direct (i.e. appointed) leaders of workgroups instead of virtual team members who emerge as leaders. Essentially a virtual leader within the context of my research is an individual who has been hired by an organization to oversee the individual members of a team that operates in a virtual fashion. This can include teams that work in close proximity to each other but rely heavily on computer-mediated communication technology to perform work, such as on projects.

To further describe virtual leadership, it is necessary to explain the context of virtual teams. The majority of definitions within the literature reviewed are derived from Bell & Kozlowski (2002) which describes virtual teams as having most members geographically disperse from each other, and relying heavily on computer-mediated communication technology to engage with team members and perform work. Berry (2011) is also consistent with Bell &

Kozlowski's definition and further adds that "the use of technology alone does not make a team virtual" (p. 187). One very simple definition provided by Gaudes, Hamilton-Bogart, Marsh, & Robinson (2007) describes a virtual team "as a group of individuals that are working together in different physical locations" and "have a significant reliance upon technology to support their communication" (p. 84).

More recent versions of the definition of virtual teams begin to introduce the concept of virtuality which is used to describe how virtually complex a team is (Berry, 2011; Martins, Gilson, & Maynard, 2004; Marlow, Lacerenza, & Salas, 2017; Suh, Shin, Ahuja, & Kim, 2011). This is important because the more virtual a team becomes, the more complex the issues are that the virtual leader must address to ensure it functions properly (Zigurs, 2003). Berry (2011) indicates a high level of virtuality would be in the case where team members "work apart from each other in distant locations and only communicate and interact through computer-mediated communication or other distance communication technologies (p. 188). Martins, Gilson, & Maynard (2004) states "that virtual teams are teams first, with virtualness being treated as a team characteristic" (p. 808). The following factors, which can be useful in describing virtuality, can also be used to describe virtual teams according to Bell & Kozlowski (2002):

- **Temporal distribution:** teams that are distributed across time or utilize asynchronous communication media (p. 24),
- **Boundary spanning:** virtual teams that cross boundaries such as spanning different functional areas, organizations, locations, and/or cultures (p. 27),
- **Lifecycle:** life of the team, for example, if a team was generated to solve a specific problem or perform a task (p. 30),

- **Roles:** the various roles that exist on the team which can be similar or extremely different (p. 32).

In summary, according to the definitions reviewed, virtual teams and leaders is defined consistently throughout the literature review. Essentially two components are required for a team to be considered virtual: 1) the team must be geographically dispersed, and 2) the team must heavily rely on computer-mediated communication technology for the performance of their work.

Virtual Leadership Challenges

This section seeks to answer LRQ2. As demonstrated, virtual teams are fundamentally different from traditional teams especially in terms of their heavy reliance on computer-mediated communication technology and/or their level of virtuality. This heavy reliance on computer-mediated communication technology has "changed the dynamics and relationships between organizational members" (Berry, 2011, p. 187). It is easy for organizations to expect a traditional leader to automatically assume the role of a virtual leader since technology is everywhere around us but this would be unfair to the leader and to the virtual team members. The transition from one type of leadership to the other creates new challenges for leaders of virtual teams. For instance, "leaders and members of virtual teams do not always have the opportunity to seek training and development to overcome the challenges of being culturally and geographically distant, nor the serendipitous changes afforded by proximity to work associates who might provide mentoring for personal or professional guidance" (Hart, 2016, p. 352). This results in challenges that are unique to virtual teams which can have a negative effect on team inputs, processes, and outcomes. The inputs-processes-outcomes (IPO) model shows up widely in the literature reviewed on virtual teams and is well known as a "dominant framework used in the

study of teams" (Martins, Gilson, & Maynard, 2004, p. 809). The next sub-section describes the

IPO model in more detail, and organizes leadership challenges identified in the literature review

according to it.

Input Challenges

In the IPO model, a team starts with inputs: "Inputs to a virtual team are the initial

contributions, such as team design and construction" (Gaudes et al., 2007, p. 86). As mentioned,

virtual teams can vary in terms of their level of virtuality and present a wide range of challenges

as a result (Marlow, Lacerenza, & Salas, 2017). A team that is designed in a highly virtual

manner, can present the following input challenges for virtual leaders according to the literature:

- **Time zone issues** which can create concerns for team members being able to

  communicate or work together in real time (i.e. challenges associated with asynchronous

  communication) (Avolio, Walumbwa, & Weber, 2009; Martins, Gilson, & Maynard,

  2004).

- **Diversity elements** that leaders may need to understand and work with especially if

  teams are globally diverse (Berry, 2011).

- **Characteristics (i.e. personality, knowledge, skills, and abilities) of individuals**,

  including the virtual leader, may not be well suited for virtual team work (Gaudes et al.,

  2007; Martins, Gilson, & Maynard, 2004). As a result, members may find it hard to

  identify with the team virtually (Fiol & O'Connor, 2005). This can lead to challenges in

  unifying the team and promoting team identification and belonging (Sivunen, 2006). This

  can also lead to lower attitudes in participants within virtual teams (Dennis & Garfield,

  2003).

● The **required use of computer-mediated communication technology** can result in

anxiety especially if experience or training is limited on the technology (Berry, 2011;

Fuller, Vician, & Brown, 2016). This can also lead to difficulties in convincing

individuals to use computer mediated technology despite the fact that it can help enhance

team performance (Thomas, Bostrom, & Gouge, 2007). The research also suggests that

there is a relationship between personality and technology acceptance with optimism

having the strongest impact on the acceptance of technology (Walczuch, Lemmink, &

Streukens, 2007).

These input challenges can further complicate the team processes which later impact the

outcomes of the team.

Process & Output Challenges

The next two elements of the IPO model consist of processes and outputs. "Processes

represent the ongoing interaction between group members" while "outputs are associated with

the effectiveness of a virtual team and encompass performance, satisfaction, work attitudes, and

the behavioral manifestation of members of a team" (Gaudes et al., 2007, p. 90).

Communication, trust and relationship building are processes that can be negatively affected

within virtual teams as they are more difficult to establish and perform than in face to face

settings especially due to the reliance on computer-mediated communication technology for the

facilitation of these processes.

Weaknesses in these processes can negatively impact a virtual team's outputs especially

since "effective social relationships are a required constant for effective collaborative work"

regardless if the work is done virtually or face to face (Berry, 2011, p. 189). This is further

supported in studies that have shown relationships between team empowerment and team

performance (Kirkman, Rosen, Tesluk, & Gibson, 2004); and, cohesiveness, openness, and effectiveness in virtual teams (Carlson, et al., 2013; Balthazard, Potter, & Warren, 2004; Lin, Standing & Liu, 2008). The following list further describes the challenges associated with processes and outputs within virtual teams:

- **Planning processes** such as goal setting or creating a unified approach is more difficult due to limited interactions (Martins, Gilson, & Maynard, 2004).

- **Communication** may not be as often within virtual teams as casual conversations in the hallways or coffee rooms are not possible and as a result can inhibit outcomes such as team bonding and understanding (Berry, 2011; Martins, Gilson, & Maynard, 2004). This can also negatively impact outcomes such as socialization activities within the team (Ahuja & Galvin, 2003). Cramton (2001) also found that failure to communicate and difficulty communicating can also lead to a lack of mutual knowledge within teams.

- It is **difficult to monitor team level satisfaction** which is a strong predictor of virtual team performance (Lin, Standing & Liu, 2008) (Robert, 2017).

- Virtual communication **decreases an individual's ability to pick up on cues** which can be found in face to face communication which can result in misreading or misunderstanding of a situation (Berry, 2011; Martins, Gilson, & Maynard, 2004).

- Hambley, O-Neil, & Kline (2007) also recognize there is a **greater potential for misunderstandings** virtually than in face to face settings since it is difficult to establish personal connections virtually, thus creating the potential for losing the human element because of increased task focus. This is also identified by Kayworth & Leidner (2002) when they identify two challenges that leadership must overcome which are "traditional social mechanisms are lost or distorted" and "inhibition in building trust" (p.10).

These challenges can severely impact the interpersonal processes and relationships within virtual teams which can overall affect the team's performance. For example, a large portion of the research identifies development of trust within virtual teams as one of the major challenges for a virtual leader (Avolio, Walumbwa, & Weber, 2009; Gaudes et al., 2007; Liao, 2017; Lin, Standing & Liu, 2008; Marlow, Lacerenza, & Salas, 2017; Robert, 2017). This is especially important as a lack of trust, can have negative impacts on team performance as trust is often described as the "glue of the global workplace" (Martins, Gilson, & Maynard, 2004, p. 816).

Effective Virtual Leadership Styles and Competencies

This section seeks to answer LRQ3. It outlines the effective leadership styles and competencies within virtual teams according to the literature reviewed. When considering the leadership that is seen as effective in virtual teams, it is also important to consider the virtual team member's expectations of their virtual leaders which include "motivate team members, give support, give instructions for the use of communication technology and about computer-mediated communication practices in general, and set clear goals for the future" (Sivunen, 2008, p. 47). The leadership styles and competencies should seek to address these expectations.

Transformational Leadership

The transformational leadership style is heavily referenced as a style preference for virtual leaders over transactional leadership especially when media richness is high which is typical in virtual teams today (Huang, Kahai, & Jestice, 2010; Purvanova & Bono, 2009; Ruggieri, 2009). Allen & Vakalahai (2013) state the "leadership characteristics involved in leading dispersed teams is in alignment with the transformational leadership style" (p. 490).

The transformational leadership style can be described as "one that inspires, conveying a vision and passion for the projects that is contagious, instilling energy and enthusiasm into team members" (Gaudes et al., 2007, p. 89). This is very similar to leadership behaviors associated with relationship building which are often described as relationship-oriented behaviors and can be described as "treating employees with respect, building relationships, and making the work environment pleasant" (Mikkelson, 2015, p. 339). Although leaders often exhibit multiple leadership styles and behaviors, or find a balance between them, the literature reviewed suggests transformational leadership style and relationship-oriented behaviors need a stronger focus in virtual teams over transactional leadership style and task-oriented behaviors in order for the team to be effective.

Shared Leadership

Shared leadership is a leadership style that has been explored recently in the literature reviewed and the research has demonstrated positive relationships between shared leadership and outcomes in co-located teams (Hoch & Dulebohn, 2017; Wang, Waldman, & Zhang, 2014a). Shared leadership refers to multiple members of a team taking on leadership accountabilities within the team in a collective approach (Hoch & Dulebohn, 2017) (Liao, 2017) (Robert, 2017) (Wang, Waldman, & Zhang, 2014a). It is recognized as beneficial as it encourages collaborative decision making and behaviors which ultimately leads to increasing trust and knowledge sharing in team members (Hoch & Dulebohn, 2017). In order for this type of leadership to work, each member who takes on a shared leadership responsibility or accountability must exhibit the qualities expected of a leader such as being able to "participate in collaborative decision-making, influence and support other team members, foster motivation, and take responsibility for outcomes" (Hoch & Dulebohn, 2017, p. 681). An important realization by Liao (2017) states

"assigned leaders still have the responsibility in building trusting relationships within virtual

teams, which in turn facilitate the emergence of shared leadership and enhance team

performance" (p. 654). As a result, shared leadership does not just happen naturally in a team

and must be fostered by the initially assigned leader.

Competencies

Competencies encompass the knowledge, skills, attitudes and behaviors that have been

recognized in effective leaders of virtual teams throughout the literature review. These

competencies are often reflected in the various leadership styles and may have overlap in some

areas. The majority of competencies for virtual leaders of virtual teams revolve around effective

communication and collaboration through the use of computer-mediated communication

technology (Zigurs, 2003). Berry (2011) recognizes four competencies required to lead effective

virtual teams which are "communication, establishing expectations, allocating resources, and

modeling desired behaviors" (p. 200). In addition, Hambley, O'Neill, & Kline (2007) identified

over 30 behaviors of effective virtual team leaders which include:

- Encourage regular communication and establish various communication channels to support

  it

- Facilitate team members getting to know each other

- Help engage people to communicate effectively through different media

- Keep team members feeling connected to rest of team

- Establish regular virtual team meetings

An effective virtual leader will need to find strategies and approaches to put these

competencies into real action by using the computer-mediated communication technology in an

effective manner.

Computer Mediated Communication Technology within Virtual Teams

In order to address LRQ4, it is necessary to understand how computer-mediated communication technology is described within the literature. Suh Shin, Ahuja, & Kim (2011) classifies computer-mediated communication technology into two categories which includes (1) personalized computer mediated communication such as e-mail and instant messaging and (2) communal computer-mediated communication such as audio/video conferencing, threaded discussions, electronic group calendar/scheduling tools, and other group electronic support systems. More recent literature reviewed begins to bring in the idea of social media or web based communication technology tools such as Skype, Google Hangouts, and Trello (Dixon, 2017). In addition, workplaces are using social media tools such as Yammer to support virtual team engagement. One study on the use of Yammer found that Yammer emerged as a "space for information sharing, idea generation, problem-solving and relationship building" (Riemer, Scifleet, & Reddig, 2012, p. 2). Yammer is further described in Chapter 3 of this report.

The use of computer-mediated communication technology within virtual teams can have a positive impact on the team's performance; however, it must be used effectively. According to the literature reviewed, the virtual leader can employ strategies and approaches in the effective use of this technology to overcome the challenges previously identified (Berry, 2011; Hambley, O'Neill, & Kline, 2007; Lin, Standing & Liu, 2008; Malhotra, Majchrzak, & Rosen, 2007; Pauleen, 2002). Berry (2011) states, "formation activities such as establishing easy communication, understanding the technology to be used and technology training, and creating explicit start-up norms and expectations for team members are more critical in virtual team start-up than in co-located teams" (p. 201).

One strategy that has come up within the literature, which may not be possible for all virtual teams, is to meet face to face in the initial team kick-off or on a regular basis, and also hold regular virtual meetings as this can help nurture relationships and increase team cohesion (Lin, Standing & Liu, 2008). This is also supported in research that suggests that the development of social aspects of virtual team development is critical to their performance and satisfaction and must be considered at the outset of the virtual team development process (Lin, Standing & Liu, 2008). Hambley, O'Neill, & Kline (2007) also recognized the importance of virtual team meetings as an approach for virtual leaders to take; however, they emphasized the fact that the meetings must be delivered in an effective manner which is an area the leader should be trained in. Liao (2017) suggests "setting up early face-to- face meetings, using media-rich communication channels, and facilitating information exchange in a synchronous format all contribute to the trust building within virtual teams, which in turn enhances virtual team effectiveness" (p. 653).

As a result, the virtual leader will also need to learn to effectively use different media in order to facilitate these processes successfully (Hambley, O'Neill, & Kline, 2007). This includes learning "how to use the vividness and interactivity of media to make their presence felt in a positive way, and to exercise appropriate influence to move the team forward" (Zigurs, 2003, p. 344). Furthermore, this learning should help identify communication techniques within the technology since "frequent and continuous communications among team members may be the most important protocol to be supported (Berry, 2011, p. 197). This includes learning to "make additional efforts to make the virtual environment as friendly and human as possible" in order to positively influence the interpersonal processes that are so important to the team's success (Berry, 2011, p. 197). The virtual leader should place a large focus on building and sustaining

trust in virtual teams through effective communication, and paying attention to a remote worker's need for information (Ford, Piccolo, & Ford, 2017). This may include the leader "inviting comment and expressing an appreciation for member contributions. Such an effort made by a team leader will help members feel valued and in an environment where they feel able to contribute and voice opinion" (Gaudes et al., 2007, p. 89). The practices of effective virtual team leaders identified by Malhotra, Majchrzak, & Rosen (2007) further identify effective virtual leadership strategies as follows:

- **Be open** about team progress on a shared virtual workspace;

- Encourage **team collaboration** and the **sharing of team opinions** using asynchronous computer-mediated communication technology;

- Take time in virtual team meetings to **build team social relationships** (i.e. make it a standing agenda item at the start of every meeting);

- **Conduct roundtables** during meetings to ensure that all team members have an opportunity to be heard and to promote engagement;

- Have a set closure to the meeting to ensure that **meeting minutes** are captured and that next steps or forward plans are understood;

- **Highlight** team progress in a shared virtual workspace; and,

- **Recognize and/or reward** individuals in virtual settings. This can also be included at the start of each virtual meeting.

These practices also align with Sivunen's (2006) tactics that leaders can apply through computer-mediated communication in virtual teams to strengthen team members' identification with the team which are "catering for the individual, giving positive feedback, bringing out common goals and workings and talking up the team activities and face-to-face meetings" (p.

345). Overall, it is important to note that these leadership approaches and strategies may not be inherent to the leader and may need to be learned through formal and informal learning processes in order for them to implement them effectively. Training and development for a virtual leader or team member might include recognizing the knowledge, skills/abilities, and behaviors that are most effective in a virtual setting and practicing techniques that help demonstrate them (Chrisentary, 2015).

Models and Theories to Guide Research on Virtual Leadership

This section seeks to answer LRQ5 and provides details on the following models and theories: IPO Model, adaptive structuration theory (AST), and social identify model of deindividuation effects theory (SIDE). These theories are some of the more prominent theories that show up in research on virtual teams, according to a review of 45 research articles performed by Schiller & Mandviwalla (2007). In fact, both AST and SIDE are the theories that suggest that transformational leadership behaviors may be associated more strongly with team effectiveness in virtual than in face-to-face project teams (Purvanova & Bono, 2009, p. 344).

IPO Model

The IPO model, previously described, is recognized as "the dominant theoretical framework used in research on co-located teams and it provides a tool for categorizing and integrating literature on virtual teams" (Dulebohn & Hoch, 2017, p. 570; Fuller, Vician, & Brown, 2016; Gaudes, et al., 2007; Hoch & Dulebohn, 2017; Marlow, Lacerenza, & Salas, 2017; Martins, Gilson, & Maynard, 2004; Powell, Piccoli, & Ives, 2004; Schiller & Mandviwalla, 2007). Ultimately, virtual team research can be divided into team inputs, processes, and outcomes similar to how I organized the 'challenges' discussion in this literature review.

Adaptive Structuration Theory (AST)

The AST which is based on Giddens' structuration theory, "explains how groups develop in a given situation, especially when technology is introduced" (Schiller & Mandviwalla, 2007, p. 43). Maznevski & Chudoba (2000) defines it as "a high-level theory explaining the relationship between technology use and social interaction in creating group outcomes in organizational contexts" (p. 476) As a result, Schiller & Mandviwalla (2007) recognize that this theory is relevant to virtual team research since it focuses on technology use impacts which is a key element of communication in virtual teams.

"The heart of AST is the role of advanced information technology and its appropriation by members of the organization as they work together" (Maznevski, & Chudoba, 2000, p. 476). A challenge identified by Schiller & Mandviwalla (2007) as it relates to appropriation is that since "team members work together in a changing environment, it is more difficult to define the appropriation of IT to be or being used" (Schiller & Mandviwalla, 2007, p. 43). Even though AST shows up a lot in the research on virtual teams, "it is possible that the high frequency of use of AST suggests that we are still trying to identify the key explanatory constructs in virtual team research" (Schiller & Mandviwalla, 2007, p. 19).

Social Identify model of Deindividuation Effects (SIDE) Theory

SIDE theory is used when discussing how social categorization affects the development of relationships among people communicating via computer mediation (Cramton, 2001; Postmes, Spears, & Lea, 1998; Purvanova & Bono, 2009; Schiller & Mandviwalla, 2007). Schiller & Mandviwalla (2007) state "SIDE theory argues that people categorize themselves as part of either the in-group or the out- group based on the characteristics of others in the group" (p

50-51). As previously discussed, this is important since a member's identity or belonging in the group is important for their satisfaction, participation, and successes within the group.

Summary

In the majority of literature reviewed on virtual leadership, a need to explore this topic further is recognized. I have noticed that research on this topic can get dated quickly due to the fast pace of emerging technologies. As a result, the research is struggling to keep up with the fast pace of technology. In one survey, question participants indicated social software would be 45% more important in 3 years from the time of the survey. (Kiron, Palmer, Phillips, & Kruschwitz, 2012). As a result, my research will continue to add knowledge to this area and provide insight to organizations and individuals who find themselves affected by or in a virtual organization, team and/or role. In addition, my research will further expand the amount of research conducted on virtual team collaboration workspaces (i.e. online collaboration tools) such as Yammer. Currently, the majority of the research focuses on more archaic computer-mediated communication technology such as email and/or teleconferences. There is a large market for online collaboration spaces for businesses/teams, and it only continues to grow. This is especially important since organizations will want to get the value out of their virtual teams as they have their advantages such as being "able to communicate, collaborate, and create outputs irrespective of time and space, because they are not bound by temporal constraints or geographic location as are most face-to-face teams" (Berry, 2011, p. 188).

This literature review informs the approach to my capstone project which seeks to further explore virtual leadership effectiveness in virtual teams. Through this process I have observed that the use of computer-mediated communication technology and the leadership styles and

behaviors present in a team are the main factors in determining whether a virtual team's

performance will be successful. As a result, for my research project I identified an effective

virtual leader and explored how they are using computer-mediated communication technology to

engage with their virtual project team. In addition, I explored the different leadership styles and

behaviors that the leader exhibits within the virtual team. I will then be able to compare my

findings with the literature findings (i.e. successful leadership styles and behaviors, effective use

of computer-mediated communication technology in virtual teams) to determine if the results are

consistent or if there are new styles or techniques emerging from my research. As a result, my

capstone project will be guided by the following research questions:

- *RQ1: How does an effective virtual leader within a North American energy company use*
  the communication technology tool known as Yammer to engage with their team
  members?
- *RQ2: What leadership styles and behaviors does the virtual leader exhibit?*

Throughout my literature review, I have noticed that the majority of research is qualitative in

nature and includes data gathering strategies such as surveys and interviews. The strong use of

this methodology also helped guide my capstone project especially in terms of my research

design and methodology which is explained further in the next chapter.

Chapter 3: Research Design & Methodology

Approach to Research

In order for me to explore a virtual leader's effective use of Yammer within their virtual

team, I conducted an exploratory case study (Yin, 2003). I made the decision to approach my

research as a case study after reviewing two previous MACT Capstone Projects which were

Rebecca Hall's (2013) MACT research project, "Exploring how teachers use social media to interact within a community of practice for their self-directed professional development" and Matty Flores' (2017) MACT research project, "Superhero stories and why they matter: the Hero's journey of SpiderMable on Twitter". Both studies were qualitative in nature, included a social media element, used interviews as a data gathering strategy, and took an exploratory case-study approach.

When taking a case study approach it is important to explore the phenomenon in its natural context and to use many data gathering strategies in order to complete an informed description of the phenomenon (Baxter & Jack, 2008). In the case of my research, the natural context includes the online social space setting known as Yammer, and the phenomenon being explored was virtual leadership and teams within that space. Again, my research was designed to answer the following research questions:

- *RQ1: How does an effective virtual leader within a North American energy company use the communication technology tool known as Yammer to engage with their team members?*

- *RQ2: What leadership styles and behaviors does the virtual leader exhibit?*

Yammer can be described as the Facebook of the company – a social network that uses features such as groups, voting (i.e. liking posts), message threads, tagging, and following. Ultimately, it allows employees to communicate with one another. It is available to internal employees, allows individuals to create/join groups (which can be set as public or private), and allows individuals to post data to the social spaces within these groups. In case study approaches, it is also important to bind the case study to avoid scope creep/being too broad, and having too many objectives (Baxter & Jack, 2008). As a result, I established a research period of three

months (from Dec 1, 2017-Mar 1, 2018) for Phase 1 of my data collection which is later

described in this section. I also constrained my research to one virtual team within the

organization.

The next sections of this chapter further describe the research method, theoretical

framework, recruitment strategy and population, data gathering strategy, and data analysis

technique employed throughout this research project.

Research Method

The research method provides procedures to guide aspects of the research such as

sampling, data gathering strategies, and data analysis techniques. Because of the exploratory

nature and case-study approach of my research, the method I used to address my research

questions was qualitative description. As Sandelowski (2002) puts it, "qualitative descriptive

study is the method choice when straight descriptions of phenomena are desired" (p. 339). For

example, with my research I did not seek to understand or interpret why the phenomena was

occurring, I was instead focused on exploring and describing it. This type of research requires

the researcher to remain flexible, open and creative throughout their research (Sandelowski,

2000). I continuously reflected on and executed this requirement throughout my research. This

involved scanning the data collected in Phase 1 for preliminary codes and themes, and utilizing it

to inform Phase 2 of my research. This is evident in a sample of my Phase 1 field notes which

are provided in Appendix B. I continued to bounce back and forth between the data being

collected as a result. Ideally, my method was focused on organizing the information and

communicating it in a coherent manner throughout this report.

Theoretical Framework

My research was guided by constructivist and naturalistic perspectives. The goal of my research was to allow the virtual leader and team members to tell their story and describe their views of reality (i.e. constructivist) while studying real-world situations as they unfolded naturally in the social space known as Yammer (i.e. naturalistic).

Baxter & Jack (2008) recognize that the constructivist perspective is common when approaching research through a case study. In addition, the naturalistic perspective is often taken when applying the qualitative descriptive method to research (Sandelowski, 2002). Sandelowski (2002) suggests that "the naturalist inquirer will use techniques that allow the target phenomenon to present itself as it would if it were not under study" (p. 337).

It is important to note that throughout my research, I did not manipulate the behavior or participants in any manner as it was important for me to focus on the phenomenon of virtual leadership and teams in the real-life context. One example of how I applied this was setting my research period for Phase 1 from Dec 1, 2017-Mar 1, 2018. By doing this, the data I collected from Yammer during my research had already been posted prior to my research commencing.

Recruitment Strategy and Research Population

For the purpose of my research, I focused on a virtual team, and the leader of the virtual team, within an Oil and Gas Energy company located in Edmonton, AB which I am also employed at. I selected the virtual leader and team through purposeful sampling in order "to obtain cases deemed information-rich for the purposes of study" (Sandelowski, 2000, p. 338). Since I wanted to find the virtual leader/team that would best represent my research question, I reached out to the internal Sr. Digital Communications Advisor who is responsible for Yammer

using the email script provided in Appendix C, and asked them if they knew of a leader that

effectively uses Yammer with their team. Yammer is a fairly new technology for the

organization which is constantly promoted through internal messaging and communications. The

internal Sr. Digital Communications Advisor is aware of super users in the system (i.e. who use

it regularly and have their own team pages) which is also why I used this recruitment strategy.

The individual was quickly able to give me a name of a virtual leader based on the description I

provided to them in the body of the email and the information provided in the Information Letter

and Consent Form which is provided in Appendix D. As a result, I focused my research on this

virtual leader and by default their team. This helped ensure I had a case "deemed information-

rich for the purpose of the study" (Sandelowski, 2002, p. 338). Since there was a potential risk

that an individual's participation in this study may be identified by the internal Sr. Digital

Communications Advisor given the recruitment method and the phases of research planned, the

Advisor was asked to sign a Confidentiality Agreement which is include in Appendix E. This

helped reduce the risk to an acceptable level and did not leave any residual risk as a result. The

company's strong values of safety, integrity, and respect also helped ensure the risks did not

interfere with or outweigh the benefits of this research. In addition, all consent forms,

recruitment scripts and confidentiality agreement were approved through the research ethics and

management (REMO) application process.

I next reached out to the Virtual Leader, herein referred to as Virtual Leader #1 (VL1),

asking if they were interested in participating in my research using the email script provided in

Appendix F. The Information and Consent Form (Appendix D) was also attached to this email

and all other recruitment emails. VL1 responded on the same day agreeing to participate. From

there, I inquired about their team's use of Yammer and through email interactions I was able to

identify an appropriate Yammer group that VL1 was heavily involved with to base my research

on. The group selected was a project team that VL1 was a sponsor of and heavily engaged with

on Yammer. As a result, not everyone within the group reported to VL1; however, they were all

indirectly reporting to them as it related to this project.

The group VL1 suggested was a group that has restricted access on Yammer. As a result,

I had to request access from the group's administrator. Based on conversations with VL1, I

quickly realized that the administrator did not report to VL1; however, that person was also

acting as an informal virtual leader in the group. As a result, I identified the group administrator

as a potential candidate for Phase 2 of my research and sent them a recruitment email which is

included in Appendix G. They also readily agreed to participate and this individual is herein

referred to as Virtual Leader #2 (VL2). It is not uncommon for people to join groups within our

organization so it reasonable to believe that my joining the Yammer group was not questioned

and/or noticed by regular members of the group.

Once I gained access to the group page, I was able to see all of the posts made. I scanned

through the posts and identified another member that showed engagement in the group based on

number of posts they had generated and/or were tagged in. This individual also did not report

directly to VL1 but was also acting as a virtual leader within the group. As a result, I sent them a

recruitment email similar to the email sent to VL1 in Appendix A. This third individual is herein

referred to as Virtual Leader #3 (VL3). VL2 and VL3 are ultimately project leads within the

group that are accountable to VL1.

Since I also wanted to get perspective from virtual team members, I sent recruitment

emails to three individuals that reported directly to VL1 and were also part of the Yammer

group. One individual declined to participate due to their limited involvement in the project on

the group page. One individual did not respond. The third individual agreed to participate and is

herein referred to as Virtual Team Member #1 (VTM1). The recruitment email used is provided

in Appendix H.

        In total I was able to recruit four individuals for interviews which is known as Phase 2 of

my data gathering strategy. Figure 1 contains a social network diagram that illustrates the

relationships between the four research participants.
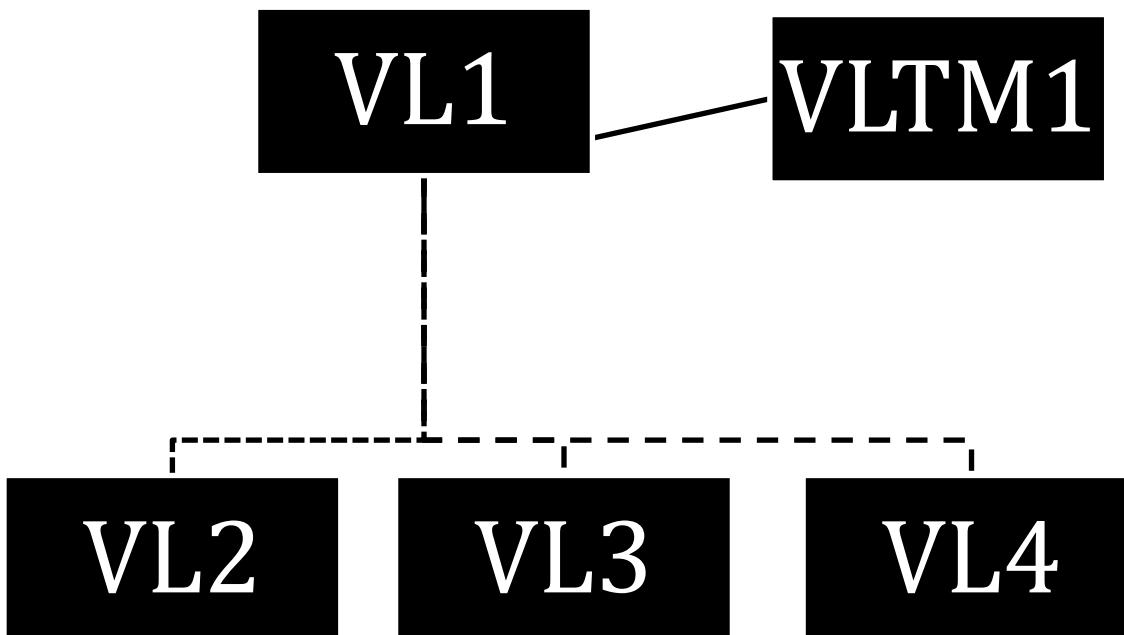
Figure 1. **Chart that represents the reporting relationships between the four research**

participants.

The solid line reflects a direct reporting relationship while the dashed line indicates an indirect

reporting relationship.

It is important to note that as part of the Information Letter and Consent Form these individuals

also consented to having their data in Yammer collected and analyzed as part of my research

project.

In qualitative research, sample sizes are small but adequate enough for replication to occur and be noted, and of course appropriate to the research being conducted (i.e. experts in the field being studied) (Morse, 2015).

Data Gathering Strategy

When using the case study approach, it is important to apply more than one data gathering strategy in order to understand the case as completely as possible (Baxter & Jack, 2008). As a result, I applied two phases of data gathering strategies during my research which were:

- **Phase 1:** Text-based data was gathered over a period of three months from the team's posts on their social space on Yammer. This research period was identified on the Information Letter and Consent Form as Dec 1, 2017 - Mar 1, 2018.
- **Phase 2:** Text-based data was gathered from one-on-one interviews with three virtual leaders (VL1, VL2, VL3) in the Yammer group and one virtual team member (VLTM1) that reported to VL1.

The Consent Form required individuals to acknowledge the phase(s) of research they were consenting to. All four individuals consented to both phases.

Phase 1: Yammer

As previously mentioned, in order to gather text-based data from Yammer, I first had to gain access to the virtual team's private group. Even though I am a member of the organization, I was unable to access the group without permission from VL2 as the group was set up as private. I did not have any issues obtaining access for the purpose of the research. I also ensured all

members understood the research and were comfortable with their data being collected. I did this

by following the research ethics and management requirements (REMO).

The data I gathered from Yammer included public posts made within the team's group

from Dec 1, 2017 to Mar 1, 2018. The term public in this context means they were shared with

all members of the group and not sent privately to only some members. I did not have access to

any private messages sent between team members and/or the virtual leaders. Once I obtained all

of the data I required, I ended my membership to the group and alerted all team members and the

leader that I did so. They were also able to see this by viewing the membership list of the group

page.

Phase 2: Interviews

For phase 2, I conducted four interviews. All interviews were conducted in person, and in

private meeting rooms, since all members recruited were located in Edmonton. It is important to

note that even though the four members interviewed were located in Edmonton, the Yammer

group consisted of members spread throughout USA and Canada and as a result, the group could

be considered geographically disperse as per Bell & Kozlowski's (2002) definition of virtual

teams. The fact that the group was also using Yammer to engage on a specific project meets the

second part of Bell & Kozlowksi's (2002) definition of virtual teams which is that they rely

heavily on computer-mediated communication technology to engage with team members and

perform work. As a result, I was confident the Yammer group and participants I had selected for

my research met the definition requirements of a virtual team.

For all interviews, I used open-ended questions and applied a semi-structured interview

approach. This aligns with Hsieh & Shannon (2005) that suggests semi-structured interviews

following conventional content analysis use questions that are open-ended rather than relating to

a specific pre-existing theory. The draft interview question themes I utilized, which were also

approved through REMO, were:

1. Tell me about how your team uses Yammer.

2. If a particular theme has emerged from the research, I may ask them more about this. For

   example, tell me more about <insert theme>.

3. What drives the use of Yammer in your team?

4. How has the use of Yammer affected your team?

5. Virtual Leader only: How would you describe your leadership style?

This approach allowed me to remain flexible in the interview and probe for more in-depth

responses where necessary. I audio recorded the interviews and later transcribed them to aid in

the data analysis. The audio recording also helped me maintain presence and flow in the

interview as taking breaks to take notes can be disruptive. I also ensured the individuals were

aware and okay with me recording the interview. The interviews proved to be adequate and

appropriate to my research as they provided more in-depth information to the text-based data

being studied and further helped complete the story. In addition, I applied the following practices

when conducting the interviews:

- Ensured participants understood how the data will be captured, used, analyzed, and

  reported on.

- Provided a welcoming atmosphere to the participants by booking private meeting rooms

  in a location known to the participant and easily accessible to them (i.e. on the same floor

  as where they worked).

- Ensured participants knew they can opt out of the research. This was also detailed on the

  Information Letter and Consent Form. Individuals had the right to opt out without penalty

and to have any collected data withdrawn and not included in the study up until May 31,

2018 (12AM MST). I did not have any participants choose to withdraw from the study.

- Ensured participants knew how to contact me if they have questions or concerns. Since

  we are members of the same company, it is easy for individuals to reach out to me via

  internal company methods; however, I also provided additional contact information on

  the Information Letter and Consent Form.

- Asked if the individual understood the consent form or if they had any questions before

  proceeding with the interview.

Summary

All raw data gathered during the two phases of research was scrubbed clean for personal

identifiers (i.e. names, company name, company specific terms) once coding was complete and

then maintained electronically on my computer which is password protected. Due to the risk of a

computer malfunction, I also stored a copy of the raw data on my google drive, which is also

password protected. Files that contained identifiable data were deleted permanently. In addition,

hard copies were shredded in locked shredding bins removed by external parties. Any hard

copies generated during this research were locked in a locked filing cabinet owned by the

researcher until it was determined they could be disposed (i.e. after coding).

At the end of the data gathering stage, I was confident I had reached data saturation as I

was not finding any new or relevant data, and I had exhausted all possible explanations for my

phenomenon. My data was also able to be gathered easily and my scope of study was fairly

narrow which helped me reach saturation (Morse, 2000).

Data Analysis Technique

I used conventional content analysis to analyze my data since content analysis is "one of the numerous research methods used to analyze text data" (Hsiesh, & Shannon, 2005, p. 1278). This involved coding, categorizing and identifying patterns within my data to describe the phenomenon under study (Hsiesh, & Shannon, 2005). For the content analysis, I considered all of the data collected in both phases at once as converging data from the multiple sources during the analysis process rather than handling it individually is typical in case studies (Baxter & Jack, 2008). My data analysis technique is summarized as follows:

First, I transferred the text data I gathered into five Word documents. One Word document was used to collect all of the data from Yammer during Phase 1. The other four Word documents contained the four separate interview transcripts from Phase 2.

Second, I printed the word documents to prepare for coding. Overall, my coding process included reading and re-reading the data and highlighting and commenting on parts of the data that were of interest. I only coded data if it related to my research question. This is important to mention especially for the interview phase as sometimes in open-ended interviews it is possible for the interviewee to go on tangents which results in data that is not relevant to the research problem (Campbell, Pedersen, Quincy, & Osserman, 2013). This means I was specifically looking for data that described how the group used Yammer and data that identified leadership styles and behaviors of virtual leaders. I originally planned to do the coding digitally using tracked changes features in Word; however, I found it was more beneficial to print the data and clip out the relevant excerpts for easier sorting into categories. Another challenge during the clipping and sorting of data was "identifying appropriate blocks of text for a particular code or codes" (Campbell et al., 2013, p. 297). To aid in the coding and categorization, I found I had to

print several copies of the data as sometimes the same data could fit into multiple categories. When I printed a copy of the data, I did so in a different coloured text so that I could easily identify it as a copy.

Third, I followed with categorizing the data, which included grouping data that was coded into categories. I reviewed the groupings multiple times to ensure the data fit within the category. Two photos taken during my coding work are found in Appendix I. I did find that it was helpful to have background knowledge in the subject of Yammer and also the Company which is beneficial for the coding and categorization process (Campbell et al., 2013).

It is important to recognize that I did not wait until all data was gathered before I begun conducting my analysis. Instead, I gathered some data, then I stopped and analyzed my data, and then I returned to gathering more data. I worked iteratively to address my research question which meant that I was conducting the content analysis practically at the same time as I was gathering data. This iterative process is typical as "analysis spirals from participants to data analysis, back to participants, and so forth, as the researcher learns about the phenomenon and develops the theory" (Morse, 2015, p. 588). The back-and-forth nature of data gathering and analysis helped me focus on certain patterns during the data gathering process. In addition, it helped me validate that my research questions were appropriate and helped verify my research would be reliable, valid and rigorous (Mayan, 2016). The next chapter provides the findings and discussion of the research.

Chapter 4: Findings and Discussion

This chapter provides a presentation of the research data collected, an overview of the data analysis results, and concludes with a discussion of the findings. The discussion section will address the research findings as they relate to my two research questions:

- *RQ1: How does an effective virtual leader within a North American energy company use the communication technology tool known as Yammer to engage with their team members?*

- *RQ2: What leadership styles and behaviors does the virtual leader exhibit?*

Data Presentation

The data collected during phase 1 and phase 2 of my research was text-based qualitative data. The first phase consisted of collecting posts made to the Yammer group page and the second phase consisted of collecting data through semi-structured interviews with virtual leaders and a virtual team member. This section of the chapter presents the data collected and analyzed during each phase of the research project.

Phase 1: Yammer

Phase 1 consisted of collecting posts made to the Yammer group during the research period which was from Dec 1, 2017 – March 1, 2018. A total of 12 main comment threads resulted and are further detailed in Table 1. Some main threads had a number of sub-posts (i.e. replies) which were also included in the data collected – provided consent was given by the individual who posted the data. In total, only one sub-post was not included as a result of not having consent. This is a very low representation and as a result it is safe to say that the removed post had minimal to no impact on the research project.

Due to the sub-posting ability to main threads, some of the threads were active for a number of days. This means they had posts over a series of day to that thread. The timeframe of the first post and last post on the main thread is included in the table below. It is interesting to note that the timeframes are relatively short which indicate a high response rate within the group. There were also some instances where individuals had liked a post within the thread and this number is also represented in the table. The "liking" ability was not commonly used according to this data. Lastly, two files were also posted to the Yammer group page during the research period; however, one of the files was not by a member who consented to having their data collected, and as a result, was not included in this research. Table 1 summarizes the text data collected for analysis during phase 1 of my research. It is also interesting to note that all posts were originated by one of the three virtual leaders. It is difficult to determine through the online data exactly how involved the other members of the Yammer group are. The total membership within this group is between 20-30 people.

Table 1

Summary of data collected during Phase 1

Data Collected	Originator	# of sub-posts on the thread	# of likes in thread	Timeframe of thread
Thread 1	VL2	3	2	Dec 1, 2017-Dec 5, 2017
Thread 2	VL2	0	0	Dec 8, 2017
Thread 3	VL1	2	1	Dec 7, 2017-Dec 11, 2017
Thread 4	VL1	6	0	Dec 7, 2017-Dec 11, 2017
Thread 5	VL1	3	0	Dec 11, 2017-Dec 15, 2017
Thread 6	VL1	1	1	Dec 15, 2017
Thread 7	VL1	1	0	Dec 15, 2017-Dec 19, 2017
Thread 8	VL3	0	0	Jan 16, 2018
Thread 9	VL1	1	0	Jan 30, 2018

Thread 10	VL1	1	0	Feb 5, 2018
Thread 11	VL1	2	0	Feb 14, 2018
Thread 12	VL2	8		Feb 2, 2018-Feb 28, 2018
File 1	VL2	N/A	N/A	Jan 27, 2018

Phase 2: Interviews

For phase 2 of my research, I interviewed four individuals who were also members of the Yammer group (three virtual leaders and one virtual team member). The interviews were conducted in the same week and ranged from 10-23 minutes in length. All interviews were audio recorded and later transcribed. I ensured I used the draft interview question themes in all interviews to maintain consistency within the interviews. The data collected as a result is detailed in Table 2.

Table 2

Summary of data collected during Phase 2 of my research

Interviewee	Interview Date	Interview Length (minutes: seconds)	Interview Location	Transcript Length (# of words)
VL1	June 16, 2018	23:17	Edmonton (private meeting room at company location)	5090
VL2	June 15, 2018	15:29	Edmonton (private meeting room at company location)	3274
VL3	June 16, 2018	9:45	Edmonton (private meeting room at company location)	2006
VTM1	June 15, 2018	16:10	Edmonton (private meeting room at company location)	3905

Data Analysis

All data collected during Phase 1 and Phase 2 of the research was analyzed according to the conventional content analysis process outlined in my methodology chapter, with a specific emphasis on focusing on data that related to the research questions. This resulted in the generation of a number of codes which were grouped into categories and then were further organized as themes. These codes, categories, and themes emerged inductively which is typical in qualitative inquiry (Mayan, 2016). Table 3 provides a summary of this information. The categories in Table 3 represent the categories generated during the initial analysis. They are summarized further in the next chapter.

Table 3

Themes and categories that emerged from the data during content analysis

Themes	Sub-Themes	Categories
Uses of Yammer	Project Management	- Updates - Goals - Priorities - Schedules - Organized - Getting work done - Accomplishments - Performance - History - Centralized - Progress
	Collaboration	- Working together - Forum - Suggestions - Consensus - Involved - Input - Feedback - Comment - Conversation - Invite

		● Interest ● Ideas ● Helped ● Interactive ● Two-way traffic ● Engage
	Communication	● Transparent ● Story ● History ● Updates ● Information ● Clarity ● Progress
	Engagement with Dispersed Workforce	● Scattered ● Multiple groups ● Various people ● USA, Canada ● Transitioning project team ● Engage with large groups ● Mixed group ● All over the continent
	Improve Efficiency	● Obsolescence emails ● Reduces meetings ● Saves time
Leadership Qualities of Virtual Leaders	Skills	● Organized ● Efficient ● Sets ground rules ● Team philosophies ● Team-oriented ● Timely ● Inquisitive/explorative ● Consistent ● Results-oriented ● Promotes meaning ● Connected ● Big picture focused ● Open to change ● Tries new ideas ● Improves processes ● Responsive ● Holds people

		accountable
		● Polite
		● Uses pleasantries
		● Detailed
Behaviors		● Transparent
		● Innovative
		● Self-aware
		● Conforming
		● Willing to adapt and learn
		● Open
		● Flexible
		● Considerate
		● Introverted

The next section further links the themes and categories uncovered during the research

with the research questions and the literature reviewed.

Discussion

RQ1: How does an effective virtual leader within a North American energy company use the communication technology tool known as Yammer to engage with their team members?

This section seeks to answer RQ1. To answer this question, I analyzed the data collected

in two phases described above. Phase 1 involved the collection and analysis of posts made to the

Yammer group page, and Phase 2 involved further exploring how the group used Yammer

through interviews. The interviews were also used to help validate what was being seen in Phase

1. The main sub-themes that emerged for how the group uses Yammer included: project

management, collaboration, communication, engagement with dispersed workforce, and to

improve efficiency. These themes are discussed further in the next subsections.

Project Management

Planning processes can often be a challenge in virtual teams (Martins, Gilson, & Maynard, 2004); however, one of the main themes that emerged from Phase 1, was the use of Yammer by the virtual team for managing planning and update processes which is essentially project management. Yammer in this project team was primarily used to communicate project goals/objectives including specific work tasks, updates (i.e. accomplishments, schedule), and future plans (i.e. upcoming tasks/activities). Excerpts from the data collected that demonstrate how Yammer was used to support project management are:

- Interview: "we use it to talk about what needs to get done, and who is doing what"

- Interview: "if you've made a commitment to the group and you aren't delivering, people know."

- Interview: "let's use Yammer not just to communicate, but like to actually do work"

- Yammer post: "Phase 2 of this project is underway with the following high level objectives..."

- Yammer post: "We will be sending invitations to a design review toward the end of February"

- Yammer post: "Our Production data connections have been rolled out. We have a remaining task to complete to set up the recurring dashboard refreshes which will be done by Tuesday."

- Yammer post: "Our target for next week will be to…"

- Yammer post: "We now turn our attention to the remaining tasks prior to deployment, with a roll out target date of December 15."

The use of Yammer in this manner aligns well with Malhotra, Majchrzak, & Rosen (2007)'s

effective virtual leadership strategies which include "making progress explicit through the use of

team virtual workspace" (p. 62) and highlighting team progress in a shared virtual workspace.

Collaboration & Communication

Yammer in this project team was also used heavily for collaboration and communication,

including asynchronously. Even though these emerged as two separate sub-themes, they will be

discussed together in this section as there is a lot of overlap between them. The collaboration and

communication observed during data collection included project updates, feedback requests,

providing input, asking questions and responding to questions. In addition, it was common for

individuals to be tagged in posts when feedback or input was requested especially by VL1 which

demonstrates that VL1 was making an effort to encourage team contributions which is another

effective virtual leadership strategy (Gaudes et al., 2007). Excerpts from the data collected that

demonstrate how Yammer was used for collaboration and communication are:

- Interview: "we generate some ideas in there"

- Interview: "ideas to add on to the project"

- Interview: "you need a lot of input from stakeholders; and that's part of what we do in

    Yammer."

- Interview: "people just kind of follow what either someone is suggesting or where we

    are, or what kind of fork in the road we are hitting. And then they all contributed to it via

    the threading the Yammer lets you do."

- Interview: "I posted that back to the group and said what did people think about that?

    And from there I got a bunch of other comments coming in."

- Interview: "And it's good two-way traffic. So lots of information coming from the stakeholders, and I can communicate to all of them in a relatively straightforward manner, so."

- Interview: "Yammer affords you the ability to invite a lot of people to the conversation, and then you can really figure out who is interested by what they say."

- Interview: "it's meant to be an interactive kind of open area where anybody from the business can come and get some updates and ask questions."

- Yammer post: "Can we have more frequent "show and tells" as progress is made?"

- Yammer post: "something to keep our eye on as we progress"

- Yammer post: "we will be looking for user feedback on the new dashboard features"

- Yammer post: "can you add REMOVED FOR PRIVACY to this group"

- Yammer post: "we are going to want to look at this list, confer with REMOVED FOR PRIVACY and select the next enhancements together"

Out of all of the data collected and analyzed, there was no evidence that suggested the team had experienced any miscommunications on Yammer. All questions were resolved in a timely manner. In fact, the data collected and analyzed indicates a high level of detail and explanation was provided in posts which helps lead to team understanding, transparency, and ultimately trust. This is positive since building trust is one of the main challenges in virtual teams (Avolio, Walumbwa, & Weber, 2009; Gaudes et al., 2007; Liao, 2017; Lin, Standing & Liu, 2008; Marlow, Lacerenza, & Salas, 2017; Robert, 2017).

Engagement with Dispersed Workforce

Engagement with a dispersed workforce is another key use of how the team uses Yammer. Virtual teams often experience time zone challenges, geographical differences, and

diverse cultures as a result. The project team within this Yammer group according to the

interviews consists of a dispersed and diverse workforce that are from different departments,

different countries, and have different reporting structures. Excerpts from the interviews that

further describe the project team include:

- "three main groups of people. So the first group would be customers, people that want

  that piece of work to get done so that they can use it. They don't report to me, those are

  other engineering groups and other functions. Then there's the people that report to me,

  and they are accountable to get something created so that those people can use it. And

  then a third group of people is our IT folks that actually have to do stuff with technology

  so that our group can do their job so that they can serve the people they are trying to

  serve.

- "we've got folks spread out, that's kind of unique about us. We've got Cushing, Casper,

  Duluth, Edina, Calgary, and Edmonton. So six locations."

- "Other stakeholders on this project I've never seen face-to-face. Like, there are people in

  Duluth I never physically meet with, but they are on Yammer"

In all interviews, it was confirmed that VL1 was the main reason the project team was

using Yammer. By introducing a computer-mediated communication tool into the project team,

VL1 allowed "diverse opinions to be expressed through use of asynchronous electronic means"

which is an effective virtual leadership strategy (Malhotra, Majchrzak, & Rosen, 2007, p. 62).

Unfortunately, through my research project, it was difficult to determine how engaged the

geographically disperse members were in the group as there was limited data in Yammer from

these members, and I was not able to interview them. In the interviews with the virtual leaders,

they were under the impression that some individuals were "watching" the activity on the group

which could be considered engagement. There were also other avenues of engagement within the

project team that were not part of this research such as using email, Skype, and telepresence. It is

possible that users were watching the Yammer posts, but engaging about the content or activity

in one of these other forums.

Improve Efficiency

Another theme that emerged on how the team was using Yammer was to deliberately

improve efficiency. VL1 would use this as a selling feature when discussing the benefits of using

Yammer. For example, in interviews with VL1 they identified Yammer as a potential

replacement for email and as a mechanism to reduce the need for lengthy meetings. VL1 also

discussed Yammer as being more of a work space instead of just a messaging platform. In

several interviews, Yammer was identified as a place where individuals could quickly onboard to

the project in one easy space instead of having to collect past emails or have several meetings

with people. This is especially important in transitioning project teams or teams with high

turnover. Several excerpts from the data collected that support these findings are:

- Interview: "We can also see the story from, you know, two years ago when it started with

  the first question, hey, should we do something like this, to where we are now."

- Interview: "I don't have to, like, attach emails and bring people up to date, and try and

  communicate the story, and be an intermediary."

- Interview: "it saved time, and it increased clarity."

- Interview: "So I don't have to fly down there, they don't have to fly up."

The deliberate use of Yammer to improve a team's efficiency was not identified during

my literature review and as a result can be considered a new finding as part of this research that

contributes to future research in this field.

RQ2: What leadership styles and behaviors does the virtual leader exhibit?

This section seeks to answer RQ2. As previously mentioned, VL1 was the sponsor of the project; however, two other individuals within the group were also identified as virtual leaders. As a result, the leadership styles and behaviors of these three individuals were taken into consideration for this part of the research. This section is organized to align with the headings of the literature review which discusses effective virtual leadership styles and competencies.

Transformational Leadership

The literature reviewed suggests that transformational leadership is the leadership style mostly beneficial in virtual team environments. To recall from the literature review, the transformational leadership style can be described as "one that inspires, conveying a vision and passion for the projects that is contagious, instilling energy and enthusiasm into team members" (Gaudes et al., 2007, p. 89). This is very similar to leadership behaviors associated with relationship building which are often described as relationship-oriented behaviors and can be described as "treating employees with respect, building relationships, and making the work environment pleasant" (Mikkelson, 2015, p. 339). Table 4 provides excerpts from the data collected that demonstrates evidence of a transformational leadership style in the virtual leaders.

Table 4

Transformational leadership styles that emerged during research

Examples	Relevant Excerpts
- virtual leaders commonly used pleasantries in Yammer posts	"Good Afternoon" "Hi" "Hello" "Morning"
- virtual leaders commonly addressed team members by name in the posts which also included tagging	"Sounds good NAME REMOVED FOR PRIVACY, thanks for the update"
- virtual leaders were polite and respectful in communications	"Your time and guidance is valuable and appreciated during design." Thank you" "Thanks to all who attended our demo this morning." "Excellent NAME REMOVED FOR PRIVACY" "Sorry for the delayed response"

It is interesting to note that when I asked VL1 about their leadership style, they believed they aligned closer with the transactional (i.e. results-oriented) style; however, the Yammer post data collected and analyzed suggests they also exhibit transformational leadership styles in computer-mediated communication environments. VL1 also indicated they were introverted. This makes me wonder if this leader may exhibit a different leadership style online than in-person and if their personality may be a factor in this. This could be an avenue for future research. Either way, evidence of both leadership styles existed within the virtual leaders.

Shared Leadership

VL1 was the primary virtual leader on the team; however, through interviews VL2 and VL3 were recognized as sharing leadership on the team for their respective responsibilities. They were accountable to VL1. VL1 heavily engaged with VL2 on Yammer which demonstrated that

VL1 fostered the shared leadership approach. The fact that shared leadership has been employed

on this team is an effective virtual leadership strategy. This type of leadership encourages

collaborative decision making and behaviors which ultimately leads to increasing trust and

knowledge sharing in team members (Hoch & Dulebohn, 2017). VL2 was the member mainly

responsible for project updates and as a result was the participant with the majority of posts

analyzed during Phase 1. The posts made by VL2 were noticed to include positive leadership

styles and behaviors which is important as each member who takes on shared leadership must

exhibit the qualities expected of a leader (Hoch & Dulebohn, 2017).

Competencies

This section provides a summary of the competencies, primarily the leadership skills and

behaviors that emerged from the data. This information is represented in Table 5.

Table 5

Leadership competencies that emerged from the data along with supporting examples

Leadership Competency	Supporting Examples from the Data
Walks the Talk	VL1 is the main sponsor of the project and was primarily responsible for the project team using Yammer. VL1 is one of the main contributors within Yammer which shows their ability to model the desired behaviours of the team.
Holds team members accountable	VL1 described this as "time-based leadership". They would request timely updates on project status within the Yammer tool to hold individuals accountable to tasks.
Inclusive	Virtual leaders tagged individuals in posts, added individuals to the conversations, and also requested membership additions to the group.
Optimistic	VL1 was highly optimistic about the use of

	Yammer. There is evidence that suggests a relationship between optimism and technology acceptance.
Establishes Expectations	VL1 indicated that during the project kick-off the team agreed upon use of Yammer. They also indicated that within their team they have a team philosophy and team ground rules.
Innovative	VL1 exhibits signs of innovation and being open to change. They indicated they found out about Yammer by accident and proceeded to watch "some YouTube videos and they were like -- they showed some examples of how people use Yammer to get real work done".
Flexible	Several times within the Yammer posts it was noticed that the virtual team members were flexible. Some examples of excerpts include: "we can adjust as needed" "yes we can" It was noticed they were very interested in project team feedback and incorporating it into the project design.
Willing to adapt and learn	Once Yammer was selected as the main tool for the project, all virtual leaders embraced it.

Summary

This project team has definitely found many effective uses of Yammer within their project team. Primarily Yammer provides the team with a project management platform, but also serves heavily as a forum for communication and collaboration about the project. This is important since the project team is heavily dispersed throughout the organization. According to the IPO model, one could describe the team structure and use of Yammer as an input; the communication and collaboration within Yammer as team processes; and a noticeable output is improved efficiency.

One might expect that it would be difficult to pick up on leadership styles and competencies from Yammer posts due to the lack of verbal cues; however, what I found is that these virtual leaders were able to write their posts in a manner that demonstrated effective virtual leadership. As an outsider to this group, I was able to pick up on things such as politeness, flexibility, appreciation, and respect through short non-verbal communications within Yammer. This was further validated through interviews with these leaders. Not all people have the ability to communicate in this manner and as a result, these behaviours really demonstrate another level of leadership especially in the effective use of computer-mediated communication technology for team engagement.

Chapter 5: Conclusion

Overall, the findings of this research contribute to the knowledge in the area of virtual leadership and the use of computer-mediated communication technology for team engagement. For the most part, the findings support and help validate current research; however, it also provides insights into future areas to explore.

A potential weakness of this research project is that all research participants have met face to face at some point and are located in Edmonton. These pre-established working relationships could have affected the performance of the group on the Yammer page and ultimately the outcome of this research. As a result, future research should consider re-creating this research in a virtual team that has not yet met face to face.

Another limitation of this research is that it didn't take into consideration any other communication methods for the project such as virtual team meetings, Skype, and email. This could have explained why some individuals were not as active in the Yammer group since they

could be getting information and updates elsewhere. Even though Yammer has the ability to see

how many users have seen a post, this data was not collected and analyzed as it is difficult to

determine when the post was actually seen and read by a participant. In the interview with VL1,

personality came up as a potential factor for why individuals may choose not to post information.

This could also be a factor to consider for future research. In addition, even though this research

was not identifying challenges and barriers associated with the use of computer-mediated

communication technology, some of the topics that emerged during the interviews that could

benefit from future research were:

- fear of using a corporate social media platform which could result in:
  - an individual's history being maintained for a substantial period of time
  - posts being reviewed and/or monitored by the Company
- lack of understanding of the benefits and the potential uses of the tool

  preference for other CMC technology

Lastly, the Yammer group focused on for this research project was not utilizing Yammer

for interpersonal processes. Instead it was more transactional focused (i.e. completion of

deliverables and tasks). In fact, it was difficult to find a group within the Company that was

using Yammer purely to build interpersonal relationships amongst virtual teams. Future research

should focus on the use of computer-mediated communication technology in virtual teams,

purely for the building of relationships.

It is important to note that after the VL1's interview, I shared that I as a virtual leader am

attempting to use Yammer to build relationships among my team members. It is focused on the

interpersonal relationships and as a result our Yammer page can include posts about the

weekend, family, plans, etc. and is less about work tasks. VL1 expressed interest in using

Yammer to improve interpersonal relationships amongst his team and has since created a

Yammer page to do so.

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Appendices

The appendix should include materials (such as the survey questionnaire used or the informed consent agreement provided to respondents) that are important for a clear understanding of the study but too cumbersome to be included in the body of the text.

Appendix A: Literature Review Planning

Table A1

High Level Project Plan

SEARCH	TIMELINE
Narrow Scope	Sept 5-10
Update Research Brief from COMM 501 and review feedback	Sept 5-10
Develop literature review project management tool	Set 11-17
Finalize focus, scope, requirements, and outcome of literature review	Sept 11-24
Generate a list of keywords, key concepts, and 'bullseye' or 'pearl' articles	Sept 18-24
Develop a library search protocol for your literature review	Sept 18-24
Conduct preliminary searches	Sept 25-Oct 1

Develop eligibility criteria to refine your search data	Sept 25-Oct 1
Source or develop a reference management tool	Sept 25-Oct 1

APPRAISAL	**TIMELINE**
Create a checklist or matrix for eligibility criteria	Sept 25-Oct 1
Select and obtain articles according to eligibility criteria	Oct 9-Nov 19
Draft sample annotated bibliography	Oct 9-15
Post and evaluate sample annotated references	Oct 9-15
Write annotated bibliography	Oct 16-29
Finalize annotated bibliography	Oct 30-Nov 5

SYNTHESIS	**TIMELINE**
Develop a coding scheme to analyze literature review data	Oct 2-8

ANALYSIS	**TIMELINE**
Analyze literature review data according to coding scheme	Nov 6-19
Draft a research questions to guide Capstone Project	Nov 1-5
Write a short evaluation of a chosen research method	Nov 6-12
Draft literature review	Nov 27-Dec 10

Finalize literature review   Dec 11-16

Submit literature review   Dec 17

Table A2

Eligibility Criteria

Criteria	Requirement	Code in Zotero
Year Published	Must be equal to or greater than 2000. Bonus: equal to or greater than 2007.	No code required. Search strategy only included articles past 2000.
Concepts	Must relate to at least one of my main concepts. Bonus: relates to at least two of my main concepts.	RMC (0) RMC (1) RMC (2+)
Language	Must be in English.	No code required. Search strategy only included English.
Peer Reviewed	Must be peer-reviewed.	No code required. Search strategy only included peer review articles.
Type of Publication	Must be a journal article.	No code required. Search strategy only included journal articles.
Environment	Must be completed in a workplace.	ENV (non) ENV (workplace)
Methodology	Must have a clear, effective methodology. Bonus: qualitative method.	MET (not well defined) MET (qualitative) MET (non-qualitative)
Audience	Study must have been completed on employees. Bonus: Employees are part of a dispersed workplace.	AUD (non) AUD (dispersed) AUD (non-dispersed)
Argument	Must have a well-defined argument.	ARG (not well defined) ARG (well defined)
Industry	Must be completed on an industry equal to or comparable to the Energy industry.	IND (N/A) IND (comparable) IND (energy)

Note: I did not include tags for all inclusion/exclusion criterion such as year published. This is because Zotero allows an individual to filter their library based on this and other criterion already. As a result, I only set up tags for data that was not captured.

Appendix B: Sample of Field Notes

Appendix C: Email Script (Sr. Communications Advisor)

Hi _____,

I hope you are doing well. A while back I mentioned I will be doing a capstone project for my Masters in Communication and Technology.

The purpose of my research is to explore virtual leadership and the effective use of computer mediated communication technologies (i.e. Yammer) in virtual teams. My goal in conducting this research is both to support my own development since I am also a virtual leader, and provide resources for others who are learning about effective ways to lead virtual teams.

Are you aware of any teams that use Yammer regularly to engage with each other? (i.e. maybe they have a team group that has a lot of action, including action by their leader). I attached the info and consent form for my research to help provide additional information.

Please let me know if you have any questions.

Thanks,

Lacey

Appendix D: Blank Information Letter and Consent Form

INFORMATION LETTER and CONSENT FORM

Study Title: Exploring Effective Virtual Leadership and the use of Computer-Mediated Communication Technology on a Virtual Team

Research Investigator:
Lacey Cribb, Graduate Student

University of Alberta
Edmonton, AB, T6G 2R3
lcribb@ualberta.ca
780.690.2544

Supervisor:
Dr. Rob McMahon, Assistant Professor
Master of Arts in Communication & Technology,
University of Alberta
Edmonton, AB, T6G 2R3
rdmcmaho@ualberta.ca
780.248.1110

Background
- You are being asked to participate in this study because (select applicable statement):

☐	You have been identified by the internal Sr. Digital Communication Advisor as a virtual leader who uses Yammer to engage with their team.
☐	Your direct people leader has been identified by the internal Sr. Digital Communication Advisor as a virtual leader who uses Yammer to engage with their team. Your leader's name was provided to me by the internal Sr. Digital Communication Advisor. I found your name in your leader's organizational chart which is available to all internal employees.

- The results of this study will be used for the final capstone project of the Masters of Arts in Communication and Technology degree for Lacey Cribb.

Purpose
The purpose of my research is to explore virtual leadership and the effective use of computer mediated communication technologies (i.e. Yammer) in virtual teams. My goal in conducting this research is both to support my own development since I am a virtual leader, and provide resources for others who are learning about effective ways to lead virtual teams.

Study Procedures
- I will conduct my research in three phases:
    - **Phase 1:** I will collect and analyze the posts made to your team's Yammer page during the timeframe of Dec 1, 2017 – Mar 1, 2018, herein referred to as the "research period". Yammer posts made after the research period will not be included in the research under any circumstances. Posts made to the team Yammer page prior to the research period may be included in the research if the Research Investigator deems data collected during the research period was insufficient to reach data saturation. Phase 1 is solely completed by the Research Investigator; however, it requires the Research Investigator to be granted access to the team's Yammer page by the People Leader. Once this phase of the research is complete, the Research Investigator will leave the group and notify the People Leader.
    - **Phase 2:** I will conduct a semi-structure interview with the leader of the team to further explore the themes emerging from the research conducted in phase 1. The interview will be audio recorded and later transcribed. The interview will take no longer than 30 minutes to complete. This interview will take place face to face at the place of work or a mutually agreed upon location. The transcript of the interview will be provided to the interviewee for review prior to its inclusion in the study.
    - **Phase 3:** I will conduct semi-structured interviews with select members of the team (estimate: 5 interviews) to further explore the themes emerging from the research conducted in phase 1. The members will be selected based on the amount of engagement they had on the team's Yammer page during the research period. The interview will be audio recorded and later transcribed. The interview will take no longer

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than 30 minutes to complete. This interview will take place via telephone or telepresence (must be mutually agreed upon). Interview transcripts will be provided to the interviewees for review prior to their inclusion in the study.

Benefits

- Participation in this study may lead to a better understanding of effective virtual leadership and teams. It may also result in a better understanding of how computer-mediated communication technology such as Yammer can be used to effectively lead and promote engagement in virtual teams. This information can support further research and development in the area of virtual leadership and teams.
- There are no costs involved in this research.
- Participants will not receive any compensation (or reimbursements) for their participation.

Risk

- There is a potential that your participation in this study may be identified by the internal Sr. Digital Communications Advisor and/or your People Leader (where applicable) given the recruitment method and the phases of research planned. To mitigate this risk the Sr. Digital Communications Advisor and People Leader (Virtual Leader) will sign confidentiality agreements.
- There may be risks to being in this study that are not known. If we learn of anything during the research that may affect your willingness to continue being in this study, we will inform you right away.

Voluntary Participation

- You are not obliged to answer any specific questions even if participating in the study. Your participation will not affect your work and/or position.
- You have the right to not participate.
- You also have the right to opt out without penalty and to have any collected data withdrawn and not included in the study up until May 31, 2018 (12AM MST). The request must be submitted by the participant to the Research Investigator in writing. The contact information is available on the consent form. You will receive an acknowledgement from the Research Investigator stating your request has been received and accepted provided it was made on or before May 31, 2018 at 12AM MST. Please note, the study may mention the number of participants that withdrew, but you will not be personally identified in any way as a participant who withdrew.
- There are no known risks or personal benefits from participation in this study.

Confidentiality & Anonymity

- The intended use of this research is for completion of the Masters of Arts in Communication and Technology degree for Lacey Cribb. It may be used in research presentations, teaching and web postings. Participants will not be identified in any part of these.
- Data will be kept confidential. All information collected will be coded to protect the participant's privacy, anonymity, and confidentiality. Before releasing aggregated data to the University of Alberta, any identifying indicators will be removed.
- The anonymity of participants will be protected with the dissemination of the research.
- Data will be kept in a secure place for a minimum of 5 years following completion of the research project. Electronic data will be login protected and will be destroyed in a way that ensures privacy and confidentiality.
- Participants can request a copy of the report of the research findings by checking off the request box on the consent form.

Further Information

- If you have any further questions regarding this study, please do not hesitate to contact the Researcher Investigator and/or Supervisor. Their contact information is provided at the beginning of this form which you will be provided a copy of.
- The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

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<u>*Consent Statement*</u>
I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I understand I will receive a copy of this consent form after I sign it.

☐ YES ☐ NO	Do you agree to participate in Phase 1 of the research study described above? (i.e. have your data collected from Yammer for analysis)
☐ YES ☐ NO ☐ N/A	Do you agree to participate in Phase 2 of the research study described above? (for People Leader only)
☐ YES ☐ NO ☐ N/A	Do you agree to participate in Phase 3 of the research study described above? (not applicable for People Leader)

_____   _____
Participant's Name (printed) and Signature   Date

_____   _____
Name (printed) and Signature of Person Obtaining Consent   Date

Please indicate if you would like a copy of the research report after final grades have been assigned:
☐ YES ☐ NO

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Appendix E: Blank Confidentiality Agreement

Confidentiality Agreement

Study Title: Exploring Effective Virtual Leadership and the use of Computer-Mediated Communication Technology on a Virtual Team

I, _____, the _____
   (Full Name)   (Job Title)
may be able to identify participants of this study as a result of the recruitment method and/or phases of research planned.

I agree to -

1.   keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., participant names) with anyone other than the *Researcher*.

2.   keep all research information in any form or format (e.g., participant list) secure while it is in my possession.

3.   after consulting with the *Researcher*, erase or destroy all research information in any form or format regarding this research project that is not returnable to the *Researcher* (e.g., information stored on computer hard drive).

_____
(Print Name)   (Signature)   (Date)

Researcher

_____
(Print Name)   (Signature)   (Date)

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board *(specify which board)* at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.

Appendix F: Recruitment Email for VL1

Hi _____.

I hope you are doing well! I have a minor request for you to consider.

I am in the process of completing my Masters in Communication and Technology through the University of Alberta which requires the completion of a capstone project. The purpose of my research is to explore virtual leadership and the effective use of computer mediated communication technologies (i.e. Yammer) in virtual teams. My goal in conducting this research is both to support my own development since I am also a virtual leader, and provide resources for others who are learning about effective ways to lead virtual teams.

You are being asked to participate in this study because you have been identified by the internal Sr. Digital Communication Advisor as a virtual leader who uses Yammer to engage with their team.

I have attached an information and consent form that provides additional information about my planned research. If you agree to participate, the estimated time commitment required by you would be 30 minutes for a face to face interview. I would also need access to your team's Yammer page to analyze posts. All of this information would be kept confidential.

I will follow-up with you in a couple days to see if you have any questions about the information provided. Please note: there is no obligation to participate. I could also introduce my planned research to your entire team if you feel this would be helpful.

Appendix G: Recruitment Email for VL2

Hi _____,

I am in the process of completing my Masters in Communication and Technology through the University of Alberta which requires the completion of a capstone project. The purpose of my research is to explore virtual leadership and the effective use of computer mediated communication technologies (i.e. Yammer) in virtual teams. My goal in conducting this research is both to support my own development since I am also a virtual leader, and provide resources for others who are learning about effective ways to lead virtual teams.

VL1 provided the below group as a potential case study. It appears that you act as a virtual leader within this space based on the limited information available below.

Would it be possible to gain access to this space to see if it would serve as a good case study? If so, would you be interested in participating in my research?

I have attached an information and consent form that provides additional information about my planned research. If you agree to participate, the estimated time commitment required by you would be 30 minutes for a face to face interview. All of this information would be kept confidential.

Please note: there is no obligation to participate.

Thank you,

Lacey

Appendix H: Recruitment Email to Virtual Team Members

Hi _____,

I am in the process of completing my Masters in Communication and Technology through the University of Alberta which requires the completion of a capstone project. The purpose of my research is to explore virtual leadership and the effective use of computer mediated communication technologies (i.e. Yammer) in virtual teams. My goal in conducting this research is both to support my own development since I am also a virtual leader, and provide resources for others who are learning about effective ways to lead virtual teams.

The "_____" Yammer group has been identified by your leader as a potential case study. Are you interested in participating in my research?

I have attached an information and consent form that provides additional information about my planned research. If you agree to participate, the estimated time commitment required by you would be 30 minutes for a face to face interview. All of this information would be kept confidential.
Please note: there is no obligation to participate.

Thank you,

Lacey

Appendix I: Photos of Coding