The Virtual Communication Aspect: A Critical Review of Virtual Studies Over the Last 15 Years

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Abstract

This study is a critical analysis of the virtual research conducted over the last 15 years in which virtual communication played a key role. The study found that a definite pattern of criteria is being used when successful virtual communication is utilized in the workplace. This study is the first part of a two-phase research project and has identified these success criteria from current research on virtual communication in order to conduct a follow up field study. The second study will use a measurement rubric developed in this study to analyze if businesses are successfully using virtual communication or not.

In today's global environment, business meetings are no longer limited by physical

boundaries. Instead, companies increasingly are requiring employees to conduct interviews,

pursue projects, and hold meetings without ever being in the same room or the same country.

However, using this technology is not the same as using technology effectively. To be

adequately prepared to participate effectively in this virtual arena, it is imperative that

researchers analyze and discover how organizations and workers effectively function in this

setting. Today employees may be sitting alone at their desk attending a virtual meeting with

colleagues they have never met, each of them in separate offices at different geographic

locations. There have been many studies and several new books examining managing virtual

teams and the virtual worker (Johnson, Bettenhausen & Gibbons, 2009; Sobel-Lojeski & Reilly,

2008; Flatley, 2007), which discuss several different techniques for improving virtual

communication. However, little research has actually analyzed major studies by just focusing on

the virtual communication aspect. The purpose of this research is to conduct a critical review of

the studies analyzing the use of virtual communication in organizations and whether using this

technology is or is not improving communication in the workplace. During this investigation I

will also identify "success criteria" from the major studies in the field of business

communication and develop a rubric to measure the use of this criteria in the workplace.

In Natalie Burg's 2013 Forbes magazine article, she states that most business

communication today still depends on conference calls and email chains, which make it

challenging to get to know your partners. According to a 2007 Stanford study, 20% of the

workforce have never met their boss fact-to-face. (House, Presentation at Media X Summer

Institute) However, even though more communication has moved to being virtual, most business

professionals are still communicating as if it is face-to-face communication (Berry, 2011; Kidde,

2014; Majchrzak, Malhotra, Stamps, & Lipnack, 2004). Professionals are also spending too

much time searching for information and there is a need to use more social media to connect

better with other team members (Cardon & Marshall, 2015). In 2000, 70 percent of young adults

used the Internet and that figure has steadily grown to 96 percent today. Pew research studies

have found that in 2015 nearly 64 percent of US adults own a smart phone and mostly use it for

texting, voice, Internet, email and social networking. The world has moved to communicating

virtually on a day-to-day basis and so has the workforce. The question is: are these businesses

communicating successfully virtually?

There have been many studies conducted in multiple fields from management to business

communication analyzing virtual teams, virtual workers, and virtual distance (Andres, 2012;

Sobel-Lojeski & Reilly, 2008; Duarte & Snyder, 2001; Reinsch & Warisse-Turner, 2006; Suh,

Shin, Ahuja, & Kim, 2011). Communication plays a key role in this research but very little of the

research focuses on the virtual communication aspect. Of course several factors (Technology

Choice, Trust, Leadership, Culture, etc.) effect virtual communication and many studies do

discuss Computer-Mediated-Communication (CMC) but few explore the true impact of virtual

communication in the workplace (Qureshi, Liu & Vogel, 2006). Lojeski and Reilly agree that,

"Communication problems strongly influence every aspect of virtual distance. They're the most

insidious issue in today's global workforce and overcoming them requires a tireless effort by

both team members and management" (p. 99, 2010). Thus, we need to analyze virtual studies

that research the workplace and focus on the virtual communication problems and successes.

This will help employers and workers improve their virtual skills by identifying communication

problems at an earlier stage and teach them how to correct communication breakdowns.

Therefore this study's research question is: What are the successful strategies or criteria used in

virtual communication in the workplace as identified in virtual research?

Methodology

This inquiry gathered hundreds of studies over the last 15 years that analyzed and

discussed virtual teams, virtual workers, virtual distance and virtual communication. Forty

studies were selected for critical review because virtual communication played a main role in

their analysis. These studies came from a variety research fields but the majority from the

Journal of Business Communication, the Journal of Business and Technical Communication, the

Business Communication Quarterly, the Journal of Management, and the Journal of Management

Information Systems. I identified the studies that virtual communication played a key role in the

outcome through critical analysis based on the methodology used in Duarte and Snyder's 2001

book titled, "Mastering virtual teams: Strategies, tools, and techniques that succeed" as well as

Qureshi, Liu, & Vogel study in 2006. Duarte and Snyder identified four competencies critical to

successful virtual teams: communication, establishing expectations, allocating resources, and

modeling desired behaviors. While Qureshi, Liu, & Vogel identified communication elements

and structures that help make virtual teams successful such as team and task characteristics,

communication technology choice, management strategies, communication patterns and

information sharing and processing (p. 59). Therefore, virtual studies that set clear rules or

expectations when using certain types of technology, defined effective work completion, laid out

general team norms and expectations, included time lines and specified team member outcomes,

and used documentation systems met the criteria to be critically reviewed for this study (Duarte

& Snyder, 2001).

In addition, these forty studies regularly came up when the search string "virtual

Communication" was searched as the key term in academic research databases. An additional

search of current studies was conducted in 2016 and only one academic study met the criteria, a

dissertation by Ryan N. Mitchell on The Correlation Between Virtual Communication and

Employee Engagement. All other discourse on this topic conducted over the last year that met

this study's criteria were business articles, which focused on professional opinions not scientific

research.

In order to critically analyze the virtual studies a clear definition of virtual

communication is needed. Webster's dictionary defines virtual as "very close to being something

without actually being it or existing/occurring on computers or on the Internet" and defines

communication as "the act or process of using words, sounds, signs, or behaviors to express or

exchange information or to express your ideas, thoughts, feelings, etc., to someone else" (online:

http://www.merriam-webster.com/dictionary, November 5, 2015). Thus, virtual communication

is the simulated process of people exchanging information using computers or the Internet. A

2010 Cornell study defines virtual communication as using both synchronous (simultaneous) and

asynchronous (delayed interaction) methods such as phone, audio and video conferencing, and e-

mail. Virtual Communication can also be defined as "the process of transferring information,

meaning, and understanding between two or more parties, and there is a huge amount of

literature on how this process can be made more efficient and effective" (Berry, 2011, p. 192).

For the purposes of this study virtual communication will be defined as people using technology

to communicate with each other when they are not physically face-to-face.

The next step in the process is to define what "successful criteria" means? Success can be

defined in many ways depending on the situation but for the purposes of this study the term

success or successful will be defined as completing or accomplishing a goal. Dictionary.com

defines criteria from the Greek word criterions, which is a standard of judgment or criticism; a

rule or principle for evaluating or testing something (online:

http://dictionary.reference.com/browse/criteria, November 17, 2015). In this study, I will identify

virtual communication rules or principles that help groups accomplish goals such as completing

a project that improves an organization internally or externally. These "successful virtual

communication criteria" will help to decrease virtual distance, which has been proven to increase

virtual teams' success rate. "Virtual Distance is a psychological distance created between people

by an overreliance on electronic communication – no matter where those communications

originate and end" (Sobel-Lojeski & Reilly, p. 10, 2010). As virtual distance increases Sobel-

Lojeski & Reilly study shows a 50% decline in project success, 90% drop in innovation

effectiveness, 80% plummet in work satisfaction, 83% decrease in trust, 65% decrease in role

and goal clarity, as well as a 50% decline in leadership (p. xii).

Virtual Research Studies from 2000-2015 with Virtual Communication as a Key Factor

Wong and Burton, in 2000 designed a simulation study to look at the impact of different

team characteristics on team performance. They focused on team context, composition and

structure and found that the virtual context team worked better than the virtual composition team.

They also learned that the virtual structure team performed better than the software development

team. The criteria that helped the virtual and structural teams do better was making it easier and

more routine to communicate, clarifying role expectations, fostering team culture and

empowering virtual team members. Also in 2000, Lurey & Raisinghani analyzed 67 individuals

that made up 12 virtual teams at eight global companies in an effort to identify the factors that

lead to successful virtual teams. They discovered that communication and technology related

issues that were not addressed did hinder the success of the team and that more ftf meetings were

needed so the team could bond and build more trust. These studies show that as early as the year

2000 virtual research was uncovering that communication was a key factor in the success of

virtual teams.

In 2001 researchers Pauleen & Yoong's study examined how virtual team facilitators use

Internet-based and conventional electronic communication channels to build relationships with

their virtual team members. They observed that some electronic communication channels are

more effective than others in building online relationships and suggested that facilitators needed

to strategically use the channels available to them to effectively build online relationships (p. 1).

This study also found that team members believed meeting ftf early on helped build the virtual

team's relationships and greatly improved communication. They noticed a great deal of

miscommunication because these virtual teams relied heavily on using email and text messaging,

which is easy to understand for a study conducted in 2001. However, this study pointed out what

many of the studies over the last 15 years have also discovered that using multiple

communication channels is vital to successful virtual communication and virtual teams. In

another 2001 experimental study Beth Dietz-Uhler and Cathy Bishop-Clark looked at the effects

of synchronous and asynchronous computer-mediated communication (CMC) on subsequent

face-to-face (ftf) discussions using college age students at a Mid-western university. The study

uncovered that "face-to-face discussions preceded by either synchronous or asynchronous

computer-mediated communication were perceived to be more enjoyable and include a greater

diversity of perspectives than face-to-face discussions not preceded by computer-mediated

communication" (p. 269). These studies show that a combination of ftf and CMC appear to

improve overall communication and thus increase the likelihood of the team's success.

In 2002, Baltes, Dickson, Sherman, Bauer, & LaGanke, conducted a meta-analysis of

research comparing decision making in face-to-face versus computer-mediated communication

groups. The study's results suggested that, "computer-mediated communication leads to

decreases in group effectiveness, increases in time required to complete tasks, and decreases in

member satisfaction compared to face-to-face groups" (p. 156). Virtual groups have difficulty

building trust as quickly as ftf groups so it takes longer for groups to bond and work more

effectively using just CMC. Researchers Isaacs, Walendowski, Whittaker, Schiano, & Kamm,

2002 study also discovered that in these virtual environments, communication is the fundamental

tool of work activities: negotiations, information exchanges, requests, giving orders,

brainstorming; but even social, non–task-related interactions take place via various mediated

channels. Their analysis showed that virtual groups build trust through consistent communication

using multiple channels. That same year Rutkowki, Vogel, Genuchten, Bemelmans, & Favier

article on the reality of virtuality came to similar conclusions that timely feedback is critical in

the early phases of virtual teams.

As virtual research headed into 2003, Cornelius and Boos looked into the ineffective use

of text-based synchronous CMC, and how it affected the quality of communication compared to

face-to-face communication. They learned that CMC often impairs performance and that users

needed to be communication experts to overcome the negative effects of using the technology.

They also found that the best performance scores came from the ftf groups and CMC groups that

had extensive training on communicating using CMC especially chat rooms. Many Studies

analyzing virtual communication seem to be ill-defined and lack support, and stated that "virtual

communication is confusing" (Thompson & Coovert, 2003), and "more laborious and more

cognitively taxing" than face-to-face communication (Cornelius & Boos, 2003). As technology

improved virtual studies began to grow as an area of research and the studies have became more

rigorous.

By 2004 Kirkman, Rosen, Tesluk, & Gibson analyzed 35 sales and service teams at a

high technology company to see if ftf interaction effected the relationship between team

empowerment and virtual team performance. They found the ftf interaction could be the key to

virtual team empowerment and that teams were more likely to take corrective action with regular

ftf interaction. Teams that met rarely ftf became more passive and relied on their leaders more

and over estimated "perceived constraints around taking corrective action" (p. 186). Furst,

Reeves, Rosen, & Blackburn, also in 2004 had similar findings in their study when they

interviewed, surveyed and observed six virtual teams at FOODCO, one of the largest food

distributors in the United States. Furst et al observed "there is growing evidence that virtual

teams fail more often than they succeed" (p. 6) and that early ftf meetings as well as managers

intervening at each group stage (forming, storming, norming, & performing) helped the team

build trust and move successfully through the process. Researchers Majchrzak, Malhotra,

Stamps, & Lipnack also argued in their 2004 study that any dispersed team requires at least some

face-to-face communication for success, although the sophisticated use of advanced

communication technology can be an effective alternative. For example, Cameron & Webster,

2005 study on instant messaging (IM) and its use in organizations analyzed interviews with

employees, who viewed IM as privacy enhancing, but also saw its interruptive nature as unfair

(p. 85). This case study showed that employees use IM not only as a replacement for other

communication media but also as an additional method for reaching others. As virtual research

expanded it was becoming very clear, that multiple communication channels needed to be

engaged for successful virtual communication to be a possibility. The virtual studies also began

to take a look at the users more and how communication technologies were affecting employees.

In 2005 virtual research started to focus more on the communication element of the

virtual business world and the quantity of studies increased. AAKirman and Harris compared

levels of communication satisfaction between virtual workplace and traditional workplace

employees in a single firm using Down and Hazen's Communication Satisfaction Questionnaire.

Based on previous research, this study developed and tested hypotheses that traditional workers

would have higher levels of satisfaction in personal feedback, communication climate,

relationship with supervisors, horizontal and informal communication, organizational integration

and overall communication satisfaction. They discovered that virtual office workers were more

satisfied with organization communication than traditional office workers. The findings showed

how this firm actually took steps recommended by the researchers and consultants by improving

upper level support, using appropriate technology, getting timely technological support, training

virtual members on technology use and cultural differences. This organization also restructured

the work to support a virtual workplace, and provided extra social support systems to reduce

alienation.

Meanwhile, Tavčar, Zavbi, Verlinden & Duhovnik 2005 study analyzed the virtual

workplace by looking at the specifics of communication and work within a virtual development

team. They observed an international course on European global product realization that

provided students with their initial experiences in working within a global team. The researchers

learned that special knowledge and skills of virtual team members' is a greater obstacle than

technical equipment and that work within a virtual product development team requires intense

communication, which is possible via videoconferencing (p. 557). The researchers believed their

recommendations could be applied in both university and industrial environments and yet can

intense videoconferencing solve all the challenges team member face when communicating

virtually. Brian Dineen's 2005 study appears to support that more visual technology needs to be

used because they discovered the students did not feel like they could trust members that they did

not get to know or bond with in an interpersonal way. He found that team cohesiveness and

social loafing behavior were lower in teams where membership changed over the length of the

project than in stable teams (p. 593). Dineen analyzed students in an organizational behavior

course over eight weeks using WebCT for a virtual team project. While many students responded

positively to the TeamXchange project 22% had major concerns about social loafing during the

project and having to depend on strangers for a grade. (p. 610). The study's subjects

communicated in a text-based way such as email, chat rooms, discussion boards and had little to

no use of visual communication.

Paul Argenti discussed the advantages and disadvantages of communication technology

in his 2006 article. For example, a message can be shared with outside people although it was

intended for an internal audience only and this can have a very damaging effect on customer and

employee relations. However, he also sees communication technology helping companies that

embrace it by using it on a consistent and regular basis to reach out and limit miscommunication

and help with branding. As the workforce become more mobile an empowered employee base,

and a broader audience for organizational information has created a power shift (p. 360).

Technology has profoundly changed business communication and the workplace over the last ten

to fifteen years and those who learn how to successfully use these technologies such as virtual

communication will be the businesses that grow as well as succeed. In 2006 Starke-Meyering &

Andrews conducted a semester long intercultural virtual team project in a management

communication course at a U.S. and Canadian college. They found that, "Success in this

complex environment depends on a shared culture that facilitates the making of knowledge and

the best contributions of all team members" (p. 25). The researchers also agreed with other

virtual studies that digital technologies present a number of communication challenges including

trust, time conflict, cultural differences, and the need for a "robust collaborative workspace".

Reinsch & Warisse-Turner, 2006 descriptive study looked into how new technology effects

employees by enhancing worker efficiency, encouraging alteration, and helping workers adapt to

new tasks and jobs (p. 342). They see business communication changing and workers now need

to, "read, write, view and sketch in a wider array of media and genres" (p.346). Business

communication is about more than one-to-one or small group communication in a collocated

organization but has expanded to one-to-group internally as well as across boundaries of an

organization located anywhere. Thus, workers and students currently studying business

communication need to meet the challenges of using multiple media to communicate

successfully in today's workplace.

Warisse-Turner and Reinsch conducted another study in 2007, where they coined the

term multicommunicating. "This new pattern of communication suggests that being virtually

present with more people by staying involved in more ongoing communications may be a new

goal of business communication" (p. 37). The researchers see multicommunicating as different

from multitasking because communication is interactive, requires feedback, and is

multidimensional. They believed this was the new norm in business communication and

conducted two exploratory studies using qualitative and quantitative methodology. In the

qualitative study they interviewed and observed 20 individuals at a large high tech company and

found, "that multicommunication occurred very frequently: Every interviewee indicated that it

was a common practice in the organization" (Warisse-Turner and Reinsch, 2007 p. 44). In the

quantitative study they administered a questionnaire to 250 young professionals who had left

jobs and were now in an MBA program. This part of the study found that a respondent was less

likely to multicommunicate when the person on the other side of the communication was

described as a superior and more likely to multicommunicate when the receivers was at an equal

or lower power level in the organization. The study did not answer at all "to what degree a

person is capable of effectively multicommunicating" but did find that this type of

communication is happening more in the workplace (p.53). Qureshi, S., Liu, M., & Vogel study

found that communication played a central role in the virtual teams performance and that trust

issues and limited communication limits success. They studied 21 distributed virtual teams made

up of university students from a university in the Netherlands and Hong Kong. The teams ran

into the same issues that always plague virtual teams, time zone conflicts, cultural issues that

slow productivity and increase miscommunication. They discovered that "properly using

communication technology profoundly influences the communication, coordination of temporal

as well as cultural issues and adaption processes such as managing conflicts" (2006, p. 71).

May & Margolis surveyed and interviewed 45 undergraduate students in a managerial

communication course "to compare and contrast the successful and unsuccessful teams to

identify the factors that impact performance" (2006, p. 1). The researchers looked at the learning

outcomes in the context of online learning and virtual teams and identified five problems areas,

"Team Membership, Action Plan, Communication, Goals, and Leadership". As usual

communication played a key role in the success or failure of these virtual teams. The researchers

discovered that having the right team members, creating a plan of tasks, responsibilities,

deadlines and deliverables; establishing ground rules and guidelines for regular communicating;

understanding group goals; and having a leader that facilitates effective teamwork creates

successful teams. However, these same factors are key to successful ftf groups, it just costs more

to bring people together in a physical setting and appears to take longer to build successful

virtual groups. A major deficiency in unsuccessful virtual teams was the lack of good team

leadership, which can also be said of ftf groups (p. 14). Nonetheless, virtual teams and groups are

here to stay both in the classroom and the workplace so it is vital that we identify the key

"success criteria" for implementing virtual communication in either environment. "Effective

communication is essential in any class but even more so in a virtual class" and "Virtual

communication makes it hard to read people and to learn content" (May & Margolis, 2006). One

student response from this study sums up the importance of communication in the virtual world

better than any researcher ever could, "Communicate, communicate, communicate. Be sure

everyone is on the same page. Double Check" (p. 13).

Gail Fann Thomas 2007 article discusses the importance of academics bridging the

research gap and collaborating more with professionals. This would help make business

communication researchers more "credible and demonstrate a better understanding of

contemporary and future dilemmas in the world of work" (p. 284). At this point, there had been

a major shift from countries globalizing to individuals globalizing and thus virtual

communication had become a key element in the changing workplace as business

communication evolved. However, De Pillis & Furumo (2007) found that virtual teams are often

less efficient and have increased cost and increased time to complete their project. These studies

see virtual teams as an asset to the workplace but at a cost to overhead and time in set up and

training. Weimann, Hinz, Scott & Pollock's findings also showed that regular face-to-face

meetings, email and phone still played a pivotal role in team communication, even though a

variety of communication tools are available. Further, like non-distributed teams, a need for

common ground and shared meaning, or social context, are essential elements for the

communication within a distributed team (2010, p. 187). Weimann, Hinz, Scott & Pollock's

results support the argument that virtual teams can't reach a similar performance level as

traditional teams due to communication deficiencies and visibility of team members" (p. 194).

The same issues of miscommunication and difficulty building trust between team members

continued to plague virtual teams and their use of virtual communication tools such as email, live

chats, and teleconferencing.

In 2008 Holly Duckworth's study on TRW Automotive manufacturing observed, "Global

virtual teams have the deck stacked against them: long distances, cultural differences, lack of

social cues to help gauge each other's trustworthiness and leaders unprepared to deal with these

challenges" (p.6). In her study she recorded and observed employees working in virtual teams

and discovered that the lack of nonverbal and social cues played a large role in the teams being

less productive. This study linked successful communication to improved productivity and found

that leaders needed to make members commitments visible to each other by maintaining clear

and consistent work practices through clear communication and creating a team memory (2008,

p. 9). Once again teams and workers using virtual communication needed to build trust in order

to be successful and so researchers kept looking into how media played a role in blocking or

building that trust. For example, Rockmann and Northcraft 2008 study examined how media

richness impacted affective-based trust and cognitive-based trust. The researchers conducted two

studies with 352 undergraduate students from two upper level business courses. They divided the

students into three groups: face-to-face, computer-mediated, and video-mediated and had them

solve social dilemma scenarios. They learned that media richness does improve virtual

communication and can help to build trust among team member. Group members who could

visually see the other team members' nonverbal and social cues had more trust with their group

than the CMC group. Although they also observed that, "Video-mediated communication solves

some, but not all, of the problems inherent when interacting via communication technology"

(2008, p.106). These researchers showed that media richness in virtual communication is key to

success but still no replacement for face-to-face communication.

Purvanova and Bono in their 2009 study found that transformational leadership is linked

to project satisfaction but also learned that ftf is superior to CMC and it takes longer than ftf (p.

344). They created 118 virtual teams and 115 face-to-face teams out of undergraduates taking a

psychology course at a public university and discovered six successful behaviors for virtual

leaders such as: "establish trust, ensure team members feel understood and appreciated, manage

virtual meetings and monitor team progress, enhance the external visibility of team members and

ensure members benefit from participating in group" (p. 347). While in Johnson, Bettenhausen,

& Gibbons, 2009 study observed that members using CMC ninety percent of the time

experienced a less positive affect while working with their teams (p. 623). Then, Markman's

conversational analysis study looked at the use of chat rooms by undergraduates in virtual

meetings and how it effected the opening and closing of the meetings and observed that the use

of that disrupted the flow of communication. In this study, "What is less well-developed within

the virtual teams literature is a more detailed explanation of exactly how, at the most basic level,

communication is coordinated in CMC" (2009, p. 151). This analysis included current concerns

related to the importance of communication in virtual organizations such as problems with the

technology design and miscommunication issues. They also discovered that, "Because actions

are not tightly coupled with talk, they can take much longer to accomplish in virtual meetings

than they would in face-to-face meetings or even telephone conferences" (p. 165). Nine years

later most of the virtual communication taking place in the workplace and in virtual research is

text-based with little or no attention being given to more visual technology even though most of

the research had pointed to the need for using technology that engaged more of the senses.

In 2010, the focus of virtual research moved away from just looking at the technology

and started to analyze the virtual worker versus the collocated worker. Lojeski and Reilly used a

linear model to measure the link between virtual distance and critical success factors by looking

at physical distance, operational distance and affinity distance, which resulted in a Virtual

Distance Index. (Lojeski & Reilly, p. 51, 2010) The same pattern of factors that effect successful

virtual communication are also important indicators in the virtual distance index such as trust

levels, innovative behavior, organizational citizenship, satisfaction in participation and a shared

vision for the project (p. 52-53). They found that three key factors effect virtual distance

including: Physical Distance (Organizational, Temporal, and Geographic); Operational Distance

(Distribution, Readiness, Multitasking, Communication Distance); and Affinity Distance

(Interdependence Distance, Relationship Distance, Social, and Cultural). What the researchers

learned was that you did not have to be a virtual worker to feel isolated from the organization

and that collocated workers used virtual communication to increase virtual distance when

desired. O'Leary, M.B, Wilson, J.M. & Metiu 2014 study agreed and found that perceived

proximity and not physical proximity affects relationship quality in an international survey of

more than six hundred people (p. 1219). "We found strong similarities between dispersed and

collocated colleagues' perceptions of proximity, communication frequency, and identification"

(p.1235). In other words, the virtual distance or perceptions of proximity are more psychological

based than geographically based. Several respondents reported that although they worked in the

same building with some team members, they used technology to distance themselves from these

workers. Then, used that same technology to keep in touch with other workers located in other

countries.

Another study by Fonner & Roloff, "examines the extent to which telework affects job

satisfaction through the experiences of work-life conflict, and found that high-intensity

teleworkers are more satisfied than office-based employees and achieve significant benefits from

their work arrangement, with work-life conflict most influential toward job satisfaction" (2010,

p. 336). This analysis concurred with AAKirman and Harris study from five years earlier that

showed higher satisfaction among virtual worker than collocated workers. Fonner & Roloff

found that teleworkers had more autonomy and that it helped with diminishing the conflict

between personal life and work life by reducing stress from meetings, interruptions, and

distractions (p. 340). The study looked at a small sample of 89 teleworkers and 103 office-based

employees who took a self-selected survey regarding job satisfaction. This research did find that

less face-to-face interaction was not detrimental to job satisfaction because teleworkers have

more control over their work environment (p. 358). Thus, teleworkers appear to be as satisfied as

they were five years earlier. Heller also observed that, "Although virtual communication offers

many advantages, it is not without challenges" (2010, p. 9). For example cost saving of travel for

ftf meetings and the ability to keep in regular contact using multi-channels during a project.

However, CMC or virtual communication also generates many interpersonal challenges such the

absence of non-verbal cues and transferring tacit knowledge (p. 11).

The same issues keep coming up such as difficulty building trust with other group

members because members do not know each other and have never met or time issues when

synchronous virtual communication is used (video conferencing, phone calls or live chats). Also

cultural barriers are compounded and technology breakdowns and delays occur on a regular

basis. Heller suggested several strategies for improving virtual communication such as strong

leadership with clear team vision that actively managed the team by cultivating relationships

through limited communication. In addition, managers need a strong understanding of cultural

differences and should build trust through early ftf meetings as well as help members see their

individual benefit. She specifically identified setting regular communication routines weekly

while rotating time for cross time zone meetings thus creating shared norms and goals. Finally,

successful virtual communication must use multiple technology tools based on the task and train

the team on the technology and programs. "By creating a balanced scorecard with objective

measures, increasing the flow of virtual team information, and capitalizing on alternative sources

of information when assessing team and individual performance, managers have the means by

which to combat the virtual communication challenges" (Heller, 2010, p. 72). After critically

analyzing ten years of virtual studies, a definite pattern is beginning to emerge as well as

strategies of how to manage virtual communication and yet not much has changed in these

studies findings. The majority of virtual research in the workplace was still text based or CMC

and the same problems kept happening such as miscommunication because of limited non-verbal

communication (facial expressions, gestures, etc.). This is difficult to believe since Facebook

was five years old at this point, Twitter had begun in 2009 and Instagram had started in 2010.

One would think at this point virtual research would start to focus on the use of more

visual or social media and its application to business communication. However, the research

continued to center on how communication technology could replace ftf meetings or the actual

collocated workplace. For instance Berry's study found "managing virtual teams is different and

more complex than managing face-to-face teams" even though they share many elements of

face-to-face teams (2011, p. 186). Virtual teams go through the same forming, norming and

performing stages but the storming stage is often skipped or blended into other stages (p. 191).

This can lead to groupthink and conflict throughout the group's work. Virtual teams are more

prone to conflict because the members may not really know each other very well and it takes

much more time to build these relationships in the virtual environment (p. 195). The advantages

of virtual team's are bridging time and space but the team still needs to have well selected team

members and leadership and systematic communication since most of the communication is

asynchronous. Berry stresses making sure the group's goal and purpose are clear and

measurable, which is just as vital to the success of face-to-face groups. This study finds for every

advantage to virtual teams there are disadvantages and that virtual groups face the same

challenges as face-to-face groups but need to work more systematically at building social

relationships among group members to help virtual teams succeed. As he states, "The effective

management of virtual teams requires knowledge and understanding of the fundamental

principles of team dynamics regardless of the time, space, and communication differences

between virtual and face-to-face work environments" (p. 186). While Berry analyzed how virtual

teams evolved or did not evolve through group stages other researchers concentrated on how

virtual members built interpersonal relationships. Virolainen 2011study collected data from 10

different virtual teams through a thematic interview and questionnaire. The results showed that a

virtual working environment decreases informal personal communication, which affects social

relationships between co-workers. However, results did show that building close social

relationships between co-workers in the virtual work context is possible but meeting face-to-face

was key to helping build them. 44% of the subjects already had personal relationships and

despite a large group of virtual members knowing each other the computer-mediated

communication was a continual struggle (p. 577-578). This study found that virtual team

members needed to start building a personal bond with other group members before the project

began and even with prior knowledge of other members communicating virtually was a

challenge.

In 2012 Denstadli, Julsrud and Hjorthol's quantitative study came to similar conclusions

as Berry and Virolainen studies regarding virtual team members socially bonding. They observed

that video-conferencing and ftf meetings differ along several dimensions, suggesting that these

two modes of communication fulfill slightly different needs. The researchers proposed a

framework to understand the emerging role of video-conferencing, which addressed both

relational and task-based dimensions (p. 65). Video-conferencing can reduce stress due to travel,

reduce environmental strain, and save time, but the main disadvantages is it is not suitable for

meetings between participants who do not know one another and that it makes developing

contacts difficult (p. 80). That same year, Golnaz Sadri and John Condia research identified the

keys to success for both face-to-face and virtual teams as: high levels of trust, open and clear

communication, strong leadership, clear goals and purpose and the use of appropriate levels of

technology. "In 2007, IBM estimated that it saved more than $50 million in travel-related

expenses by using virtual teams" (2012, p. 21-22). However, poor technical and communication

skills as well as members cultural differences and inability to work remotely can hinder

productivity of virtual teams. "Since individuals tend to be less inhibited when communicating

technologically, virtual team communication has the potential to become harsh and provoke

conflict" (p. 24). Thus modeling proper communication is vital when dealing with conflicts that

arise. Virtual teams need to have their members and leadership carefully selected and creates

regular and predictable communication to build trust. Researchers Golnz Sadri and John Condia

agree that, "Members of high-performing teams have high levels of trust in one another" (p. 24).

Palos 2012 study also agreed with many earlier research that, "The process of communication is infinitely more complex in virtual teams and virtual organizations" (p. 38). "The issue of trust arises because of the characteristics of the communication process – the lack of or very few face-to-face meetings and the cultural diversity that is manifested in the manner of addressing of the partners from different geographical regions" (p. 41). It is obvious that after 12 years of virtual studies building trust is directly linked to communication and how well that virtual communication is managed as well as maintained.

In 2013 researchers started to analyze more cutting edge communication technology, Cyphert, Wurtz and Duclos study looked at how business organizations used virtual worlds in traditional organizations and found that the communication requires much more examination and modification. They learned as others have that it is a useful tool when used with other communication tools such as social media, and face-to-face. Companies such as Cisco and IBM were early users of public virtual worlds but have since moved in-house to create more secure and customizable virtual environments (Cyphert, Wurtz and Duclos, 2013, p. 350). Sun Microsystems incorporates also moved to using more social media tools (Barker, 2008). "Now, an employer can choose among a range of social media, including Facebook, LinkedIn, podcasts, Twitter, wikis, as well as various methods of virtual interaction" (Cyphert, Wurtz and Duclos, 2013, p. 350). In Weimann, Pollack, Scott, and Brown 2013 study the focus had shifted to virtualness as a characteristic present in all teams. It was found that restrictions in Internet access of even a single member within a team limited the team's technological choices, and affected the team's performance (p. 332). "Technologies, such as groupware, videoconferencing, mobile phones, and the internet, all support the work of teams. Communication is at the heart of distributed and traditional project teams; and many issues faced by virtual teams, such as conflict

management as well as trust and team cohesion, are rooted in team communication behaviors

and processes" (p. 336). Just as many studies before, they found that trust must be established

and maintained through the proper selection and use of virtual communication technology tools.

Next, the team's progress should be monitored regularly through the chosen technology and team

members made visible and shown the benefits of working on a virtual team. Even as the

communication technology choices grew in business communication, virtual research kept

finding that virtual groups encountered the same issues with some minor improvements when

communication was managed properly.

Ruppel, Baiyun, G., & Tworoger in 2013 analyzed the perspectives of U.S. managers

who teleworked from domestic workplaces and virtual team members located in offices in India

and found that "managers chose media that met task requirements and maintained the boundaries

between their work and personal lives rather than media that would provide the most satisfactory

experience" (p.437). This case study looked at a nine member virtual team of managers and

workers from a Fortune 100 multinational corporation and observed the virtual team select media

based on the people involved and their relationships not just the assigned task (p.441). The

virtual managers choose their communication tools based on the size, subject matter, and

makeup of the audience, thus instant messaging, email and talking on the phone were the tools

used most of the time during the project (p. 451). These researchers have learned as many others

have that the more virtual the workplace becomes the more complex the issues such as managing

temporal, cultural, geographical, language, work-life boundaries as well as communication. It

appears from this study that even though the virtual team was very successful the members from

India would have liked more ftf interaction to better bridge the cultural divide. "Consequently,

miscommunications occurred, leading to missed deadlines and lost productivity that could have

possibly been avoided if the team members had initially met face-to-face in order to establish

team protocols and build relationships and mutual understanding" (p. 463).

In 2014 Bartelt and Dennis conducted an experimental study to examine the impact of

different genre rules developed for two communication tools: instant messenger and discussion

forum. Their results show that these tools triggered different genre rules with different behaviors,

which in turn resulted in significantly different decision quality. These findings suggested that

the automatic enactment of genre rules for a communication tool had as powerful an effect on

behavior and performance as the actual features of the tool itself. They believed that the results,

taken together with past research showed the effects of social structures on communication, and

called for "the expansion of task–technology fit theories to include the role of social structures in

explaining the use of and performance from communication tools" (2014, p. 521). Their research

supported McLuhan's "the medium is the message" work and the thousands of other studies that

followed by showing that how virtual group members use virtual tools such as discussion boards

and instant messaging directly affects the message. Thus affecting the success of the group

reaching their goal. This empirical study analyzed "virtual team's effectiveness, their

communication strategies and the team's psychological traits: trust, shared understanding and co-

operation and found the limited range of communication methods available to a global virtual

team was not a major contributing factor to a team's effectiveness" (Morgan, Paucer-Caceres &

Wright, 2014, p. 607). However, they also found that as virtuality grew in the different groups

their need for routine and constant communication was necessary to reach their goals

successfully. Researchers Morgan, Paucer-Caceres & Wright also found that "misunderstandings

and misinterpretations occur frequently, but this can be overcome through a mixed methods

approach to communicating - verbal, face-to-face and written" (2014, p. 613). Virtual team

effectiveness is linked to the communication process and the need for group members to bond

and build relationships, which builds trust and improves virtual groups productivity. This study

found that it was not necessarily the mode of communication as much as it was the regular

process of communicating with your group members.

As the number of virtual studies grew it is interesting to note that many results showed

that most business communicators were still using traditional technology to virtually

communicate. For instance, Kiddie's 2014 survey found that "Email, face-to-face meetings, and

telephone calls are preferred choices for workplace communication as well as for personal

communication although text-messaging did receive a significant increase in personal

communication (p. 78). It should be noted the study is based on a 26-question survey distributed

back in 2010 only a year after Twitter came into existence. In 2010 email and electronic

calendars were preferred over texting at work. "Employees were relying more on instant

messaging, email, and text messaging to communicate with colleagues asynchronously while at

work" (p. 66). Most of the virtual communication taking place in the workplace in 2014 still

centered on text-based communication. Respondents to the survey believed that, "A successful

next generation messaging system will combine SMS, instant messaging, video conferencing,

and email into one seamless platform' (p. 68). "The author concludes that change agents and

early adopters already in the company, not new hires, will effect a change in communication

media that will involve new technology such as smartphones" (p. 65). Almost ten years since the

birth of Face Book and with the explosion of social media, business communication was still

text-based with more people texting, blogging, and using email. Darics 2014 study found through

linguistic analysis new communicative situations requires rethinking of previously existing

interactional norms and communicative practices employed by the team members are not yet

conventionalized. The growing success of virtual teams is due to the confluence of

organizational and technological factors, as well as financial benefits (p. 337). Their study

disclosed that the success of virtual teams boiled down to saving the company money not

necessarily the quality of the project. A few studies did analyze business use of total virtual

environment; a Lohle & Terrell qualitative study analyzed how avatars had an impact on trust

and potential project management success when teams used virtual worlds to collaborate (2014,

p. 1). Their study observed multiple issues with the avatars realistically representing the person

with miscommunication of facial expressions and gestures. Virtual team members only trusted

their colleagues after confirming they could rely on them to deliver and once they verified their

colleague's virtual self was authentic (p. 7).

The most comprehensive study conducted on virtual teams was Gilson, Maynard, Jones

Young, Vartiainen, and Hakonen 2015 review of empirical studies conducted over the last ten

years. They found that technology can impair virtual teams and is key to enabling

communication and performance monitoring. Trust is one of the most studied variables in virtual

team literature and trust is influenced by communication behaviors such as timely responses,

open communication and feedback (p. 1321). Early communication and trust in technology are

important elements to successful virtual groups. The researchers learned that virtual competence

and generational impact also need to be studied over time to allow for better assessment because

millennials will be better at virtual teams since they are more comfortable using CMC to reduce

boundaries (p. 1324-1325). The majority of virtual team studies focused on email, chat rooms

and discussion boards and their study observed that there is a need for the research to look at new

and emerging technology such as social media. (p. 1318). The Cardon & Marshall study did just

that by surveying 227 business professionals about their, "use of social networking for team

communication compared to other communication channels, perceived effectiveness of social

networking tools for team communication compared to other communication channels" (2015, p.

273). The results showed that traditional communication channels are used more commonly and

considered more effective for team communication. However, younger generations did see social

media as the future tool for business communication. The authors believe social media has taken

over email as the primary source of personal communication but email still dominates in the

workplace (p. 274). According to Cardon & Marshall's survey "Across all generational groups,

face-to-face meetings, in-person conversations, e-mail, and phone calls are considered the most

effective communication tools" (p. 284). Even in companies that use and promote the use of

social media, these traditional tools are still considered the most effective. The authors concluded

that this technology would become more a part of business communication over the next 5-10

years. A great deal of these virtual studies keep pointing to the fact that a media rich environment

with multiple communication tools in use could be the answer to the successful use of virtual

communication in the workplace (Mitchell, 2015).

Discussion

After reviewing hundreds of studies and focusing on forty studies where virtual

communication played a key role, several issues that impact the success of managing virtual

communication have become quite evident. In 15 years of virtual research the majority of the

studies analyzed traditional communication technology being used in business communication

such as email, texting, chat, and phone calling. These studies tended to focus more on the text-

based virtual communication because it is the technology that businesses and workers reported

they used the most when communicating at work. A few studies did look into the use of video

conferencing and briefly discussed the use of social media, but for the most part virtual business

communication has been text-based. This has led many researchers to similar findings on the

success and failure of virtual teams and their use of virtual communication. The same problems

of building trust, keeping the virtual team members engaged in the process, dealing with cultural

as well as time differences, routine communication and overcoming technical breakdowns were

consistently encountered in almost all of the forty studies analyzed. Many of the researchers

identified these problems and suggested solutions such as, Kirkman, Rosen, Gibson, Tesluk &

McPherson study which conducted "a comprehensive set of interviews with team leaders,

general mangers and executives on 65 virtual teams at Sabre, Inc., a travel industry company"

(2004, p. 67). Over 13 years ago these researchers identified five challenges that virtual teams

need to overcome to be successful which includes: building trust, cohesion, team identity,

balancing technical and interpersonal skills, and assessment and recognition of team

performance. This study as the many studies that have followed discovered that the lack of ftf

time for team members made social bonding much more difficult and thus virtual team members

must establish trust based on routine virtual communication. Such as short, frequent

communications with purpose, which helps remote employees to feel connected and included

(Janove, 2004)

In his 2013 Harvard Business Review article, Michael Watkins agrees with Kirkman's

findings as well as several other studies that ftf meetings in the beginning are vital so is

communication mode, choice of technology, and virtual water coolers so groups can bond and

get to know each other. Communication on virtual teams is often less frequent, and is always less

rich then ftf interaction and communication guidelines must be set up and enforced for success to

happen. A 2014 Cornell Study also found that meeting ftf is key early on, so is setting up ground

rules for communication mode, shared software interface is a must and picking the correct

technology based on tasks is vital to that success. These current studies support other research

that can be traced back to studies conducted in 2002 by Rutkowki, Vogel, Genuchten,

Bemelmans, & Favier as well as Kirkman, Rosen, Gibson, Tesluk & McPherson. Rutkowski et al

found that continuous communication is required to avoid confrontation and resolve conflict.

These researchers believed in applying a sandwich structure with virtual teams by kicking off the

team with ftf meetings to build trust, creating and sticking to an agenda, ending with the closure,

and delivering a final product preferably done ftf (p. 227). The researchers developed a six-week

project involving hundreds of people from different cultures and focused on the "importance of

structuring activities for balancing electronic communication during e-collaborations such as

video conferencing, email, and chat sessions" (p. 219). They also found that early synchronous

work and timely feedback were critical for virtual groups to succeed. As early as 2001 Duarte

and Snyder developed a communication plan for virtual teams which included: access to the

power structure, managing horizontal interfaces, provide teams with access to important

information and establish accountability for data collection and information sharing (p. 108).

These researchers identified the importance of regular free flowing communication between

virtual group members and other stakeholders in the process as key to the success of the team's

work. They also recognized the importance of accountability for virtual workers' roles, which

can make or break the success of a virtual team. However, Duarte and Snyder's communication

plan is missing a key element named in a majority of the forty studies analyzed and that is

without trust very little virtual work let alone communication succeeds.

Thus, businesses that want to successfully use virtual communication at work must

include some form of a ftf meeting early on or at the very least allow workers to bond before

projects begin using more visual technology such as video-conferencing or Skype. As these

virtual studies have shown people tend to trust quicker and deeper when they have actually seen

and heard the other person. This is due to the fact that 80% or more of communication is

nonverbal. Businesses that have been relying on text-based virtual communication have

increased miscommunication among workers not improved it, which is why the media richness

of the business communication used is vital to the success of virtual communication in the

workplace. After building trust by meeting ftf or using more visual media to converse the

research also pointed out a need to set clear communication ground rules for when and how long

virtual workers/teams communicate. Researchers consistently reported that some virtual

workers/teams could become slackers or drift when there was no weekly routine for members to

communicate (Isaacs, Walendowski, Whittaker, Schiano, & Kamm, 2002; Lojeski and Reilly,

2010; Morgan, Paucer-Caceres & Wright, 2014). In other words, successful virtual

communicators exchange information on a regular basis for a certain amount of time at least one

to two times a week if not more depending on the project deadline.

In addition to building trust and setting clear communication guidelines, organizations

need a shared technology interface that all workers have been properly trained on so time is not

wasted with people trying to learn the software at the same time they are trying to virtually

communicate. This only causes delays in communication, which leads to frustration and more

miscommunication among workers both collocated and virtual. The interface that is being

utilized by the organization should be made easy to use since there will be people using it from

varying levels of technology expertise from novice to professional. Another element that greatly

impacts virtual communication is the communication channels selected to communicate

virtually. Almost all of the studies found that the communication channels used should be based

on the task, which means virtual work requires the use of multiple communication channels

(Darics, 2014; House, 2007; May & Margolis, 2006). Just as some people are visual or verbal

learners the same can be said about how people communicate, which is why it is so important to

use more than one communication channel when virtually communicating at work. Many of the

studies found that business were using at least three different communication channels even if

they were mostly text-based such as email, instant messaging, live chats and phone calls. More

and more businesses are using video-conferencing and this does help improve non-verbal

communication depending on if workers can see each other's facial expressions and gestures.

Therefore, the virtual research suggests a minimum of two weeks before virtual

communication begins on a project, the group needs to become more socially grounded by either

meeting face-to-face or by taking part in virtual water cooler communication so workers can

bond with their group (Akkirmann & Harris, 2005; Duckworth, 2008). The researchers also

suggest using richer media especially voice and video technology and that using this richer

media helps to build trust and trust helps make virtual communication successful (Argenti, 2006;

Berry, 2011; Bartelt & Dennis, 2014). Furthermore, a variety of communication channels must

be used to avoid miscommunication and should be selected based on the task at hand (House,

2007; Gilson, Maynard, Jones Young, Vartiainen & Hakonen, 2015). Finally, virtual

communication cannot be successful if workers are silent or not very responsive so regular and

consistent communication must take place and each worker needs to be accountable for their

communication effort (Heller, 2010; Kidde, 2014; Markman, 2009). A rubric that can measure

the proper use of these suggestions is needed in order to acquire the ability to measure the

success or failure of virtual communication in the workplace.

Instrument

A measurement device was developed to evaluate the success of the four areas/criteria

that impact virtual communication as identified in the analysis of the virtual studies. The Virtual

Communication Evaluation Instrument analyzes trust-building, routine communication, media

richness, and accountability. The device can be used to critically review a project or an employee

that is using virtual communication in the workplace. If an employee is being evaluated the job

title will also be recorded. The entire instrument is based on a 100-point scale with each area

worth 25 points apiece. There are five sub-areas for each main area analyzed valued at five

points a piece. The five point scale ranks each sub area's performance as 5 = excellence, 4 =

Good, 3 = average, 2 = poor, and 1 = failure. The assessment is based on an expert applying the

device and identifying if each area is functioning well or if problems are being encountered and

how these difficulties are being addressed to resolve the problems or if the issues are not being

addressed. Once the instrument is applied and the subject or project has been analyzed, it is

scored and a final total is given a value with suggestions on how to improve virtual

communication, which in turn will improve the ranking on the VCE (Virtual Communication

Evaluation) scale. The VCE levels are: Extremely Successful: 100-90 - Virtual Communication

flowed well with little to no miscommunication and goals were met with high employee

satisfaction; Successful: 89-80 - Virtual Communication flowed well with some

miscommunication but goals were met with employee satisfaction; Moderately Successful: 79-70

- Virtual Communication had several issues with miscommunication but goals were still met

with some employee satisfaction; Unsuccessful: 69-60 - Virtual Communication had several

major issues with miscommunication and goals were not met, little or no employee satisfaction;

Failure: 59 and below - Virtual Communication had total communication breakdown and goals

were not met, little or no employee satisfaction. The final element of the instrument is a

comment section where a trained expert can make suggestions for the subject or subjects being

analyzed. The expert will physically go to the organization or employee's location and observe

them at work using virtual communication and administer the device. In essence, a field study

will occur and the VCE applied and then the expert will meet with their subjects to advise them

on how to improve or keep successfully virtually communicating.

The four main criteria analyzed in this instrument are broken down into sub-areas, which

were also consistently identified in the virtual studies as criteria that need to be properly

managed in order to help build trust through routine communication using more media richness

and ensuring engagement through accountability. The first main criteria critically reviewed in the

device is trust building, which was the number one problematic issue mentioned in a majority of

the research (Berry, 2011; Denstadli, Julsrud & Hjorthol, 2012; Duckworth, 2008; Fonner &

Roloff, 2010; Johnson, Bettenhausen & Gibbons, 2009; Palos, 2012; Virolainen, 2011). The five

sub-areas that may improve or impede trust building are: Pre-Work, face-to-face/video

conferencing, CMC, bonding and culture. A majority of the studies discussed the importance of

employees and groups getting to know each other before actually working together. Many

suggestions were made from creating informal virtual exercises that created a virtual water

cooler environment to having employees call, text, or email one another so when they begin

work they are not total strangers. This part of the instrument will help the expert to identify if

any effort is being made on the pre-work area and observe if it is building trust or not. The

second sub-area is face-to-face/video conferencing, which was another issue continually

discussed in the virtual studies. Researchers have found that having employees or groups meet

early in their work process together is vital to building trust and that if ftf is not possible at the

very least video conferencing must be used to build trust. People do not trust as easily when they

have not seen the other person they are working with and it takes much longer to build trust, which can delay work productivity. The expert will observe if this issue is addressed or not and analyze how it is effecting the virtual communication process. The third sub-area looks into the use of CMC or all the non-visual communication-taking place and identifies if at least three forms are being utilized. The research suggested that at least three modes of CMC should be used when communicating virtually such as texting, emailing, and phone calls. The fourth sub-area the device is analyzing is bonding. The expert will try to identify if employees have created relationships with each other to the point that they have bonded. This can be uncovered by looking at the type of language being used between employees, (is it casual or more formal) as well as how the employee's over all demeanor is when communicating with this person. The fifth and final sub-area under trust building is culture. There are two kinds of culture that impact virtual communication, the first is the organization's culture and the second is intercultural. Each organization has a culture that can be highly structured or less and may empower managers or the employees or perhaps both or neither. Organization are also made up of employees from different countries as well as from different regions of various countries and each culture has a distinct way of communicating in addition to speaking different languages. It is vital that organizations understand the various cultures interacting in their workplace and that employees are supported and aided in reaching across cultures to successfully communicate with one another. This can only be done when an effort is made for employees to get to know each other better and with training on cultural communication. If the expert using the VCE sees little or no effort being made to communicate cross culturally and the employees are a culturally diverse group a low score will be given. However, if the expert observes consistent efforts being made to be inclusive culturally the result will be a higher score in this sub-area.

The second main criteria the VCE instrument is routine communication (Bartelt &

Dennis, 2014; Darics, 2014; Kidde, 2014; May & Margolis, 2006; Sobel-Lojeski & Reilly, 2008;

Wong & Burton, 2000) with five sub-areas that include: weekly, bi-weekly, monthly, time of

day, and time quantity. These sub areas are looking at if employees or groups are regularly

communicating and is this routine communication every week or every two weeks or every

month. If the expert sees that the virtual communication is every week then all three sub-areas

will be scored at the same time and the quality of that communication will be measured by the

last two sub-areas, which are time of day and time quantity. Time of day will evaluate if the

employee or group are making an effort to routinely virtually communicate by rotating the time

of day they virtually meet to accommodate employees in different time zones. The time quantity

sub-area analyzes if the employee or group are spending enough time with each other to

successfully complete the work. In other words, is the virtual communication brief with little

information exchanged or do they spend several hours exchanging in depth information with

substance.

The third main criterion analyzed on the VCE is media richness, which refers to the type

of communication technology being used to virtually communicate (Argenti, 2006; Cyphert,

Wurtz & Duclos, 2013; Dineen, 2005; Reinsch & Warisse-Turner, 2006; Ruppel, Baiyun &

Tworoger, 2013; Warisse-Turner & Reinsch, 2007; Weimann, Pollack, Scott & Brown, 2013).

The five sub-areas are text-based, phone, video, social, and technology interface. The virtual

research findings suggest that the type of task be used as a guide in choosing which media by

utilized to virtually communicate for a project or meeting. For example, using email or Google

doc or live chats or all three to build a report by sharing the data. Another example might be

using video conferencing, phone calls and Adobe Connect to work on a global presentation by

employees or a team. Text-based technology refers to texting, chats, email, blogs, wikis, or

communication that uses text as the main source to share information. Phone technology is using

phones to verbally speak to one or more people, while video technology is using the phone or

computer to visually and verbally share information with other people. Social technology refers

to using social media such as Facebook, Twitter, and Instagram to communicate with other

people at work. Finally, the expert will also look at the technology interface to see if it is easy for

employees to use or more complex requiring employees to train to properly use it. This part of

the instrument is designed to help the expert decode if the proper technology is being utilized and

if employees are successfully virtually communicating through both software and hardware.

The fourth and final main criterion analyzed with the Virtual Communication Evaluation

Instrument is accountability (Akkirman & Harris, 2005; Baltes, Dickson, Sherman, Bauer &

LaGanke, 2002; Duarte & Snyder, 2001; Fonner & Roloff, 2010; Markman, 2009; Morgan,

Paucer-Cacere & Wright, 2014; Thompson & Coovert, 2003). Many of the virtual studies

discussed the problems of keeping employees engaged in virtual communication and the

negative impact that occurred when employees or virtual teams did not see the communication

process as a key element to success. This is why the instrument analyzes participation,

communication role, productivity, goals met, and feedback. Participation is defined as employees

or teams actively taking part in the communication process by using the virtual technology to

consistently share information. Communication role refers to the role or roles the employee is

playing in the communication process such as leading the discussion, being a gatekeeper,

contributing information, gathering information, etc. Productivity is defined as an end product or

result of some kind that comes from the employee or group that is working virtually. This end

product could be reaching a benchmark of a project or the end result of the entire project. The

fourth sub-area of accountability is have the goals been met. In other words, is the employee or

group meeting or not meeting the goals that have been previously set. These goals include the

business goals set and communication goals set by superiors. For instance, a team of employees

may have set a communication goal to complete a report using email, texting and phone calling,

while the final report is the business goal, which was assigned by supervisors to be completed by

a certain deadline. The final sub-area is feedback, which refers to employees being required to

give and receive feedback on their virtual communication. According to the virtual research

feedback is vital to the success of virtual communication because it confirms if the

communication was successfully shared with other employees or not. The expert is analyzing if

employees or teams are using a communication plan that actively makes the members account

for their part in the virtual communication process and if they are not what steps are being taken

to improve the communication such as rewards and discipline. For example, if an employee is

being highly accountable for their communication, then are they being rewarded for their efforts

with praise or a bonus? Further, if an employee is not being very accountable for their

communication, then are they being disciplined by losing a privilege or a bonus?

Limitations

This study has it limitations, which include only one researcher critically reviewing and

selecting the studies. It would have strengthened the findings to have several researchers

critically analyzing the virtual studies. This why I developed a rubric/coding instrument that can

be applied by more than one person in a business setting for future research and make the

findings more rigorous. Most of the studies came from multiple journals because there was not

enough data on virtual communication in business communication journals to properly analyze

trends and issues. Hopefully, as the research area grows more data will become available for

future analysis.

Suggestions for Future Studies

The field of business communication must expand their research focus to analyzing the

use of more visual media and social media such as the use of Skype, Face Book, Twitter,

Instagram, Adobe Connect, and GoToMeeting. Researchers need to study how using these more

media rich technology is impacting the productivity of workers and organizations. In addition,

more rigorous analysis must be conducted from experimental to more field studies at small and

large businesses to ensure more accurate findings that can help improve business communication

practices. We need to look into multiple organizations and how they are using virtual

communication from the health to education to government to the private sector. Perhaps subject

matter effects how virtual communication should be utilized but very little is know at this time

regarding this topic. I plan on conducting a second study using the rubric I have developed from

this study to analyze if businesses from various fields are successfully using virtual

communication in the workplace or not. In other words, are any consistent practices in the

utilization of virtual communication across various fields?

Conclusion

After reviewing hundreds of virtual research studies and analyzing forty where virtual

communication played a key role, a definite pattern of four areas impacting the success or failure

of virtual communication emerged. I have identified four issues (trust-building, routine

communication, media richness, and accountability) that consistently effect virtual

communication in the workplace. The research clearly shows that if these areas are not properly

managed the communication fails and so does the project and/or employee. Thus businesses need

to focus on these areas more and actively work on fixing the communication breakdowns that

can impede success. It is vital to identify the problems because you cannot fix something that has

not been acknowledge and identifying the problems in these four areas will help businesses

improve their virtual communication, which will improve the businesses results. The goal of this

study was to identify the "success criteria" used in successful virtual communication. By

uncovering the impact that these four areas have on virtual communication and identifying the

criteria that make up each of the sub-areas I have completed that objective by developing the

Virtual Communication Evaluation Instrument. It not only identifies the "successful criteria" but

also measures the success of the virtual communication and provides feedback for organizations

using virtual communication in the workplace. Virtual communication can only be successful

when these areas are consistently addressed and the criteria managed.

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