1-1-2016

A Design-Based Research Study Examining The Impact Of Collaboration Technology Tools In Mediating Collaboration

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A DESIGN-BASED RESEARCH STUDY EXAMINING THE IMPACT OF COLLABORATION TECHNOLOGY TOOLS IN MEDIATING COLLABORATION

by

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DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2015

MAJOR: INSTRUCTIONAL TECHNOLOGY

Approved By:

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Advisor   Date

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DEDICATION

Instruct the wise and they will be wiser still; teach the righteous and they will add to their learning. Proverbs 9:9

To all those who have transitioned to be with our Lord

before completion of this my academic milestone,

I know you would be proud of me...

I honor and love you each in very special ways:

Mary Jo Brooks

Pauline "Grand" & Willie "Grand-dad" Daniels

Inez "Nana" Waddell

ACKNOWLEDGEMENTS

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CHAPTER ONE

PROBLEM STATEMENT

Introduction

It is widely understood that collaboration in a global knowledge economy breeds innovation and drives progress in a variety of endeavors and fields of study. Interactive collaboration technologies have expanded users' capabilities to collaborate and have driven pedagogical paradigm shifts toward more learner-centered and interactive teaching and learning. As a result, collaboration proficiency is an expectation of 21st century college and workplace readiness. It has become an education imperative that learners engage in real-world team work and ill-structured problem solving situations typical of an interconnected knowledge society enhanced by ubiquitous ever-advancing communication technologies at all levels of their educational experience (Garrison, 2011). Yet, working collaboratively may not be a spontaneous outcome of face-to-face and online group formation or teaming (Fischer, Kollar, Stegmann, & Wecker, 2013). Business leaders, educational researchers, and instructional designers are focusing their efforts on making the pedagogical paradigm shift in the design and implementation of high performance collaborative processes based on "problem solving, collaboration, important themes or challenges, the ability to innovate and create, and the ability to understand and deal with complex systems" (Gee & Hayes, 2011. p. 69). The education sector in particular is leaning to online programs powered by integrative learning management systems to accomplish this mission. These educational technologies are increasingly interactive with integrated collaboration tools and related information communication technologies recognized for their transformative potential for learning given their capacity to enable anytime, anyplace, global access to more knowledgeable others (Vygotsky, 1978) for information sharing and

collective knowledge building whether synchronous or asynchronous. Key considerations toward effective collaboration mediated or enhanced by collaboration technology not only has much to do with shared goals, group composition, defined roles, and mutual respect that lends toward trust for individual and group accountability (Hershock & LaVaque-Manty, 2011; Patel, Pettitt, & Wilson, 2012); but with the pedagogical instructional design decisions for the collaboration technology in the task design (Laurillard, 2009; Puentedura, 2006).

Statement of the Problem

How online learners engage with collaboration technology for learning as well as how instructional designer incorporate these tools to impact collaborative learning goals and outcomes (Roschelle, 2013) in the online environment is where there is a critical problem. As a result, online learners may not become sufficiently prepared for the level of collaboration fluency expected by a globally competitive digital distributed knowledge economy largely made possible by leveraging collaboration technologies (Hershock & LaVaque-Manty, 2011). The shift toward learner-centeredness in academia at all levels may eventually drive deeper examination of online collaboration dynamics for purposes of isolating factors that may help and hinder collaboration process. The ubiquitous use of social media technology by adults for social interaction creates a socio-technical phenomenon that begs greater understanding to improve the quality of collaboration (Janke, 2010) in online learning environments. Socio-technical theory maintains that both social (e.g., behaviors, culture, working practices) and technical (e.g., technologies, information systems) aspects of a system must work together in order for it to function effectively (Clegg, 2000). Instructional designers or developers and managers of online course content in higher education-- who are often the professors themselves-- typically use comprehensive learning management systems integrated with powerful information

communication and collaboration technologies that represents a level of enhancement to their online course experiences (Puentedura, 2006). It is the exceptional online course that integrates these information communication and collaboration technologies at a transformation level as suggested by Puentedura's (2006) Substitution Augmentation Modification Redefinition (SAMR) Model.
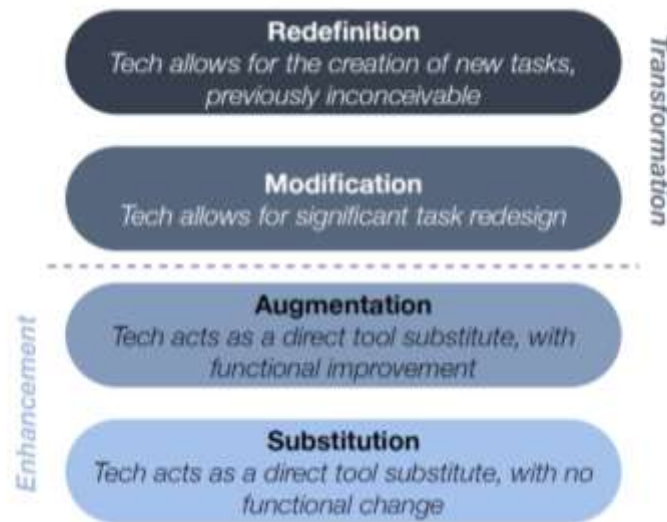
Figure 1. The SAMR Model.
Puentedura, R.R. (2009). *As We May Teach: Educational Technology, From Theory Into Practice.* Retrieved from http://www.hippasus.com/rrpweblog/. This figure illustrates the SAMR classifications linked to the outcomes of educational technology integration.

Adult learners, in contrast to adolescent learners, are perceived to possess characteristics of self-motivation and independence to direct their own learning within relevant tasks (Knowles, 1984; Kearsley, 2010). These characteristics of adult learners present an opportunity to gain insight into the role of dynamic collaboration technology tools used at a transformative level and its impact on collaboration processes within the increasingly common online learning environment.

Purpose and Research Questions

The purpose of this design-based research study was to examine collaboration by exploring the perceived impact of a series of instructional screencasts designed to demonstrate and support the use of dynamic text editor functions and multimedia features for authentic collaboration learning tasks towards greater learner-driven discussion board collaboration activity in two online discussion forum platforms: Blackboard Learn (BB) and Google Groups (GG). The goal was to examine how collaboration experiences might be impacted by the use of dynamic text editor functions and multimedia features aboard a commonly used collaboration tool: online discussion board. The research questions that guided this study are:

Q1. How does an instructional intervention in the use of collaboration technology influence collaboration experiences?

Q2. How do participants perceive their collaboration experience is constrained using collaboration technology?

Q3. How do participants perceive their collaboration experience is enhanced using collaboration technology?

 Q4. Does the iterative process of this design-based research study impact participants perceptions of collaboration?

In accordance with a design-based research approach, I was able to analyze collaboration course objectives of the instructors; identify appropriate collaboration technology tools; design, develop, and implement an instructional intervention to train participants in the use of the collaboration tools; and evaluate how tools mediate collaboration among the dynamics presented by authentic collaborative learning tasks and human collaboration element towards the development of design principles regarding how the intervention works in practice.

Theoretical Constructs

Vygotsky's constructivist theory known as social constructivism laid the foundation of my research. Social constructivism is a consistent theoretical foundation in existing literature of most computer supported collaborative learning research work as it recognizes that learning is a function of communication within a community culture or a social construct. Relevant research on collaboration supports the inextricable relationship among the learners and learning process, the learning and performance contexts as well as the media and delivery systems domains of the instructional design knowledge base taxonomy. Learning occurs through the interaction and engagement with tasks and tools that drive the learner to problem solve and make procedural decisions. These decisions and problem-solving process may even result in failure, conflict or cognitive disequilibrium that can function as a mechanism of feedback that perpetuates a search for a more knowledgeable other (Vygotsky, 1978), which in the technology enhanced learning environment may be another human being and/or more likely some information communication technology tool.

Bandura's (1986) Social Cognitive Theory must therefore drive instructional design decisions that orchestrate complex tasks, information communication technology tools, and social interactions required for collaborative learning experiences. Social cognitive theory suggests that learning occurs and is sustained where instructional behavior is modeled within a meaningful context for its use within the collaborative learning community; and, from these experiences learners develop self-efficacy through critical feedback mechanisms from the learning environment (Bandura, 1986). Hershock & LaVaque-Manty (2011) indicate that "task design, group formation, team management and the establishment of both individual and group

accountability" (p. 1) are key factors in the learning gains that can be achieved by leveraging collaboration technology for effective collaborative learning experiences. In this study, social cognitive theory and a recursive grounded theory approach (Charmaz, 2008) guided the design, implementation, and evaluation of my instructional interventions. I designed a series of instructional screencast tutorials and informational videos to provide observable behaviors for learners to emulate, to build self-efficacy with collaboration technology use, and to support collaboration technology task appropriateness decision making.

Engeström's (1987) Activity Theory and Theory of Expansive Learning, in part, guided the identification of transactional/transformative learning through the interaction between tools and online collaborative processes. The lens of Engeström's (1987) Theory of Expansive Learning suggests that the outcomes of learning derived by the collaborative process of solving complex ill-structured problems produces new forms of practical activity and artifacts that emphasizes the potential impact of new tools as vehicles for transformation.

Epistemology

The epistemological perspective or philosophy of this research study that explored online collaboration through the perceptions of the learner is fundamentally constructivist. Constructivism is a belief that all knowledge as constructed as a function of an individual's principles, perceptions and social experiences (Crotty, 1998). A constructivist epistemology rejects the notion of knowledge as a product to embracing knowing as a process (Ultanir, 2012).

Definitions and Key Terms

Collaboration and cooperation are often used interchangeably; however, there is a distinction. Collaboration is the process of joint creation while cooperation speaks to the process of joint activity. This study explored collaboration in its various task structures, for its crucial

technologies, and for the human factors that lead to effective collaboration. Definitions of terms contained herein are the following:

21st Century skills. The skills related to creativity, collaboration, communication, critical thinking, information literacy, media literacy, and technology literacy that contribute to college and career readiness in the twenty-first century (Spector, Merrill, Elen, & Bishop, 2014).

Collaboration technology. This is an umbrella term that refers to software, platforms or services that "support the communication, coordination, and/or information processing needs of two or more people working together on a common task" (Galletta & Zhang, 2006, 145).

Computer-supported Collaborative Learning (CSCL). Computer-supported collaborative learning refers to the use of information and communications technology to facilitate group learning activities such as problem-solving and knowledge-sharing (Dewiyanti, Brand-Gruwel, Jochems & Broers, 2007; Prinsen,Volman & Terwel, 2007).

Information Literacy. This is an intellectual framework and fundamental competency of lifelong learners involving analysis, comprehension, discovery, evaluation, and application of information leveraged by fluency with technology (Information Literacy Competency Standards for Higher Education, 2000).

Information Technology Fluency. This emphasizes an "understanding of technology and graduated, increasingly skilled use of it" (Information Literacy Competency Standards for Higher Education, 2000).

SAMR Model. The Substitution, Augmentation, Modification, and Redefinition Model is a non-linear classification continuum of entry for educational technology integration that seeks to drive deeper cognition and transformational social learning experiences (Puentedura, 2006).

Socio-technical theory. This theory has its origins from the perspective complex organizational work designs around the mechanization of coal mining processes (Trist and Bamforth, 1951). The theory and its principles embody the notion of joint optimization where humans and technology interplay for effectiveness and productivity between the human element and the technological tool (Clegg, 2000). For purposes of this research study, I will use the term socio-technical phenomena to describe these interactions within the context of this study's system of engagement.

Transactional learning. This term is used in educational theory to describe active learning through performance in authentic collaborative tasks involving reflection in and on learning (Campos, 2007).

Transformative learning. This term embodies the idea that one's core belief systems or frame of reference becomes altered as manifested by a sustained change in corresponding actions or behaviors as a direct result of fundamental changes to one's beliefs (Mezirow, 1997; Garrison & Kanuka, 2004).

Summary

Collaboration fluency is an expectation of 21st century learners that may not be well supported by current standards of collaboration technology use as integrated by instructional designers or practiced by learners in academia particularly in higher education. This design-based research was guided by the following questions: How does an instructional intervention in the use of collaboration technology influence participants' collaboration experiences? How do participants perceive their collaboration experience is constrained using collaboration technology? How do participants perceive their collaboration experience is enhanced using collaboration technology? Does the iterative process of this design-based research study impact

participants perceptions of collaboration? A review of theoretical constructs, the identification of opportunity gaps in existing CSCL literature, and the acknowledgement of educational problems to overcome by my cooperating practitioners framed the research problem. Relevant research on collaboration supporting the inextricable relationship among the learners and learning process, the learning and performance contexts as well as the media and delivery systems domains of the instructional design knowledge base taxonomy will follow in the next section.

CHAPTER TWO

LITERATURE REVIEW

A critical review of literature related to this design-based research supported my understanding about computer supported collaborative learning educational problems and establishes a theoretical basis for future research and instructional design interventions. Within a social constructivist framework, three major topics consistently emerged from a synthesis of the literature: social interaction and cognition; tools of collaboration; as well as collaborative context and tasks. These interrelated topics supported my research questions and framed my design-based instructional intervention towards the development of design principles in connection with how the intervention works in practice grounded in the data.

Theoretical Framework

Historically, much of the body of research on collaborative and cooperative learning stemmed from the precedents set by the social constructivist theory of learning in the work of Dewey (1916), Vygotsky (1978), Piaget (1973), Bandura (1986) and Bruner (1996). Social learning systems, cooperative systems, or collaborative systems adopt a constructivist approach using technology as a collaborative tool (Karpova, Correia, & Baran, 2009) or scaffolding tool to reduce cognitive load (Nussbaum, Alvarez, McFarlane, Gomez, Claro, & Radovic, 2009) and for interdependent expression of knowledge constructed by each individual with an authentic context. It is this learning that occurs in a social context and among learning communities that influences my interest in collaboration particularly in the 21st century blended learning model. Constructivism is the foundational perspective that supports the body of research around collaboration and social constructivism more specifically concerning CSCL research work. The work of Janssen *et al.* (2010) recognizes,

Vygotsky's (1978) concept of the zone of proximal development is often used to explain that collaborative learning is beneficial for learners because the more capable learner can help and scaffold, the less capable learner to accomplish a task he or she could not accomplish while working individually (p. 140).

With full acknowledgement of the challenges in investigating the dynamics of engagement involved in collaboration online or F2F as well in blended environments, researchers have sought to apply social cognitive theory (Bandura, 1977); communication theory (Shannon & Weaver, 1949); and self-regulated learning theory (Zimmerman & Schunk, 2001) in their research designs. Janssen *et al.* (2010) applied a process-oriented approach paired with cognitive load theory to gain a more complete understanding of collaborative learning as well as to complement the preponderance of effect-oriented research.

Collaboration particularly in the blended learning environment is a system of engagement that includes individuals as well as tools and tasks. Acknowledging the dynamic nature of collaboration processes Zigurs & Munkvold's (2006) research defined collaboration technology as "comprising one or more computer-based tools that support the communication, coordination, and/or information processing needs of two or more people working together on a common task" (p. 145). Engeström's (1987) Activity Theory Model represents this socio-technical system illustrated by a triangle with six constructs that he called an activity system. The subject (individual or group) interacts with the community (learners who share the same object), rules (explicit and implicit norms of interaction), division of labor (tasks/roles & power/status), and the tools that mediate the object (or goal) of the activity unto a transformed outcome. This triangle is shown in Figure 2, below.
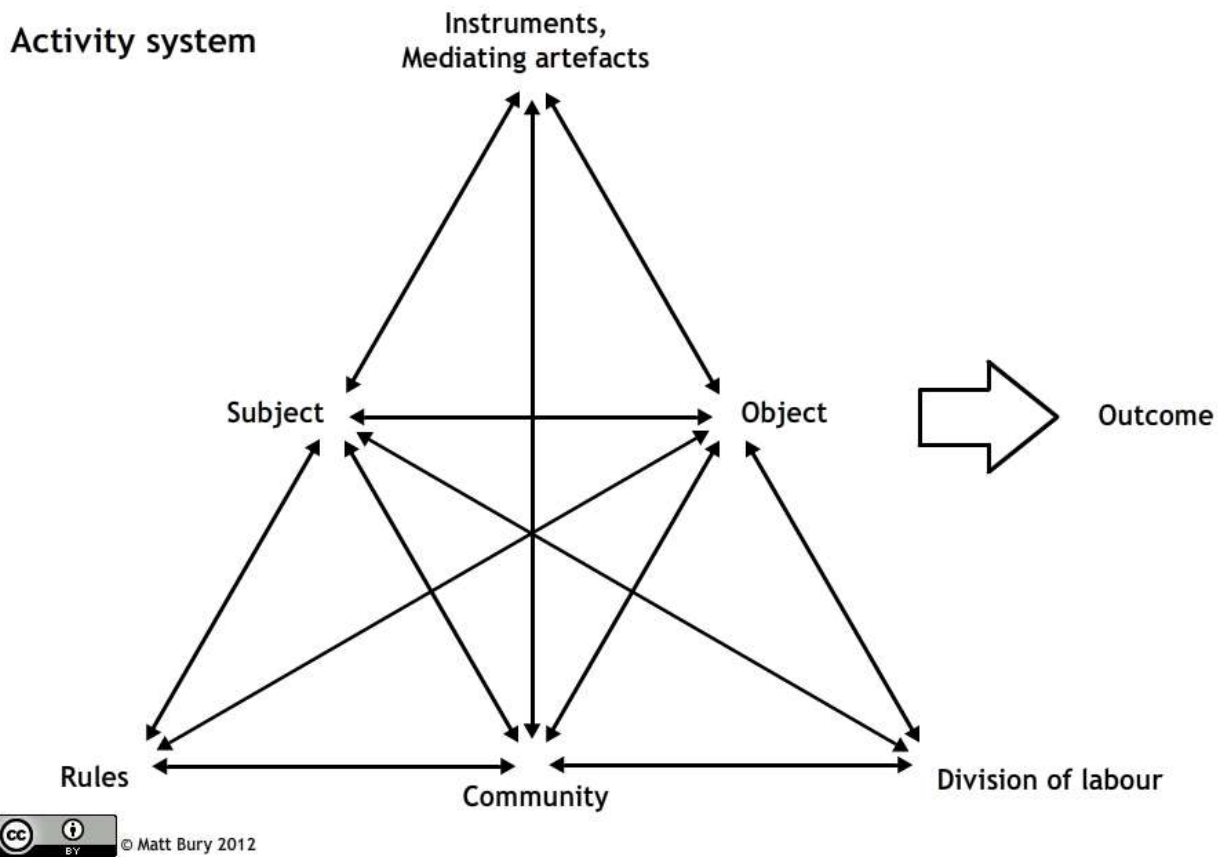
Figure 2. The Activity Theory Model (Engeström, 1987). Reprinted from Wikimedia Commons, by Matbury, *Illustrative diagram of Scandinavian activity network* (Own work) under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License

Contradiction and disequilibrium (Engeström, 2001) are the driving forces of change and development in this activity systems. When both contradiction and disequilibrium are overcome, change and development can lead to innovation. Through the lens activity theory design-based implementation research is desired "for answering questions about how digital learning systems are being used in different contexts and how implementation variations relate to differences in outcomes" (U.S. Department of Education, 2013, p. 20). Several researchers were noted to have used Activity Theory to underpin their approach to evaluating collaboration. Both Engeström's (1987) Activity Theory and Theory of Expansive Learning will likely be used, in part, to guide

my research in investigating transactional/transformative learning through the interaction between tools, task as well as F2F and online collaborative processes. Engeström's (1987) Theory of Expansive Learning suggests that the outcomes of learning derived by the collaborative process of solving complex ill-structured problems produces new forms of practical activity and artifacts that emphasize the potential impact of new tools as vehicles for transformation.

Similar to Engeström's (1987) Activity Theory Model is the socio-technical hexagon model of Davis, Challenger, Jayewardene & Clegg's (2013) retrospective case study analysis and action research study that identified six interrelated elements applicable to any complex system: goals, people, process/procedures, buildings/infrastructure, culture, and technology. In contrast to Engeström's (1987) Activity Theory Model, the Davis *et al. (*2013) hexagon socio-technical framework explores and illustrates how a work system sits within an extended context to include the regulatory framework, its various sets of stakeholders, and its economic/financial environment. These factors, particularly the latter, are key factors toward expanded (or restricted) use of ICTs and technology integration in general for more innovative teaching and learning in educational systems. Like the Activity Model, the Davis *et al.* (2013) hexagon socio-technical framework lends a flexible, yet systematic and structured way to analyze a range of domains given their various complex systems, problems and events. The socio-technical hexagon model is illustrated in Figure 3.
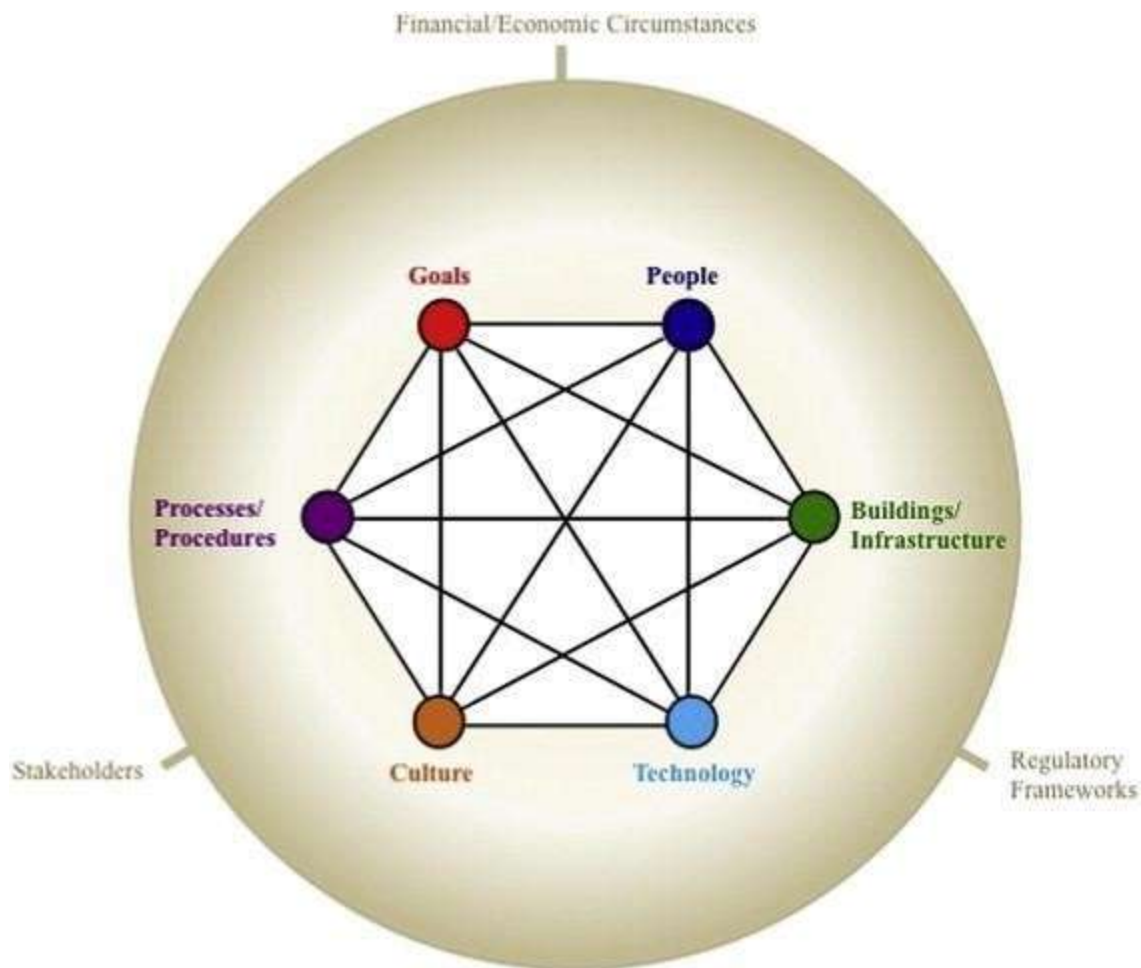
Figure 3. Socio-technical system, illustrating the interrelated nature of an organizational system, embedded within an external environment. Davis, M. C., Challenger, R., Jayewardene, D. N., & Clegg, C. W. (2014). Advancing socio-technical systems thinking: A call for bravery. *Applied ergonomics*, *45*(2), p.173. Retrieved from http://www.sciencedirect.com.proxy.lib.wayne.edu/science/article/pii/S000368701300032X. Reprinted with permission of authors and Elsevier

Patel, Pettitt, & Wilson's (2012) CoSpaces Collaborative Working Model is a framework designed to examine collaboration "through people's interactions with each other, technology, information and the environment and not solely in terms of the cognitive skills of workers and organisational norms"(p. 3). Patel, Pettitt, & Wilson (2012) identified seven main categories of factors involved in collaboration: Context, Support, Tasks, Interaction Processes, Teams, Individuals, and Overarching Factors that have application in instructional technology. The

CoSpaces Collaborative Working Model of Patel, Pettitt, & Wilson (2012) is not unlike the activity systems represented by Engeström's (1987) Activity Theory Model. In the technologically enhanced context of the blended learning environment, learners must navigate the ability to use to learn and learn to use hi- and low-tech resources available to them to include the human resources among their collaborative teams.

Davis' (1989) Technology Acceptance Model (TAM) consistently appears in the literature as a valid framework to explain user acceptance behavior with regard to the design of system characteristics and the implementation of emerging ICTs to include collaboration technology. The foundational constructs of Davis' (1989) initial Technology Acceptance Model are perceived ease of use and perceived usefulness. Perceived ease of use is a metric of effort expectancy associated with use of the tool and perceived usefulness is a metric of performance expectancy associated with the belief that the tool will support measurable improvements in task performance (Venkatesh, Morris, Davis, & Davis, 2003). Davis (1989) found,

"In both studies, usefulness was significantly more strongly linked to usage than was ease of use. Examining the joint direct effect of the two variables on use in regression analyses, this difference was even more pronounced: the usefulness-usage relationship remained large, while the ease of use-usage relationship was diminished substantially" (p.334).

The original Fishbein & Ajzen's (1975) Theory of Reasoned Action (TRA) drives the Technology Acceptance Model. TRA asserts that human performance behaviors are determined by one's behavioral intention, attitude (beliefs toward and evaluation of an outcome) and subjective norms (beliefs of what others think to include one's motivation to comply with others). See Figure 4, Davis, Bagozzi & Warshaw's (1989) Technology Acceptance Model (TAM) has

empirically validated the causal relationship between system design features, perceived usefulness, perceived ease of use, attitude toward using, and actual usage behavior; yet, TAM is criticized for its limitation in considering the social influences of technology adoption and utilization. As such, Malhotra & Galletta's (1999) research extended the TAM to include the following constructs: psychological attachment, the external social influential processes that drive compliance, identification, and internalization. Venkatesh & Davis (2000) included social influence processes-- subjective norm, voluntariness, and image-- and cognitive instrumental processes --job relevance, output quality, result demonstrability, and perceived ease of use-- in their extended TAM research.
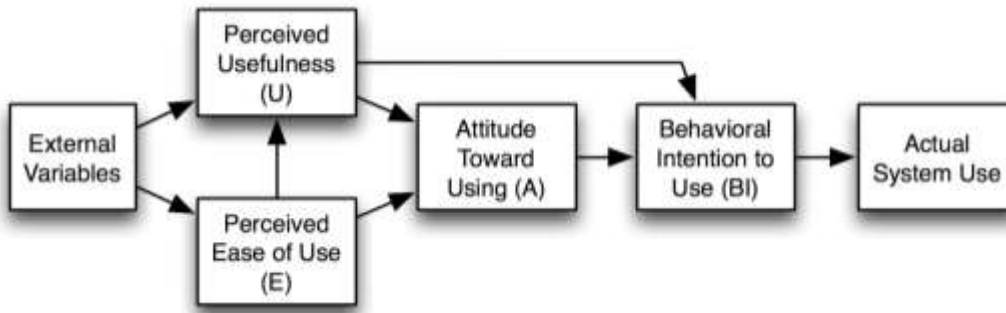
External Stimulus	Cognitive Response	Intention	Behavior

Figure 4. The Technology Acceptance Model (Davis *et al.,* 1989) Reprinted from Wikimedia Commons, by Nippie (Own work) licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License (http://creativecommons.org/licenses/by/3.0).

Other theories examining the tool-task alignment dynamic in literature include Zigurs & Buckland's (1998) Task-technology Theory (TTF); Dennis & Valacich's (1999) Media Synchronicity Theory (MST); and Dennis, Wixom & Vandenberg's (2001) Fit-appropriation Model (FAM). Zigurs & Buckland's (1998) Task-technology Theory (TTF) attempts to align a series of five task types to three technology tool dimensions. The tasks are simple, problem,

decision, judgment, and fuzzy. The technology tool dimensions are communication support, process structuring, and information processing (as cited by Zigurs & Munkvold, 2006, p. 151). Dennis & Valacich's (1999) Media Synchronicity Theory (MST) attempts to align technology tools to either communication tasks of conveyance or convergence (as cited by Zigurs & Munkvold, 2006, p. 151). Dennis, Wixom & Vandenberg's (2001) Fit-appropriation Model (FAM) attempts to align task, technology structure, and adoption. Learners and instructional designers must understand how the various ICTs and social interactions can support learning outcomes given complex well- or ill-structured problem solving tasks. In the investigation the problem-solving process Yen & Lee's (2011) suggests examination into the following factors that impact a learner's problem-solving ability: resources, heuristics, control, and beliefs.

Social Interaction and Cognition

Individual factors of engagement: behavioral, emotional, and cognitive (Lambropoulos, Bakharia & Gourdin, 2011) shape goals and objectives for collaborative endeavors (Angehrn & Maxwell, 2009) as do diversity of backgrounds, different levels of academic training, and general comfort-level with the online platform seen in learners transitioning from face-to-face to a blended learning model (Lotrecchiano, 2013). All present significant factors in the success or failure of effective collaboration, and the establishment of collective identity (Angehrn & Maxwell, 2009). The literature suggests that an interplay of individual and social factors not only contribute to idea generation or cognition in collaborative learning situations—F2F and virtual but to the development of socio-technical communities (Jahnke, 2010) and to include a recent focus in literature on conflict. Clegg, Yip, Ahn, Bonsignore, Gubbels, Lewittes & Rhodes' (2013) comparative case study with learners age 8-11 indicates that CSCL tools can provide necessary separation to help learners begin to internalize the social skills needed for effective

group work and suggests that CSCL technology can actually unite learners who struggle with F2F interactions.

Conflict in collaboration can have detrimental effects on cognition, motivation, and performance. Information communication technologies (ICT) have been found to mediate conflict (Chiravuri, Nazareth & Ramamurthy, 2011; Martínez-Moreno, Zornoza, González-Navarro, & Thompson, 2012) in its various forms: task, relationship, and process (Greer, Jehn, & Mannix, 2008; Jehn & Bendersky, 2003). In contrast, some researchers have found that not all types of conflict is detrimental, but can present a positive effect on collaborative work as a consequence of germane load associated with the task or intrinsic to the group dynamic. Constructive controversy (Roseth, Saltarelli & Glass, 2011) and productive failure (Kaput & Kinzer, 2009) are considered C-type conflict (Chiravuri, Nazareth & Ramamurthy, 2011) or cognitive conflicts necessary and even desired for decision-making with regard to substantive team efforts pertaining to the task at hand. Chiravuri, Nazareth & Ramamurthy (2011) suggested that all affective conflict or A-type conflict should be minimized as it often tends towards distraction from task processes and is consistently detrimental to collaboration. Information communication technologies enable this paradox by enabling a diversity of voices and perspectives perhaps not normally heard during collaborative activity that challenges the status quo while may also impact traditional power dynamics within groups (Rhoads, 2010).

"[Disentangling] the individual and group level factors involved in collaboration" is a challenging task (Janssen *et al*., 2010, p. 150) as the interplay between the characteristics of the task, the learner, and the group that affect group performance and student learning such as the factors that contribute to germane or extraneous cognitive load may differ between group members (Janssen *et al.*, 2010). However, a variety of methods for evaluating group ideas,

creativity and innovation appear in engineering and business research with growing agreement that traditional methods of research fail to provide a holistic process-oriented view into the variables at work in collaborative learning to include cognitive load measurement (Janssen *et. al*, 2010). Literature suggests a need for a methodological innovation that would allow researchers to gather real-time data that might be triangulated amongst other data-gathering methods to enrich the data. Technological advances have improved data mining to include predictive learning analytics, analysis of structured and unstructured text is gaining support in the evaluation of the dynamics of collaboration and its impact on knowledge management and transformative learning (Lambropoulos, Bakharia & Gourdin, 2011; Siemens, and Baker, 2012; Kelly & Thorn, 2013; Tozman, 2012).

Tools of Collaboration

The ubiquitous nature of mobile information communication technology supports the claim that "the vast majority of formal as well as informal learning experiences in the future will be blended ones" (So & Bonk, 2010, p. 198). Traditional face-to-face environments increasingly use some form of computer supported collaborative learning (CSCL) mediated instruction to some extent (So & Bonk, 2010). The literature suggests that successful collaborative learning experiences whether online or offline were mediated by some form of technology to afford communication, distributed participation, knowledge building and used as cognitive learning tools: wikis, Google Docs, Skype, Dropbox (Kelly &Thorn, 2013; Johnson, Adam & Cummins, 2012; Jonassen, Peck & Wilson, 1999). While many successful examples of computer supported collaborative learning (CSCL) exist in the literature (e.g., So & Bonk, 2010; Roschelle, 2013), it does not solve all educational problems. Wang (2009) who in his work designed a constructivist learning environment emphasizing pedagogical, social, and technical design elements to describe

the environment's design specifications and evaluation results acknowledged that having a multimedia, technology-rich learning environment is not required to result in constructivist learning; it just made constructivist learning more feasible. Further, Akan, (2009) reminds instructional designers to understand the limitations of technology to "design task execution to minimize process losses…related to educational and social affordance" (p. 485). Stakeholders of organizational, governmental, and educational systems alike must strategically introduce technological tools for those tools ability to fundamentally impact the capacity of the user to take advantage of the best of online learning, blended learning, and collaborative models (Jonassen, Peck & Wilson, 1999). How these tools change the way people work are evident in best practices among practitioners of blended learning settings in the use of asynchronous and synchronous tools. Synchronous tools are used if the goal of collaboration is to develop verbal/written interpersonal communications, develop a sense of community, or provide natural and immediate interactivity. Conversely, if the overarching goal of collaboration is to be reflective without a sense of time sensitivity, asynchronous tools are more likely employed. It may be important to note that collaborative tools can be as simple or low-tech as paper, pencil, markers, sticky notes, poster boards, whiteboards and etc.; nevertheless, it is certain that further investigation into how new and emerging high-tech ICT tools affect collaboration in design projects is needed (Zahn, Pea, Hesse & Rosen , 2010). As such, examining tool-task alignment decision-making processes strike me as a possible unit of analysis in the collaborative learning setting with emphasis with the online setting. The application of Task-technology Theory (TTF) in the literature is from the perspective of the organizational level rather than the individual or group level. Aljukhadar, Senecal, & Nantel's (2014) quantitative study representing twelve industries, involving 13,135 learners of two larger scales cases from two cultures--French and English, confirms this

contention and found that where there is fit between characteristics of utilitarian and informational tasks and the technology, ease of use and information quality appears to be key indicators of user performance. Nonetheless, the link between task-technology fit and utilization intentions remains under clear (Aljukhadar, Senecal, & Nantel, 2014).

Collaborative Context and Tasks

One such ever-evolving high-tech information and communication technology tool is the mobile device. Mobile technologies paired with advances in wireless connectivity has extended the context of collaboration to the realm of ubiquitous learning which operationalizes the idea of anytime, anyplace learning certainly for the traditional F2F setting but even for blended learning models. Yen & Lee (2011) state that ubiquitous learning made possible by mobile technology use supports more situated, experiential, and contextualized learning experiences. Learning occurs through the interaction and engagement with tasks and tools that drive the learner to problem solve and make procedural decisions. These decisions and problem-solving processes may even result in failure, conflict or cognitive disequilibrium that can function as a mechanism of feedback that perpetuates a search for a more knowledgeable other (Vygotsky, 1978). Vygotsky's (1978) notion of the more knowledgeable other (MKO) hinges on the idea that learners advance their knowledge and skills by participating in activities that extend beyond their current skill level while being supported by more knowledgeable others which in the blended learning environment may be another human being and/or more likely some information communication technology tool. Nevertheless, sound pedagogy within the application of social cognitive theory must drive the instructional design decisions towards complex tasks, information communication technology tools, and social interactions to include those of conflict.

There seems to be a consensus in existing literature that points to the complex ill-structured task as the most suitable activity for collaborative learners. Solving complex ill-structured problems that utilize multiple elements of knowledge and impose demands on higher order thinking skills (Janssen *et al*., 2010; Clegg *et al*., 2013) support the very need for collaboration. Nevertheless, Yen & Lee (2011) found that the knowledge type-- conceptual, principle, or critical knowledge – as well as the structure of the learning task-- ill-structured or well-structured-- impacted problem solving processes. Dror's (2008) technology enhanced learning (TEL) research admonishes instructional designers to use the functionality of various technologies where applicable to encourage learner control, challenge, and commitment. Fischer, Kollar, Stegmann, & Wecker's (2013) CSCL research found collaboration micro- and macro-scripts to be a sound pedagogical strategy for supporting collaboration and scaffolding argumentation processes to help learners to problem solve; yet, macro-scripts could not claim causation in producing high-level collaboration. Considering these limitations and admonishments, deeper research insights into the general and contextually specific processes of intentional learners, given a specific context of a complex problem-solving task, would likely support the design decisions of instructors and designers of collaborative learning environments.

Current literature offers many instructional and non-instructional strategies applicable to computer supported collaborative leaning (CSCL) models to include: face-to-face and blended learning approaches (So & Bonk, 2010; Zahn, Krauskopf, Hesse & Pea, 2012; Akan, 2009; Jonassen, Peck & Wilson, 1999); online small group collaboration, scaffolding, critical reflection, continuous feedback, sufficient time, clear but flexible goals, authentic context, appropriate sequencing (Brindley, Blaschke & Walti, 2009; Johnson, Adams & Cummins, 2012); and management of observable team learning processes-- i.e., assigning maximum group

members or roles, fit between collaboration mode and task execution (Akan, 2009; Clegg *et al.,* 2013). However, when evaluating the quality of blended learning Ginns and Ellis (2009) found it critical to relate the computer-mediated learning component representative of the 'part', such as the online activities and discussions, to the 'whole' of the student experience to include both the online and face to face learning experiences.

Collaboration is already inherently difficult to measure in the traditional face-to-face setting making types of assessment and evaluation of critical concern for instructional design in a blended learning context. The challenge to measure, assess and evaluate collaboration beyond traditional summative standardized tests is only compounded by various computer-supported collaborative learning tools paired with the mobility of online learning (Chen, Looi, & Tan, 2010). As such, both the NCM Horizon Report (2013) and the Office of Educational Technology share similar sentiments that collaborative learning will require evidence-centered design assessment tasks powered by learning analytics. "First, education must capitalize on the trend within technology toward big data. The second step is a revitalized framework for analyzing and using evidence that can go hand-in-hand with newly abundant sources of data" (U.S. Department of Education, 2013, p. 8). While the NMC Horizon Report (2013) seems to caution learning analytics as an emerging scientific practice, only gaining recent acceptance, The NMC Horizon Report (2013) plainly states that "learning analytics will, in the coming years, have a significant impact on the evolution and refinement…in the design of personalized and online learning environments in higher education" (p.26). Highlighting this imminent change, Tozman (2012) encourages instructional designers in practice to engage in intentional design for purposes of formative data collection that works within the system of the organization to directly inform goals and outcomes. In other words, the fit between the features of technology, the specific

learning task, and the learning objectives will need to align to gain greater insights into how the interaction of these elements impacts the learning process and outcomes.

A Case for Descriptive Research Methods

A great proportion of research on collaboration is effect-oriented neglecting the how of collaboration. Research into the effects of collaboration fail to study the interactions between students during collaboration to establish how task, learner, and group characteristics affect student interactions and how these interactions, in turn, affect students' cognitive load (Roseth, Saltarelli & Glass, 2011) and ultimately the learning process (Fischer, Kollar, Stegmann, & Wecker, 2013). Lambropoulos, Bakharia & Gourdin's (2011) case study focused on learner collaboration in a 2-day e-course used diverse real-time quantitative and qualitative data analysis methods and collaboration tools that served to gather multiple perspectives of the same data for the researcher, provide formative data to learners in support of their own self-regulation and critical self-reflection by scaffolding the various learning modes presented by an online learning environment as well as provide feedback to help the instructor make pedagogical decisions about instructional activities. In effect, the functionality of ICTs to include collaboration technology powered by learning analytics can enable the essence of Marshall McLuhan's (1964) now famous phrase, "the medium is the message" suggesting that the means sometimes is the end has direct implication for the advancement of educational technology research. Lambropoulos, Bakharia & Gourdin (2011) further suggest that even beyond traditional research methods that collaboration research settings be "actual working situations, meaning actual IT projects, entrepreneurship projects, intercultural teams, and geographically distributed teams such real-world situations could allow for deeper exploration of various aspects of teams working on projects with actual IT deliverables and constraints" (p. 97). This is a major implication for instructional design that

might encourage the use of emerging dynamic technological qualitative and quantitative tools and methods for a design-based research (DBR) approach (Reeves, Herrington, & Oliver, 2004, 2005; Wang & Hannafin, 2005) to gain greater understanding about the "social or socio-technical phenomenon and improve its quality" (Jahnke, 2010, p. 536).

Summary

My literature review points to social constructivism as the predominant theoretical basis of existing literature on collaborative learning with a call for more descriptive research within authentic contexts. Misalignment among factors concerning social cognition, task context or pedagogy, and technology integration are the source of educational problems with collaborative learning. Three major topics consistently emerged from my review of literature: social interaction and cognition; tools of collaboration; as well as collaborative context and tasks.

This research adds to the literature focused on the major topic-- tools of collaboration framed within a design-based approach within the constraints of an authentic activity system presented by the online learning environment. The interrelated topics concerning social cognition, task context or pedagogy, and technology integration framed the development of my research questions for this design-based research study to afford practitioners design principles to consider in connection with how the tools of collaboration work in practice.

CHAPTER THREE

METHODOLOGY

Introduction

The purpose of this design-based research study was to examine collaboration by exploring the perceived impact of an instructional intervention that supported the use of collaboration technology tools and functions on authentic collaboration learning tasks. The goal was to examine how collaboration technology tools mediate collaboration among the dynamics authentic collaborative learning tasks and social elements towards the development of design principles within an iterative three-phase feedback loop: design & development, implementation, and evaluation of how the intervention worked in practice. Engeström's (1987) Activity Theory drives the examination of this socio-technical system with six interrelated constructs that he called an activity system: instruments, artifacts or tools; objects; division of labor; community; rules and norms; and, individual/groups or subject. Through the lens activity theory design-based implementation research is desired "for answering questions about how digital learning systems are being used in different contexts and how implementation variations relate to differences in outcomes" (U.S. Department of Education, 2013, p. 20). Vygotsky's (1978) concept of the more knowledgeable other (MKO) and zone of proximal development (ZPD) was re-imagined for the online learning environment with regard to designing scaffolding for the human element or online learner in this study. Further, principles of Andragogy (Knowles, 1984) or Adult Learning Theory (Knowles, 1990) informed the design of the instructional interventions to support the adult online learners. The results of the study can direct further research and help to develop a deeper understanding of the computer supported

collaborative learning literature. Both qualitative and quantitative data were gathered guided by the following research questions:

Q1. How does an instructional intervention in the use of collaboration technology influence participants' collaboration experiences?

Q2. How do participants perceive their collaboration experience is constrained using collaboration technology?

Q3. How do participants perceive their collaboration experience is enhanced using collaboration technology?

Q4. Does the iterative process of this design-based research study impact participants perceptions of collaboration?

The following sections will provide details of this study's research methodology to include the: (a) rational for design-based research; (b) research design; (c) participants, setting and sampling; (d) data collection sources and analysis methods; (e) data collection instrumentation; and, (f) design project timeline. This chapter concludes with a brief summary of this design-based research study's methodology. Prior to conducting any research activity pertaining to this design-based research study, Institutional Review Board approval was obtained in July 2014, see Appendix A.

Design-Based Research

A design-based research methodology calls for a systematic approach "to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (Wang and Hannafin, 2005, p. 6; McKenney & Reeves, 2012). Design-based research is suitable for open or "wicked problems" a

term coined by design theorists Rittel & Webber (1973) for which an interplay of variables exist where: "initial state(s) are unknown or are unclear; goal state(s) are unknown or are unclear; operators to move from initial states to goal states are unknown or how to apply the operators is unclear" (Kelly, 2013, p. 137). Collaboration is one such dynamic construct for which "designing adequate indicators of success are part of the overall problem" (Kelly, 2013, p. 137) and how to teach collaboration particularly in the online setting is unclear (Roschelle, 2013). Much of the existing research on the subject of collaboration tends toward a comparison of the effects of one variable over that of another within the myriad of inextricable variables present in collaboration thus making it difficult to clarify "the intervening variables" that impact collaboration (Janssen *et al.*, 2010). The goal of design-based research as a largely qualitative descriptive approach tending to not only illuminate conditions of variables within an authentic context of collaboration among the learner participants, but to document the yield of the various phases or iterations toward the development of design principles regarding how the instructional design intervention works in practice (Brown, 1992; Collins, 1992; Reeves, 2000; Design-Based Research Collective, 2003; Collins, Joseph, and Bielaczyc, 2004).

Research Design

My design-based research study was conceptualized within an iterative design process: 1) review of literature & analysis of the practical problem with the cooperating instructors; 2) intervention design & development within a theoretical framework; 3) implementation within a three-phase formative evaluation feedback loop of iterative redesign, and 4) documentation and reflection toward the development of contextually-sensitive design principles and theories (Ma & Harmon, 2009; Wang and Hannafin, 2005; McKenney & Reeves, 2012) as illustrated by Figure 5.
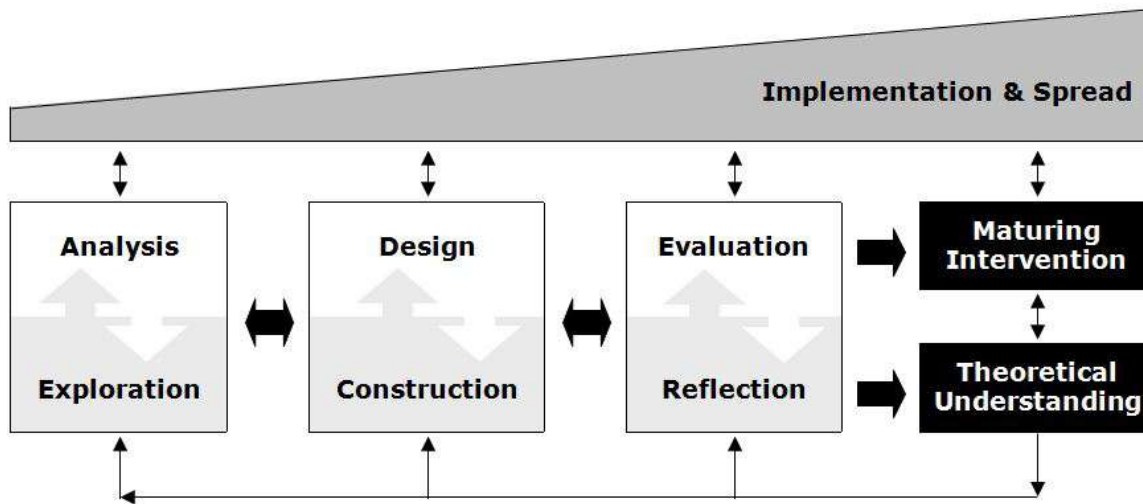
Figure 5. Generic model for design research in education (McKenney & Reeves, 2012, p.77) McKenney, S. & Reeves, T. (2012). Conducting educational design research. London: Routledge. Reprinted with permission.

Participants, Setting, Sampling

The participants for this study were adult learners -- Masters, Education Specialists and Doctoral students-- enrolled in online graduate level courses in the Instructional Technology program at a Midwestern urban University during the Fall 2014 semester. Each web-based course by original design utilized collaborative learning techniques, computer-supported collaborative learning strategies or otherwise technology-enhanced collaborative learning experiences situated in a nationally recognized metropolitan research university setting. The instructional design program of this Midwestern urban University setting holds the distinction of being one of the oldest and most respected Instructional Technology programs in the USA. After IRB approval and prior to the start of the Fall 2014 semester, I obtained cooperation from five instructors scheduled to teach graduate level online instruction technology courses in the Fall. Using a non-probability sampling method, I used a purposive sample of convenience characterized by their graduate student status, their specific department type within the College of Education (Instructional Technology), and their enrollment in these online graduate courses.

Blackboard is the official course management and learning system of this Midwestern urban University. Three of my cooperating instructors used Blackboard Learn and the remaining two instructors used Google Sites as their web-based learning management system. The data collected in this study derived from remotely located participants (e.g., their own study areas, home, work, etc.) enrolled in five graduate level online courses who volunteered their participation at Weeks 5, 9, and/or 14. Correspondence between the cooperating instructors and myself continued throughout the span of the Fall 2014 semester.

Data Collection Sources and Analysis Methods

Data gathered for this design-based research study was both qualitative and quantitative to provide triangulation of data collected. All data was concurrently gathered within a three-phase interval during Weeks 5, 9, and 14, see Table 1. A design-based research approach requires collaboration between the researcher and the practitioner towards the development of actionable design principles in the educational arena. The perceptions of my participants related to the impact of the instructional intervention (screencast tutorials) on their collaboration experiences within the online discussion board represented my dependent variables. These dependent variables were expressed both quantitatively and qualitatively. As such, three data sources were central to the synthesis and interpretation of findings in this study: participants; researcher; and instructors.

Qualitative. The preeminent data gathered from these three sources was qualitative in the form of reflective journals from the participants and the researcher. Data sources between the instructors and me took the form of email correspondence that was used to for credibility, consistency, and transferability support.

Participants. The participants' data source was framed by responses to reflective journal prompts (Appendix J) posted in the discussion boards and in collaborative Google documents .The learner reflective journal prompts were designed to gather perceptions regarding the impact of the instructional interventions as well as draw comparisons between the quantitative variables. For each data set generated during Phase One/Weeks 5, Phase Two/Week 9, and Phase Three/Week 14, the learner reflective journals were analyzed using inductive approach in accordance with a grounded theory methodology. Through constant comparative analysis, I generated open, axial, and selective codes or categories grounded in the data and generated themes to inform my iterative redesign decisions and to address the research questions.

Researcher. My source of data was maintained throughout the span of the design-based research study. My data sources consisted of an accumulation of notes, memos, and reflections from my literature review in addition to details about the design & development, implementation, and evaluation process of the study. The data source was loosely guided by a set of Research-Designer's Reflective Journal Prompts (Appendix J). The source was used for secondary reflection in addressing two research questions (RQ1 and RQ2) with regard to determining how the intervention in all its iterative designs worked in practice.

Instructors. The instructors' source of data was culminated from the point of IRB approval to commence the study. An accumulation of email correspondence was organized using the label functions present in my email client (Gmail). During Pre-Phase One, the instructor data source was organized using Google Groups as a collaborative inbox for controlled research communications among the group's members. The instructors' data source was used to provide supplementary evidence and insight toward interpreting both the qualitative and quantitative data sets. The dynamics of the individual course structures and circumstances that impacted my

participants during the each phase of the design-based research study were often revealed through the instructor data source. As such, the instructor source was used as secondary data to offer richness in addressing all the research questions, see Table 1.

Quantitative. The primary quantitative data of this study were three validated survey instruments that the following variables measured by 7-point Likert-type interval scales in numeric and semantic formats: Perceived Usefulness, Perceived Ease of Use; Usefulness; Ease of Use; Actual Use, Behavioral Intentions, Attitude Toward Using as well as the measurement scales for psychological attachment: Internalization, Identification, and Compliance (Appendices D-F). These data were analyzed to obtain descriptive statistics –frequency, median, and mean values-- from each phase using IBM SPSS 22 Student Premium Bundle 2015 for Win. I analyzed aggregated Blackboard/Google scaled score values to interpret overall results. I also separated the aggregated Blackboard and Google scaled score values to compare and note variance between the two user types along the variables of each survey instrument. All quantitative survey data acquired on the variables measured by each survey instrument was compared against corresponding themes that emerged from my participants' qualitative journal data from each phase. This triangulation of data brought richness to my interpretation of the findings and brought direction to my iterative design decisions.

Table 1. Summary of Research Questions, Data Sources, Collection and Analysis Methods

Research Question	Data Source	Collection Method	Analysis Method
Q1. How does an instructional intervention in use of collaboration technology influence participants' collaboration experience?	Participants Instructors Researcher	• Literature Review • Analysis of course collaborative needs and task outcomes • Survey • Learner reflective journal • Design project timeline • My designer's reflective journal	• Constant comparative • narrative analysis • Grounded theory analysis • Open coding • Integrate the properties • of categories from • literature • Descriptive statistics
Q2. How do participants perceive their collaboration experience is constrained using collaboration technology?	Participants Instructors	• Survey • Learner reflective journal • Analysis of collaborative needs and task outcomes	• Constant comparative • narrative analysis • Grounded theory analysis • Open/axial coding Descriptive statistics
Q3. How do participants perceive their collaboration experience is enhanced using collaboration technology?	Participants Instructors	• Survey • Learner reflective journal • Analysis of collaborative needs and task outcomes	• Constant comparative • narrative analysis • Grounded theory analysis • Open/axial coding • Descriptive statistics
Q4. Does the iterative process of this design-based research study impact participants perceptions of collaboration?	Instructors Participants Researcher	• Survey • Learner reflective journal • Collaborative needs and task outcomes • Design project timeline • My designer's reflective journal	• Constant comparative narrative analysis • Open coding • Integrate the properties of categories from literature • Descriptive statistics

Data Collection Instrumentation

Qualitative

      Socio-technical Graphic Organizer Planning Tool. The goals, visions, and constraints presented by the socio-technical system as perceived by the instructors during my Pre-Phase One cooperating instructor meetings were organized using the Socio-technical Graphic Organizer Planning Tool. Adapted from the research of Axtell, Pepper, Clegg, Wall, & Gardner (2001), this instrument was used for this study to evaluate "new forms of work organization within modern working environments" (p. 1) based upon socio-technical design principles illustrated by Engeström's Activity Theory Model (see Appendix H). In gathered insights about their learning outcomes and existing course structures, I built my understanding of how collaboration presently worked in their courses. A review of the data collected from each instructor allowed me to determine a common goal and educational problem to examine given the time and resource constraints of this design-research study. The identified a common goal and educational problem was member checked to enhance the participation of the instructors and credibility of the study.

      Research-Designer Reflective Journal. This journal instrument was my own Google Document reflective space used to maintain notes, memos, and reflections from my literature review, instructor meetings, including details about the design, development, implementation, and evaluation process of the study. A set of Research-Designer's Reflective Journal Prompts (see Appendix J) existed for this instrument to guide my thoughts; but, it was the varied data from my instructors and participants as well as the notation of my own megacognitive processes that built the content of this instrument.

      Learner Reflective Journal. The learner reflective journal was an existing component of each instructional design course involved in this research study. The learner journal was either a

Google Document shared directly with the instructor or was a discussion board post to be responded to by classmates. Instructors would provide a reflective writing prompt within their LMS and participants would respond in writing via a discussion board post visible to their classmates or via a Google Document shared with only the instructor. Three Learner's Reflective Journal Prompts (Appendix J) were posted for purposes of my design-based research study with full disclosure of their voluntary nature and with requests for consent to share their perceptions each time: Phase One/Week 5; Phase Two/Week 9; and, Phase Three/Week 14. The Learner's Reflective Journal Prompts where designed to gather the participants' perceptions about the design and development of the collaboration tool training as well as their feelings and experiences about the use of the online discussion board functions for collaborative learning tasks in the course.

Instructors Collaborative Google Groups INBOX. This online forum and email-based Google Groups application was used as an instrument for organizing and controlling the flow of communications between the researcher and the cooperating instructors. The Participating Instructors Collaborative Google Groups INBOX discussion forum instrument was accessible to only my five participating instructors via a dedicated email address. This collaborative inbox instrument allowed for instructor correspondence that had been sent to the researcher's various individual email addresses to be directed into a single shared, searchable system. The email correspondence I sent to my participating instructors using the Google Groups INBOX were not plain text emails. The emails using the Google Groups INBOX incorporated fonts, color and graphical content with purposeful design intent, see Appendix I. The emails to my participating instructors were designed to model the dynamic rich communication features their students had available to them within the online discussion forums of both the BB & GG platforms. With

every communication I attempted to demonstrate the change I wanted to see in communications designed for the online learning environment.

Quantitative

Davis (1989) Technology Acceptance Model Questionnaire. The TAM has been empirically validated and its measures refined and updated resulting in two six-item scales with Cronbach's alpha reliabilities of .98 for usefulness and .94 for ease of use (Davis, 1989;). A Cronbach's alpha value within the range to .7 to .95 is considered acceptable reliability estimate; however, a Cronbach's alpha of .9 or greater may suggest redundancy (Tavakol & Dennick, 2011). Permission was acquired to use each instrument. The Davis (1989) TAM questionnaire was administered in Week 5/Phase One; the Malhotra & Galletta (1999) Extended TAM questionnaire in Week 9/Phase Two; and the Dasgupta, Granger, & McGarry (2002) Davis' TAM survey instrument in Week 14/Phase Three. The wording was adapted in each instrument to insert the collaboration technology tool examined by this study at each phase specific to both the Blackboard Learn and Google Groups discussion forums.

The Davis (1989) TAM instrument consisted of 12 questions formatted as a Likert scale survey to evaluate participants' early user acceptance perceptions of the collaboration technology tool based on two variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEU), see Appendix D. The first six items of the Technology Acceptance Model survey instrument were designed to measure to PU, "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320) and the other six PEU, "the degree to which a person believes that using a particular system would be free of effort" (p. 320). Participants' perceptions were indicated by a 7-point Likert scale: 1=strongly disagree; 2=Disagree; 3= Partially Disagree; 4=Neither Agree nor Disagree; 5=Partially Agree; 6= Agree;

and, 7=strongly agree. The foundational variables (PU and PEU) evaluated by the TAM are repeated and extended throughout this study to take into account the limitations of the TAM. The TAM is criticized for failing to include other external and internal variables (social, organizational and work context) that may impact actual technology use (Davis, 1989; Davis, Bagozzi and Warshaw, 1989).

Malhotra & Galletta (1999) TAM Extended Questionnaire. The Malhotra & Galletta (1999) Extended TAM survey measured participants' perceptions of the collaboration technology tool's functions and features in terms in two sections: Scales for Measuring Various Constructs-- Perceived Ease of Use, Perceived Usefulness, Actual Use, Behavioral Intentions, Attitude Toward Using; and, Measurement Scales for Psychological Attachment-- Internalization, Identification, and Compliance. Participants' perceptions measuring the Actual Use and Attitude Toward Using variables were indicated by 7-point Likert-type interval scales in numeric and semantic formats, see Appendix E. For the Perceived Ease of Use and Perceived Usefulness variables, Malhotra & Galletta (1999) departed from the scale of Agreement used in the Davis (1989) TAM opting for a 7-point Likert scale of Likelihood: 1=Very Unlikely; 2=Somewhat Unlikely; 3= Unlikely; 4=Neither Likely or Unlikely; 5=Likely; 6= Somewhat Likely; and, 7=Very Likely. As cited in (Malhotra & Galletta, 1999), their Extended TAM survey instrument is informed by Fishbein and Ajzen's Theory of Reasoned Action (TRA). Malhotra and Galletta (1999) sought to isolate causal links between Behavioral Intentions, Attitudes Toward Using as manifested by Actual Use. Further, measures for Psychological Attachment based on the research of Kelman (1958, 1961) were included in the Extended TAM survey instrument adapted from a context of organizational commitment to a context of information system acceptance. Kelman (1958, 1961) asserts that three social influence

processes can change individual attitudes and impact an individual's corresponding behavior: internalization– inputs align with one's value system; identification- sense of belonging with a social group; and, compliance— acquiescence to reap reward or avoid punishment. The Malhotra & Galletta (1999) Extended TAM survey has been empirically validated through analyses of field study data to determine its Cronbach's alpha of .8047. The Psychological Attachment items have the following Cronbach's alphas: Compliance: .7043; Identification: .8010; Internalization: .7234 (Malhotra & Galletta, 1999). The inclusion of the social influence variable within the context of this study's online collaborative learning environment in this study was important in interpreting meaning of rich reflective journal data through constant-comparison analysis and triangulation.

Dasguspta, Granger, & McGarry (2002) Davis' TAM Questionnaire. This study adapted the Dasgupta, Granger, & McGarry (2002) Davis TAM Questionnaire instrument that consisted of 32 questions formatted on a 7-point Likert scale of Agreement (1=strongly disagree; 2=Disagree; 3= Partially Disagree; 4=Neither Agree nor Disagree; 5=Partially Agree; 6= Agree; and, 7=strongly agree) for online administration during Week 14, see Appendix F (BB users) and Appendix G (GG users). With expressed permission, the wording was modified to reflect the Blackboard Discussion Forums and Google Discussion Groups and Documents as the collaboration technology used in this design-based research study. Questions 1-20 measured Perceived Ease of Use and Perceived Usefulness as the validated constructs of the scale by Davis (1989) correlated to a learner's adoption of information technology overall. Questions 21-32 focused on a single feature of the collaboration technology of study. The reliability and validity of the scales for Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were established by prior studies of the TAM (Davis, 1989; Venkatesh & Davis 2000); while, Fishbein & Ajzen's

(1975) Theory of Reasoned Action (TRA) establishes the Behavioral Intentions (BI), Attitude Toward Using (AT) and Actual Use (AU) variables.

Trustworthiness. The quality indicators of trustworthiness for this study were demonstrated in accordance with Guba and Lincoln's (1985, 1986, 1989) criteria for judging qualitative research: (a) credibility, (b) transferability, (c) dependability, and (d) confirmability. At every stage and phase of my design-based research study I attempted to meet the trustworthiness criterion through a structured data collection and analysis plan in accordance with protocols of constant comparative narrative analysis and grounded theory analysis.

Credibility. Evidence for this quality was established through source triangulation and member checking with my cooperating instructors. Source triangulation was accomplished through quantitative and qualitative data sources gathered in three intervals—Week 5/Phase One, Week 9/Phase Two, & Week 14/Phase Three-- within the natural progression and context of a 15-week semester for authenticity. Both data sources included the perceptions and iterative experiences of my cooperating practitioners (instructors), the researcher, and the student participants over time. Member checking in the study was established through deliberate examination of a commonly used collaboration technology tool found in online learning environments: the discussion board.

Transferability. Evidence for this quality was achieved through descriptions specific to the behavior within the context of the online graduate courses represented in this study. My findings may find similar transferability using the Technology Acceptance Model (TAM) as a mechanism to evaluate a participant's acceptance perceptions of a collaboration technology tool's usefulness and ease of use towards authentic collaborative learning tasks. Practitioners, students and other researchers may find useable knowledge from this study expressed by the

procedural and practical design principles (van den Akker, 1999) towards the development of an innovative intervention relevant for similar educational challenges (Plomp, 2013) of the online learning environment.

Dependability. Evidence for this quality was established by accurate and adequate documentation of my participants' perceptual changes and of my research-designer iterative redesign processes toward the development of contextually sensitive design principles and suggestions.

Confirmability. Evidence for this quality was achieved by constant comparison data analysis across three data sources both qualitative (reflection journals- & literature review) and quantitative (survey data) in nature. I noted persistent themes as well as actively searched and described contradictions grounded in the data.

Design Project Timeline

Pre-Phase One - Analysis, Design and Development: July 30–Sept. 7, 2014. In accordance with a design-based research approach, collaboration with practitioners is critical to examining and understanding the unit of analysis (Dorman & Fraser, 2009). Two data collection instruments were used to organize, to compare and to reflect upon data gathered during scheduled discussions with each instructor in this phase: (1) Socio-technical Graphic Organizer Planning Tool (Appendix H) adapted from the research of Axtell, Pepper, Clegg, Wall, & Gardner (2001), and (2) Research-Designer's Reflective Journal. The feedback gathered from the instructors in Pre-Phase One identified a collaboration technology tool common among all participating instructors; a shared educational problem; and an initial instructional intervention.

Upon IRB approval in July 2014, I emailed instructors teaching graduate level instructional technology courses to request participation in my Fall 2014 semester design-based

researcher study. Five instructors committed to participation in my research study. I contacted each instructor to gather and understand how collaboration presently worked in their courses given the course culture and infrastructure (learning platform or LMS) to support collaborative processes and practices.

The Fall 2014 semester was scheduled to begin on August 27th, making time of the essence. Four of my five cooperating instructors had already created and structured their online course plans; yet, modifications to the physical online environment and to some of the initial course tasks were required to support my data-collection methods. Paired with feedback from my cooperating instructors in consideration my potential study participants, three driving principles of Universal Design for Learning (CAST, 2011) influenced my design decisions throughout this study: Principle I. Provide Multiple Means of Representation; Principle II. Provide Multiple Means of Action and Expression; Principle III. Provide Multiple Means of Engagement (CAST, 2011).

In the span of three weeks, the initial instructional intervention and the accompanying activities for both the Blackboard and Google platforms as well as the Week 5 participants' reflective journal prompts were designed in alignment with each courses' expectations of collaboration for the start of the Fall 2014 semester. The goal was to get participants acclimated to Discussion Board navigation and to dynamic multimedia thread post functionality using my instructional intervention—a series of screencast tutorials as job aids or scaffolding implemented on Week 1 of the Fall 2014 course.

Initial instructional intervention. A screencast is a digital video recording that captures actions taking place on a computer desktop. Using Camtasia Studio 8, I designed and produced the series of live-action screencast tutorials narrated by me that demonstrated how to use

dynamic --and other rarely used-- functions of Blackboard Discussion Forums, Google Discussion Groups, and Google Documents for collaboration (Figure 6). The video productions were lively enhanced with zoom & pan effects as well as animated video backgrounds and transitions. I made a conscious effort to try to kept each video under 5 minutes and densely informative to deliver value to the viewer, engender engagement as well as respect the time of my voluntary online participants who might access this content on the run via various mobile devices. The Blackboard screencast tutorials were a series of three short videos titled: Discussion Forum Management (1:37); Basic Text Editor Function Navigation (1:32); and, Media Functions for Dynamic Discussion Board Collaboration (4:10). In the Discussion Forum Management video, I showed viewers how to subscribe to a discussion forum; how to control message actions within a discussion forum using the Thread Actions function; and how to control sorting options of discussion threads for printing or quick reading purposes using the Collections function. In the Basic Text Editor Function Navigation video, I demonstrated the functions accessible in both the simple and advanced content editor modes. Simple functions included Spell Checker, hyperlinking/removing hyperlinks, bulleted and numbered lists. In the Media Functions for Dynamic Discussion Board Collaboration video, I featured live demonstration of how to include Webcam Recording, Image insert, Embed Media, Emoticons, Math editor functions, and Mashups (Flickr, Slideshare, YouTube) in discussion board posts. The Google screencast tutorial series included some videos just over 5-minutes. There were three Google Groups videos that included reference its function within Google Sites: Features of the Google Groups Web Forum (5:31), Where Am I...Google Sites or Groups? (2:31), and How to Post to Google Groups Discussion from Email (3:11). The Dynamic Features of Google Documents were presented in two parts running 2 minutes ,54 seconds and 5 minutes, 41 seconds. In the two part screencast

video set, I featured live demonstration on how to use the table insert, drawing tool, Research tool, interactive Table of Contents, Suggesting mode, and Comments built-in to Google Documents for richer communication and more meaningful collaboration.

A discussion forum page was designed within Blackboard Learn where on my screencast tutorials (instructional intervention) were hyperlinked to YouTube (Figure 7). In Google Sites, the Google Groups screencasts were embedded at the top of the Google Groups discussion forum page and the Google Documents screencasts were linked as a subpage to the Discussion Board page, yet appeared in the left navigation area at the same level as the homepage. (Figure 8). All videos designed and produced by me for this design-based research study were hosted at YouTube with an Unlisted privacy setting. This made the video set only accessible to those with the link.
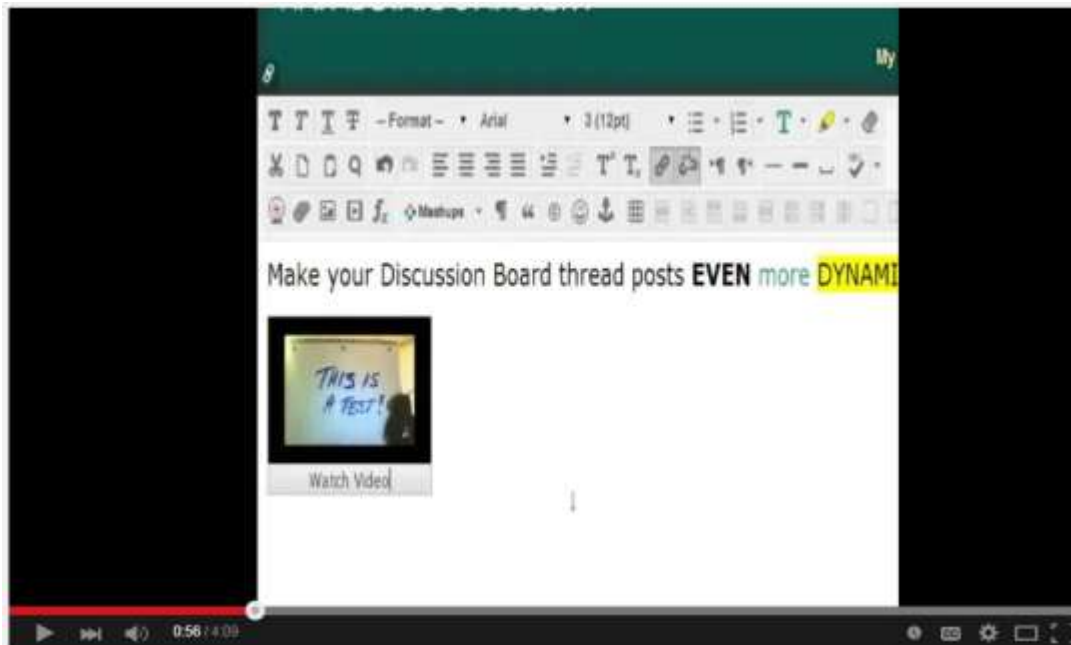
Figure 6. Screenshot from an Initial Instructional Intervention video series at 0:58.

Figure 7. Instructional Intervention videos hyperlinked in Blackboard Learn.
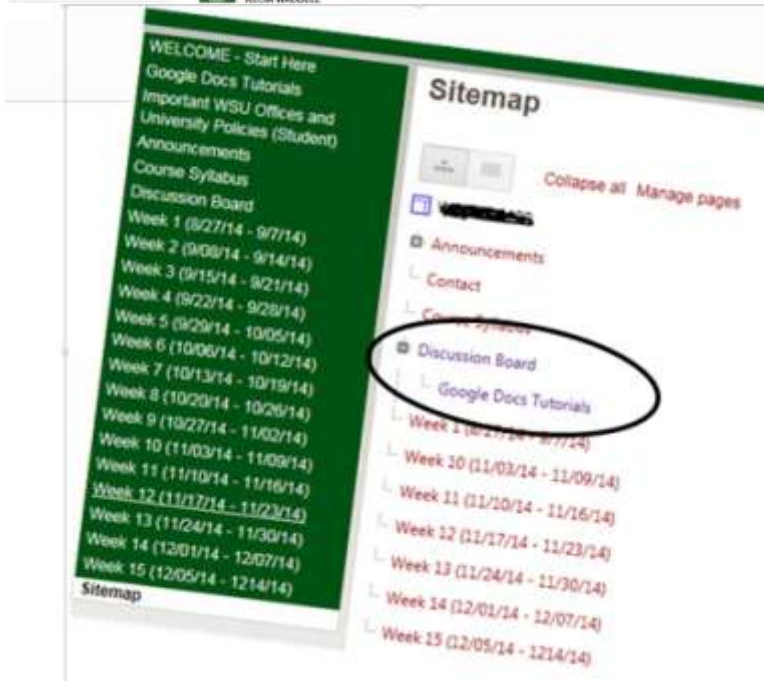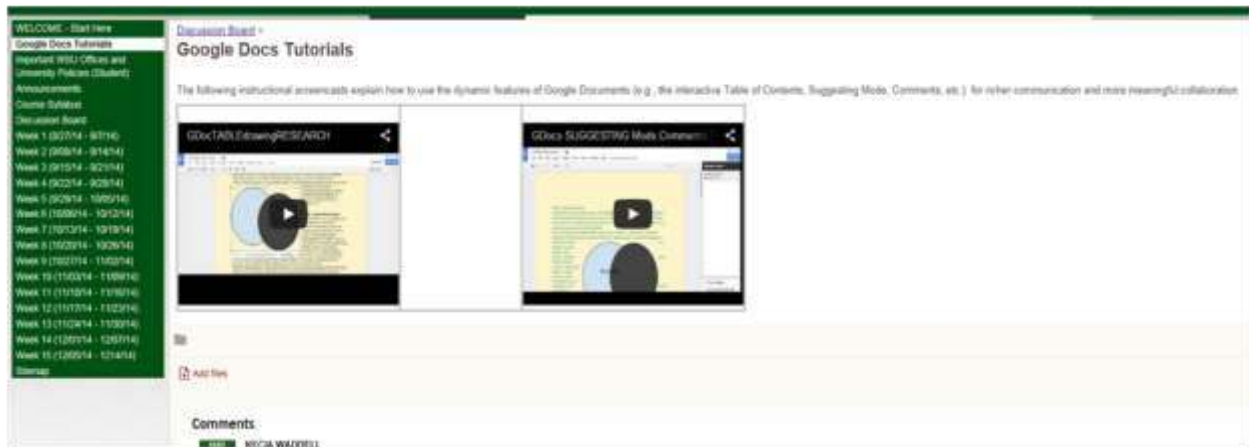
Figure 8. Images of Google Instructional Intervention video series embedded on separate pages within an online course using Google Sites and its Sitemap organization.

Blackboard and Google platforms Activities. Instructors of both platforms agreed to incorporate my Discussion Board Function Introduction/Icebreaker Exercise into their previously designed course tasks. The Discussion Board Function Introduction/Icebreaker Exercise for Blackboard users suggested that participants view the screencasts and demonstrate use of the following functions within a BB discussion post: INSERT MASHUP or RECORD FROM WEBCAM, INSERT/EDIT EMBEDDED MEDIA and INSERT/EDIT IMAGE as they, perhaps: explain their strengths; or describe/explain their concept of design thinking; or some other task suitable to the course subject matter. I suggested to my instructors that the media inserted could be actual artifacts of student work or simply representations on the concept of design thinking of their level of comfort or experience in a varied/fun/informal way.

The Discussion Board Function Introduction/Icebreaker Exercise for Google Sites/Groups participants similarly encouraged use of the functions explained in my screencasts AND allow each learner to DEMONSTRATE what design thinking meant to him/her in a manner beyond mere text-based discussion thread posts using the INSERT VIDEO or ADD REFERENCE and INSERT IMAGE functions within the post. Here again, instructors were free to decide upon tasks they deemed appropriate for their course outcomes and objectives.

Participating Instructors Collaborative Google Groups INBOX. For my instructors using Google Sites, I recognized that the integration of Google Groups -- an online forum and email-based group application, was required to effectually create a fully functioning rich-text editor discussion forum to their courses where there was none prior. In the process of designing my Google Groups instructional videos intended for my study participants, I recognized of value in Google Groups as a useful tool for organizing and controlling the flow of ongoing communications that could be accessed via a forum space or via email. I decided to create and

utilize a Participating Instructors Collaborative Google Groups INBOX discussion forum that was accessible to my participating instructors via a dedicated email address for this purpose throughout the course of this research study. The email correspondence I sent to my participating instructors using the Google Groups INBOX were not plain text emails. The emails using the Google Groups INBOX incorporated fonts, color and graphical content with purposeful design intent, see Appendix I. The emails to my participating instructors were designed to model the dynamic rich communication features their students had available to them within the online discussion forums of both the BB & GG platforms. With every communication I attempted to demonstrate the change I wanted to see in communications designed for the online learning environment. see Figure 9. DBR is characterized by design in practice (Barab & Squire, 2004). Incorporating the Google Groups collaboration technology tool into my own research-practitioner communications resulted in an effective way to model to my instructors the capabilities   of   a   discussion   board   with   rich-text   editor   functionality.

Figure 9. Image of the Participating Instructors Collaborative Google Groups INBOX .

The Davis (1989) Technology Acceptance Model Questionnaire was prepared prefaced by the Research Informed Consent request in its design for online Week 5/Phase One email distribution via Qualtrics (Appendix B). Prior to any direct communication from the researcher

to the course enrollees, each cooperating instructor agreed to cooperate with my research study design by familiarizing themselves with the details of my study's recruitment sheet plan to prepare themselves to encourage participation from their enrollees throughout the three interval data-collection phases-- Week 5/Phase One, Week 9/Phase Two, & Week 14/Phase Three -- within the natural progression and context of the course's 15-week semester. The email addresses of every online course enrollee were shared with me by each of the five cooperating instructors in preparation for subsequent online qualitative and quantitative data collection within the three-phase cyclical feedback loop.

Phase One - Implementation, Analysis and Iterative Design: Sept. 24-Oct. 5, 2014.

With emphasis on tools of collaboration a major topic from existing CSCL literature, the design, development, and implementation of the instructional interventions throughout this study were framed by the goals of my cooperating instructors and by the principles of Andragogy (Knowles, 1984) or Adult Learning Theory. By this Phase One/Week 5, participants enrolled in my cooperating instructors' courses had been informed of the voluntary research study and its connection with the presence of the series of instructional interventions-- screencast tutorials-- embedded in the discussion boards for both the Blackboard and Google platforms; had viewed the screencast tutorials; had demonstrated practical use of some of the functions as an initial formal suggestion during the Discussion Board Function Introduction/Icebreaker Exercise from Week 1; and, had been encouraged to use at will throughout the duration of the course. The emphasis of this study up to this phase had been to provide online participants with procedural scaffolding via the videos to support their understanding of the tools of collaboration that were largely being unused aboard the learning management platforms commonly used by institutions of higher learning. The dynamic multimedia communication functions of the online discussion

boards featured in this study were those found aboard both the Blackboard Learn/Google Groups platforms. These two discussion board types represented my independent variables. The perceptions of my participants related to the impact of the instructional intervention (screencast tutorials) on their collaboration experiences within the online discussion board represented my dependent variables. These dependent variables were expressed both quantitatively and qualitatively. The quantitative survey instrument was emailed to all the enrollees of my cooperating courses. The Davis (1989) TAM instrument measured early user acceptance perceptions of the collaboration technology tool based on two variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). The Week 5 reflective journal prompt (Table 2) was posted to the discussion board for voluntary participation. Instructors agreed to forward the participants' qualitative reflective journal data at the conclusion of the phase. Through an inductive analysis of Week 5 reflective journal data using open coding and constant comparison, I sought to identify emerging themes in their perceptions on how the intervention resource supported collaborative course tasks and how using multimedia functions impacted their collaboration experience in terms of collaborating with their classmates, the collaborative process, and the collaboration technology.

Phase Two - Implementation, Analysis and Iterative Design: Oct. 22-Nov. 2, 2014.

My Phase One instructional intervention (screencast tutorial videos) was paired with a start of course performance task that required participants to watch the videos and demonstrate some of skills presented in the videos to check for understanding. The rarely used functions of the collaboration tools provided within Blackboard Discussion Forums, Google Discussion Groups, and Google Documents were no longer a mystery to course enrollees. Plus, the videos were embedded in the learning management systems of each course accessible to participants for

viewing at any time for just-in-time reference and support. The results of Week 5 data indicated online collaboration using the online discussion board tools was limited and the idea that use of color, video, etc. for collaborative learning was perceived as unprofessional and nonacademic. Recognizing from the data that participants saw no use for the tools, to me, indicated lack of Internalization (metric to be evaluated in Phase Two). Implemented in Week 9, the second iteration of the re-designed instructional intervention departed from its live-demonstration tutorial design. Instead, the Phase Two instructional intervention was design as a three-minute Google Slide presentation featuring large colorful animated text throughout the video presentation. The visual presentation displayed one idea per slide utilizing text zoom animation and fade-in slide transition. I narrated the presentation starting with a reminder of all the skills covered in the Phase 1 video during the first 33 seconds of the video. At :37 in the video, I asked and answered: "Why Try; For What Purpose; and, "When should I" use dynamic discussion board tools, features, and functions for collaboration beyond that which was teacher-centered, see Figure 11. These questions were the three major concerns revealed by the Week 5 reflective journal data. The video offered recognizable best fit academic scenarios and ideas to answer the questions that emerged from the data that presented as constraints to active collaboration tool use. The tone of the video encouraged and challenged viewers to embrace uncertainty, get out of their comfort zone and transfer their newly acquired skill and awareness of the dynamic discussion board functions during student-driven collaboration in a similar manner that they might engage in any other social media outlet. The goal of this design decision was to stimulate actual use of the collaboration tools, functions and features towards course tasks as well as attempt to counter this constraining mindset that was indicated by Week 5 qualitative data.

The Week 9 quantitative survey instrument was emailed to all the enrollees of my cooperating courses. The Malhotra & Galletta (1999) Extended TAM survey administered online measured participants' perceptions of the dynamic discussion board multimedia functions and features based on the following variables: Usefulness, Ease of Use; Actual Use, Behavioral Intentions, Attitude Toward Using as well as the measurement scales for psychological attachment: Internalization, Identification, and Compliance, see Appendix E. The Week 9 reflective journal prompt (Table 2) was posted to the discussion board for voluntary participation. Instructors agreed to forward the participants' qualitative reflective journal data at the conclusion of this phase. Through an inductive analysis of Week 9 reflective journal data using open coding and constant comparison, I sought to identify new emergent, divergent, and recurrent themes. Essentially, I repeated the following steps in analyzing the data at each phase of this design-based research study:

1) I read through the reflective journal data as a whole and made notes and memo about my first impressions.

2) I read the reflective data again with a careful close read line by line.

3) I coded relevant words, phrases, sentences, and sections on the basis of my research questions, on emergent and repeated themes, surprising explicit reflections from the participants, and ideas expressed that aligned with CSCL literature or theories.

4) I created categories by bringing several codes together that I recognized as dominant and recurrent themes.

5) I conceptualized the categories towards an interpretation of the significant effects of the intervention on collaboration processes and on perceptions of collaboration technology tools, features and functions used at each phase.

6) I then made iterative design decisions directed by the indications and interpretation of participants' and cooperating instructors' feedback data.

The iterative design decisions in Phase Two resulted from direct analysis of self-reported reported descriptive statistics with statements suggestive of a new overarching theme grounded in the data of my participants triangulated with correspondence with my cooperating instructors' as a data source. My system of organization was challenged in this phase with regarding to my PrePhase One decision to create and utilize Google Groups Collaborative Inbox as a method to facilitate 2-way organized and dynamic communication with and data collection from my participating instructors via a dedicated email address throughout the course of the research study. The Google Groups Collaborative Inbox instead became a 1-way communication channel, the results of this iterative design decision will be detailed in Chapter Four. Even so, a synthesis of all available qualitative and quantitative data to include that of Week 5 allowed for iterative design decisions and interpretation of the research questions that guided this study.

Phase Three - Implementation, Analysis and Evaluation: Nov. 26-Dec. 7, 2014.

The qualitative data from Week 9 indicated a prevailing sentiment that using the dynamic multimedia functions was too much work, and not academic besides. For the third and final iteration of the study, the intervention was re-designed to call instructional design students to action toward developing the ability to envision and embrace a new normal for instructional design that fully integrates technology for teaching and learning in higher education. This video featured colorful animated text, images with a compelling narrative about the new normal grounded in Social Learning Theory; unified communication and collaboration; and the collaboration technologies that enable the paradigm shift around anywhere, anytime, anyplace communication, teaching and learning, see Figure 10.

The Week 14 quantitative survey instrument was emailed to all the enrollees of my cooperating courses. The Dasgupta, Granger, & McGarry (2002) TAM questionnaire was adapted at this phase to permit my Google and Blackboard users to characterize the Perceived Ease of Use (PEU) and Perceived Usefulness (PU) of the rich-text editor functions of the discussion board with emphasis on just the insert image function at questions 21 - 32. During Phase Three, I gathered quantitative survey data concerning the characteristics of Blackboard Advanced Content Editor Discussion Board and Forum features with an emphasis on the Insert/Edit Image function from the BB users (See Appendix F); and, the characteristics of Google Groups and Documents with an emphasis on the Insert Image function in particular, see Appendix G.

Figure 10. Screenshot from Week 14 Instructional Intervention video at 2:09.

The Week 14 reflective journal prompt (Table 2) was posted to the discussion board for voluntary participation. Instructors agreed to forward the participants' qualitative reflective

journal data to conclude this design-based research study. Through constant comparative analysis of Week 14 reflective journal data, I generated open, axial, and selective codes or categories grounded in the data; addressed all the research questions; and evaluated my iterative design process towards the development of some contextual design principles or suggestions for instructional designers who are often the instructors or practitioners.

Table 2. Design Project Timeline

WEEK	BB Week Schedule	GG Week Schedule
5	Sept. 24 - Oct 1	September 29 - Sunday, October 5
9	October 22-28	October 27- November 2
14	November 26- December 2	December 1-7
Researcher: Conduct a Review of CSCL Literature		
Pre-Phase One - Upon IRB approval, identify and collaborate with cooperating practitioners of online courses; define our educational problem; and develop a solution Design a series of instructional screencasts for both the Blackboard and Google platforms Prepare the surveys using Qualtrics for online distribution via student email addresses		
BLACKBOARD Users	**GOOGLE SITES/GROUP FORUM**	
Task required at course start date **Discussion Board Function Introduction/Icebreaker Activity** **(modify task as required)**		
Instructors: Encourage participants to view the screencasts and demonstrate use of the following functions within a BB discussion post: INSERT MASHUP or RECORD FROM WEBCAM, INSERT/EDIT EMBEDDED MEDIA and INSERT/EDIT IMAGE as they, perhaps: explain their strengths; or describe/explain their concept of design thinking; or whatever works best for your course subject matter. (The media inserts could be actual artifacts of their work or simply representations of their level of comfort or experience in a varied/fun/informal way.)	Instructors: Encourage demonstrated use of the some of the functions explained in my screencasts AND allow each learner to DEMONSTRATE what design thinking means to him/her in a manner beyond mere text-based discussion thread posts using the INSERT VIDEO or ADD REFERENCE and INSERT IMAGE functions within the post. Again, in whatever manner you deem appropriate for your course.	
Task required by or prior to course start date **Instructors: FORWARD YOUR COURSE LIST OF STUDENT EMAIL ADDRESSES TO THE RESEARCHER. Please be reminded to use our collaborative inbox email address for all communications regarding this DBR.** **Your feedback is my data!**		

Phase ONE	
Researcher: Email survey instrument Week 5	
Instructors: POST Week 5/Phase One REFLECTIVE JOURNAL PROMPTS	
BLACKBOARD Users	**GOOGLE SITES/GROUP FORUM**
WEEK 5: An instructional intervention in the use of Blackboard discussion forum multimedia functions was designed to you support your collaborative tasks for this course. Reflect and share how the intervention resource and using Blackboard discussion forum multimedia functions have impacted your collaboration experience. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.	WEEK 5: An instructional intervention in the use of the multimedia communication functions of Google discussion Groups and Google Documents was designed to you support your collaborative tasks for this course. Reflect and share how the intervention resource and using multimedia functions have impacted your collaboration experience. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.
Analyze Phase One feedback from participants' interaction with the intervention to tasks; Re-design the instructional intervention for both the Blackboard and Google platforms in response to feedback; Prepare the surveys using Qualtrics for online distribution via student email addresses	
Phase TWO	
Researcher: Email survey instrument Week 9	
Instructors: POST Week 9/Phase Two REFLECTIVE JOURNAL PROMPTS	
BLACKBOARD Users	**GOOGLE SITES/GROUP FORUM**
WEEK 9: Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of using the instructional intervention resource and using Blackboard discussion forum multimedia functions for your most recent collaboration task. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology	WEEK 9: Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of using the instructional intervention resource and using the multimedia communication functions of Google discussion Groups and Google Documents for your most recent collaboration task. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.
Analyze Phase Two feedback from participants' interaction with the intervention; Re-design the instructional intervention for both the Blackboard and Google platforms in response to feedback; Prepare the surveys using Qualtrics for online distribution via student email addresses	
Phase THREE	
Researcher: Email survey instrument Week 14	
Instructors: POST Week 14/Phase Three REFLECTIVE JOURNAL PROMPT	
BLACKBOARD Users	**GOOGLE SITES/GROUP FORUM**
WEEK 14: Evaluate how the Phase 1 video tutorials that demonstrated how to locate and use dynamic Advanced Content Editor discussion board features; the Phase 2 socio-technical motivational videos that encouraged spontaneous ubiquitous use of the features; and the Phase 3	

presentation that provided exemplars of dynamic communication in academia impacted your collaborative experience for better or for worse. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.

Analyze Phase Three learner perceptions from qualitative and quantitative data; and evaluate iterative design decisions for both the Blackboard and Google platforms in response to learner feedback with regard to the research questions.

Summary

In this Chapter, I described an overview of this design-based research study's methodology to include the: (a) rational for design-based research; (b) research design; (c) participants, setting and sampling; (d) data collection sources and analysis methods; (e) data collection instrumentation; and, (f) design project timeline. Chapter Three discussed the framework for this study as anchored by Engeström's (1987) Activity Theory Model and by the identification of an educational problem formulated through collaboration with my cooperating instructors. Chapter 4 will report the qualitative and quantitative data that framed my iterative design decisions at each phase and will evaluate the findings against the research questions and educational problem as applicable.

CHAPTER FOUR

FINDINGS

The purpose of this design-based research study was three-fold: (1) examine collaboration by exploring the perceptions of adult online learners regarding collaboration technology use and of a series instructional intervention videos that supported tool use; (2) track the iterative design, development, implementation, and evaluation of instructional screencasts designed to demonstrate and support the use of dynamic text editor functions and multimedia features for authentic collaboration learning tasks and learner-driven discussion board communication in two online discussion forum platforms: Blackboard Learn (BB) and Google Groups (GG); and (3) determine the impact of the instructional intervention on our educational problem identified as a behavior: organic learner-driven online discussion board collaboration. In this chapter, I report the findings that emerged from an examination of the self-reported collaboration experiences of adult online participants after being introduced to a series of instructional intervention videos designed to support the use of dynamic text editor functions and multimedia features in a commonly used collaboration tool: online discussion board. The chapter is organized to present the qualitative and quantitative yield collected and analyzed at three iterative design phases-- Week 5/Phase One, Week 9/Phase Two, & Week 14/Phase Three are compared. These data were integrated to interpret the results of the iterative design decisions motivated by the feedback at each phase. The following research questions were addressed to determine the impact of the instructional intervention on collaboration experiences:

Q1. How does an instructional intervention in the use of collaboration technology

influence collaboration experiences?

Q2. How do participants perceive their collaboration experience is constrained using collaboration technology?

Q3. How do participants perceive their collaboration experience is enhanced using collaboration technology?

Q4. Does the iterative process of this design-based research study impact participants perceptions of collaboration?

Insights towards our educational problem identified as a behavior: student-led discussion board collaboration were also addressed by these findings, as applicable.

Pre-Phase One

Upon IRB approval in July 2014, the DBR study commenced with an analysis of the practical problem with the cooperating instructors. Table 3 presents the summarized feedback gathered from the Pre-Phase One discussions with instructors about the goals, visions, and constraints presented by the socio-technical system of their courses using the Socio-technical Graphic Organizer Planning instrument.

Table 3. Combined Socio-technical Graphic Organizer Planning Tool Notes

Course Name *Web-based Instructional Technology Courses (N=5)*	**Existing scenario** **Statement of Education Problem: A fully (100%) online course is a community of learners; developing organic learner-driven online collaboration might support online presence concerns and perhaps impact social learning experiences.**
Vision/Goals/Values	Develop design thinking; Instructional program evaluation; Applied educational technology
Reason for vision/goal/value	Divergent thought development towards all design; critical analysis; practical problem solving
How collaboration presently work in the course	Group projects and initial introductions via discussion board
People **(Learner characteristics)**	Working adult learners; Grad students- Masters, Doctoral, and Education Specialists; some previous online learning experiences; varying

	levels of Information Technology Fluency
Infrastructure for Collaboration	Teacher-driven online collaboration is substantive & expected; regular interaction occurs via web-based technologies. Teacher-led offline collaboration is optional yet may consists of non-instructional activities (e.g., a class or program orientation, presentation, or exams). Student-led offline collaboration is entirely driven by the students and is not expected.
Existing Technology	Email; Google Docs; (3 courses) Blackboard; other web-based tools; Google Sites (2 courses)
Course Culture around Collaboration	Required course; group work driver for collaboration; task-focused; teacher-chosen group membership; open student-choice grouping
Processes/practices	Asynchronous
Benefits	sense of online presence/community
Costs	Time investments
Risks	Fall 2014 start of class date was imminent

My collaboration with the instructors revealed the following: (1) the online discussion board was being largely unused within the university's course management and learning system (Blackboard Learn) and among professors using Google Sites, (2) an expressed gap between how their courses' online discussion forums were functioning and the desired level of active collaborative student-driven interactivity they had intended, (3) a common goal and educational problem to target: increase organic learner-driven online discussion board collaboration in their courses, (4) the discussion board was the identified common tool for collaboration available in both Blackboard Learn and Google Sites used by all the instructors, and (5) agreement that the Fall 2014-15 course enrollees be afforded necessary information technology support via screencast tutorials to sufficiently prepare them for increased collaboration fluency expectations.

   Initial Instructional Intervention. Using Camtasia Studio 8, I designed and produced the series of live-action screencast tutorials narrated by me that demonstrated how to use dynamic --and other rarely used-- functions of Blackboard Discussion Forums, Google

Discussion Groups, and Google Documents for collaboration. The video productions were lively

enhanced with zoom & pan effects as well as animated video backgrounds and transitions. I

made a conscious effort to try to kept each video under 5 minutes and densely informative to

deliver value to the viewer, engender engagement as well as respect the time of my voluntary

online participants who might access this content on the run via various mobile devices. The

Blackboard screencast tutorials were a series of three short videos titled: Discussion Forum

Management (1:37); Basic Text Editor Function Navigation (1:32); and, Media Functions for

Dynamic Discussion Board Collaboration (4:10). In the Discussion Forum Management video, I

showed viewers how to subscribe to a discussion forum; how to control message actions within a

discussion forum using the Thread Actions function; and how to control sorting options of

discussion threads for printing or quick reading purposes using the Collections function. In the

Basic Text Editor Function Navigation video, I demonstrated the functions accessible in both the

simple and advanced content editor modes. Simple functions included Spell Checker,

hyperlinking/removing hyperlinks, bulleted and numbered lists. In the Media Functions for

Dynamic Discussion Board Collaboration video, I featured live demonstration of how to include

Webcam Recording, Image insert, Embed Media, Emoticons, Math editor functions, and

Mashups (Flickr, Slideshare, YouTube) in discussion board posts. The Google screencast tutorial

series included some videos just over 5-minutes. There were three Google Groups videos that

included reference its function within Google Sites: Features of the Google Groups Web Forum

(5:31), Where Am I...Google Sites or Groups? (2:31), and How to Post to Google Groups

Discussion from Email (3:11). The Dynamic Features of Google Documents were presented in

two parts running 2 minutes, 54 seconds and 5 minutes, 41 seconds. In the two part screencast

video set, I featured live demonstration on how to use the table insert, drawing tool, Research

tool, interactive Table of Contents, Suggesting mode, and Comments built-in to Google Documents for richer communication and more meaningful collaboration. These screencast video tutorials supported a variety of collaboration tool functions and features from which the adult participants might make their own tool-task fit decisions as they became acclimated to Discussion Board navigation and to dynamic multimedia thread post functionality implemented on Week 1 of the Fall 2014 course.

The Discussion Board Function Introduction/Icebreaker Exercise for Blackboard users suggested that participants view the screencasts and demonstrate use of the following functions within a BB discussion post: INSERT MASHUP or RECORD FROM WEBCAM, INSERT/EDIT EMBEDDED MEDIA and INSERT/EDIT IMAGE. My Google Sites/Groups participants were encouraged to use of the some of the functions explained in my screencasts AND allow each learner to DEMONSTRATE what design thinking meant to him/her in a manner beyond mere text-based discussion thread posts using the INSERT VIDEO or ADD REFERENCE and INSERT IMAGE functions within the post.

Design-based research is characterized by design in practice (Barab & Squire, 2004). In the process of designing my Google Groups instructional videos intended for my study participants, the Participating Instructors Collaborative Google Groups INBOX discussion forum was created accessible to my participating instructors via a dedicated email address for the purpose of controlling the flow of ongoing communication throughout the course of the research study. The result of incorporating the Google Groups collaboration technology tool into my own research-practitioner communications served as in an effective model of the capabilities a discussion board with rich-text editor functionality provided (Google Groups). The email correspondence I sent to my participating instructors using the Google Groups INBOX was not

plain text emails. The emails using the Google Groups INBOX incorporated fonts, color and graphical content with purposeful design intent, (see Appendix I). The emails to my participating instructors were designed to model the dynamic rich communication features their students had available to them within the online discussion forums of both the BB & GG platforms. With every communication I attempted to demonstrate the change I wanted to see in communications designed for the online learning environment.

Phase One

Week 5 Qualitative. The Week 5 reflective journal prompt for students stimulated data focused on perceptions on how the intervention resource supported collaborative course tasks and how using multimedia functions impacted their collaboration experience in terms of collaborating with their classmates, the collaborative process, and the collaboration technology. An analysis of statements concerning GG and BB functions/features in the Week 5 reflective journal data suggested that higher acceptance perceptions among GG users over BB users stemmed from a general sense of familiarity with Google applications and efficacy with collaborative Google Document functions in particular. Examples of such statements include:

> Student 10, Line 85: "The ability to connect without having to be face-to-face is amazing. It helps for ease of use and quick access to information and communication. Being able to use Google documents to see others work and connect with another or a group instantly saves time and allows for full communication between people who may not have the opportunity to do so without this technology. This helps save money, time, and increase productivity. Also, it allows a variety of opportunity to collaborate with people different background, cultures, education, etc. allowing more experience and a broader base of growth within projects, discussions, etc. My personal experience has been positive and informative."; "My classmates typically respond or comment within a day of someone posting or submitting an email to the class Google link. By everyone having a Google account, we receive notices from our instructor as soon as they are sent because I personally receive alerts on my smartphone when I get an email to my gmail account. Receiving this notification will allow me to react to changes in the syllabus or new timelines for assignments." and, "Google Discussion Groups and Google Docs are great tools when there is a need to collaborate remotely. There isn't really a perfect substitute

for sitting down in the same room with others, however these tools do allow for live discussion. Another positive aspect is that one can take a little time to think and reflect before sharing."

With regard to Research Q1, How does an instructional intervention in the use of collaboration technology influence collaboration experiences? The journal data indicated participants perceived their coursework by Week 5 had not necessitated use of the dynamic discussion board functions and features for collaboration. Instead, the participants expressed a general appreciation for instructional invention and related tasks. It was noted by the data that some participants used the results of the Introductory Icebreaker task to gauge the technological ability of their online classmates for purposes of future collaborative group formation:

> Student 35, Line 242: "The "Discussion Hint and Tips" videos are very helpful to me when communicating within blackboard. I find myself revisiting the videos for my other course. I wish I would have had this type of instruction in undergrad. I didn't realize there was a function for mathematical equations; it would have been useful in my online econ class. I too found that the "Dynamic Discussion Board Features" video informative. The webcam feature would be very useful in personalizing material that I want to share on blackboard, once I get better at using it."

> Student 50, Line 341: "The week 1 activity did have an impact on collaboration, but I felt it was more beneficial for student to have an opportunity to practice using the technology to make sure that it worked early in the semester. Also, knowing who has a strong technical background might help to better implement the collaboration process in a group."

> Student 52, Line 387: "The ScreenCasts are a great tool because they provide a direct, quick, and easy instruction to follow. What is astounding to me is that I am now on my 3rd year at Wayne State and I had never before viewed this type of instructional assistance when using blackboard. So, I did not know how to do any advanced functions in Bb before this course. I believe that having us use these tools during the week 1 introductory posts/intervention was very beneficial to myself and my colleagues because it got us started with using technological functions that we may not have used I the past."

The Week 5 reflective journal data was replete with statements acknowledging the PU of the collaboration technology tools and functions found in the discussion forums of both the Blackboard and Google platforms. Example journal statements include:

Student 47, Line 316: "The videos displaying the functions were helpful for exposing all the different utilities and options offered, but other than loading a picture of myself for introduction purposes, I haven't used any of these. The need hasn't presented itself, at least not as of yet, although, learning/practicing the skills to use Bb in its fullest entity would be an ideal goal. It's actually good to know that all these functions exist. I have only used Bb discussion board in its simplest form. The option to broaden the experience should lead to a much more engaging experience for my peers and myself, in all courses. I'm not too savvy, so I'll have to keep up practice and revisit the "Tips and Tricks""

Student 53, Line 408: "Honestly, I never knew how to use the functions we learned on the first week, like embedding and mashups. I had taken many courses on blackboard before but I was never required to use those functions, and never told about them. I tried to do them without watching the videos first but could not figure it out. Once watching the videos it was very easy to do! It's just a matter of knowing where to go! I think it can def help in collaborating with your group. I think one way is with the mashup and embedding a video. I use to just post the link in there and then you can copy and paste it but with the videos we saw you can use a hyperlink or just embed the video and you can just click play. It makes it easier so that everything can be done on blackboard."

Student 5, Line 50: "Multimedia functions are great for this program and could also be beneficial for true online courses if classmates choose to use this resource instead trying to set meeting times outside of class to work on a project."

These strong acceptance perceptions towards future collaboration tool use were very reassuring to me considering that the study was only in its first phase. Reassurance was thwarted by further analysis of the Week 5 qualitative data wherein a most interesting, unexpected, and astounding theme emerged aligned with Research Q2 (constraints using collaboration technology). The perception that using the dynamic Blackboard and Google Groups discussion board functions and features was non-academic and inappropriate for the higher education learning environment for collaboration was an emergent finding (see Table 4). This perception or mindset would prove vital to interpreting the impact of collaboration technology tools in mediating collaboration processes to include the interpretation of actual collaboration technology use behaviors throughout the study. Further, the following participants' statements seemed to offer insight into

the system of conditions in the online learning environment presented by authentic collaborative

learning tasks and human social elements:

> Student 9, Line 80: "The collaborative aspect of this class or any online course is only as effective as people use them. I believe there is a level of antisocial behavior at work when someone chooses an online course. I think the instructional intervention of this class allows me to be as active or inactive socially as I wish. I have not participated in much group work yet so my collaborative experience is limited right now."

> Student 24, Line 180: "I really love the flexibility that online courses provide however it does require discipline and organization by the student. It also requires that instructors are very clear with instruction on assignments and expectations as well as constant monitoring of student engagement."

For these participants, their encounter with the Week 5 instructional intervention enabled them to

formulate a general profile of the adult online learner and gave pause for reflection on their own

online engagement behaviors. Given full consideration of these perceptions, I categorized these

themes as Mindset and Self-Efficacy variables.

Table 4. Summary Phase One/Week 5 Themes

Summary of Week 5 reflective journal responses regarding their perceptions of the intervention and their discussion board collaboration tool experiences.

OPEN CODES		
Online Learners require discipline Nontraditional grad student Discussion board enable expression of ideas Desire for use Confusion about use Intent to use	Online learners are asocial-types Tech user for work & personal Promotes equality and engagement Multimedia tool support expression by different cultures of learners	Felt not too tech savvy Feel need for tech support K-12 educator Assent to benefit of use Too hard, too much work Teacher feedback Teacher as designer General collaboration
Emergent Themes/Categories	**Raw Journal Data Support**	**ITERATIONS OF THE Instructional Intervention**
Week 5 PHASE ONE Themes	I did not know how to do any advanced functions in Bb before this course. I believe that having us use	Phase One How-to Tutorial

• Was aware of functions
• No use for functions
• Not academic to use multimedia functions in DB
• Noted potential benefit, but had no use for tools
 	
Categories
I. Technological self-efficacy
II. Mindset
III. Tool Usefulness
    a. Intervention
    b. Discussion Board functions
	these tools during the week 1 introductory posts/intervention was very beneficial to myself and my colleagues because it got us started with using technological functions that we may not have used I the past. The video tutorials provided some great suggestions for how to engage each other in a collaborative environment that is more dynamic and provides a stronger sense of personal connection and community.
	
	...the multimedia functions aren't used extensively; most people are just comfortable with text with a discussion board forum. It is almost as if the effort to creatively use images, video, or audio is more work.
	
	...multimedia it's also tricky in an academic setting, because I don't want to do a vlog-style response when writing seems more 'academic,' you know? I'm always afraid it will look like I'm taking the easy way out by talking to the camera rather than writing my thoughts. Also it's a lot easier to create an articulate argument in writing than with video.
	
	I believe that using the multimedia does not add much to the discussion because it then becomes more of an information sharing session then a true discussion of ideas and thoughts. Some of the basic functions like hyperlinking add to the experience a little because it helps the other students access the information more easily. Maybe it is has been the topics we are discussing that prevents the advanced use of the tools but I feel like most discussion board questions are designed to be discussing ideas and thoughts. Most of the topics in this course so far have
		(Instructional)

	been personal not research based so posting videos and other external documents & files was not necessary. I have mixed emotions. I actually find it difficult to use technology to actively collaborate with my classmates. I have only done one project like this though so I am holding out hope that the more I do it the better I will like it. As far as the collaborative process, I again find it a difficult process because we are not meeting or even really speaking face to face as I am used to. I understand that I have to grow out of my comfort level but currently it is difficult for me. I do, however, feel there are great collaboration technologies out there that help people do what they need to do regardless of physical location...	
Researcher Notes/Reflections: Phase ONE		
Awareness of the functions the collaboration tool provided was no longer a mystery. My Phase One instructional intervention included a performance task to check for understanding (wasn't required but was encouraged by professor) plus the videos were accessible for viewing at any time for just in time support; Week 5 might have been too early in the courses for FORMAL teacher-driven collaborative learning activities/experiences, but INFORMAL collaboration could have been ongoing and organic; the idea that Use of color, video, etc. for collaborative learning was seen as unprofessional and nonacademic was a surprising sentiment to me; seeing no use for the tools to me indicated lack of Internalization (metric to be evaluated in Phase Two)		

Week 5 Quantitative. The Davis (1989) TAM instrument measured early user acceptance perceptions of the collaboration technology tool based on two variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEU) anchored on a 7-point Likert scale: 1=strongly disagree; 2=Disagree; 3= Partially Disagree; 4=Neither Agree nor Disagree; 5=Partially Agree; 6= Agree; and, 7=strongly agree. An analysis of aggregated Blackboard/Google Week 5 data standardized into continuous variables from the survey data indicated collective agreement on the Perceived Ease of Use (PEU) variable among Blackboard

and Google Groups users; but, on the Perceived Usefulness (PU) variable, participants "neither agreed nor disagreed" that using the enhanced discussion board functions "would enhance his or her job [task] performance" (Davis, 1989, p. 320). Using SPSS, I converted the raw scores of the series of survey items to a consistent and standardized scale or scaled score that can be interpreted using mean value to help describe the variables measured by the instrument against the 7-point Likert scale. Table 5 shows the combined and compared descriptive statistics of N=17 participants. Week 5 participants combined seemed to be undecided about the PU of the advanced content editor functions (17.6%, Mean=4.37, 4=Neither Agree nor Disagree), but indicated agreement by 23.5% on the PEU variable (Mean=5.86≈6 Agree). Interestingly, participants scores ranged from a minimum of 3= Partially Disagree to a maximum of 7=strongly agree with the median score of 6= Agree on the Perceived Ease of Use (PEU) variable. A comparison between both the median and mean values of Blackboard and Google users on the PEU and PU variables were roughly the same. On both variables, Google Groups users' acceptance perceptions presented statistically higher than BB users.

Table 5. Comparison of Descriptive Statistics: Davis (1989) TAM

Statistics

		SS_PU	SS_PEU
N	Valid	17	17
	Missing	0	0
Mean		4.37	5.86
Median		4.00	6.00
Std. Deviation		1.729	1.118
Skewness		-.034	-1.764
Std. Error of Skewness		.550	.550
Minimum		2	3
Maximum		7	7

SS_PU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	5.9	5.9	5.9
	2	2	11.8	11.8	17.6
	3	1	5.9	5.9	23.5
	4	1	5.9	5.9	29.4
	4	1	5.9	5.9	35.3
	4	3	17.6	17.6	52.9
	5	2	11.8	11.8	64.7
	5	1	5.9	5.9	70.6
	6	1	5.9	5.9	76.5
	6	1	5.9	5.9	82.4
	7	1	5.9	5.9	88.2
	7	2	11.8	11.8	100.0
	Total	17	100.0	100.0	

SS_PEU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	5.9	5.9	5.9
	4	1	5.9	5.9	11.8
	5	1	5.9	5.9	17.6
	5	1	5.9	5.9	23.5
	6	1	5.9	5.9	29.4
	6	4	23.5	23.5	52.9
	6	2	11.8	11.8	64.7
	6	1	5.9	5.9	70.6
	7	2	11.8	11.8	82.4
	7	1	5.9	5.9	88.2
	7	2	11.8	11.8	100.0
	Total	17	100.0	100.0	

Discussion Board Type			SS_PEU	SS_PU
Black Board	N	Valid	11	11
		Missing	0	0
	Mean		5.74	4.05
	Median		6.00	4.00
	Std. Deviation		1.170	1.623
	Skewness		-1.981	.010
	Std. Error of Skewness		.661	.661
	Minimum		3	2
	Maximum		7	7
Google Groups	N	Valid	6	6
		Missing	0	0
	Mean		6.08	4.97
	Median		6.42	4.92
	Std. Deviation		1.084	1.904
	Skewness		-1.855	-.457
	Std. Error of Skewness		.845	.845
	Minimum		4	2
	Maximum		7	7

End of Phase One Design Decision. The first phase of Week 5 data collection revealed two pervasive themes that I coded Mindset and Technological Self-Efficacy. There was strong indication that my participants held a mindset that was not self-motivated by merely improving their explicit knowledge about the rarely used discussion board feature or by providing just-in-time instructional support for their self-reported lack of technical efficacy. Giving consideration to Knowles' (1984, 1990) characteristics of adult learners being autonomous & self-directed; goal & relevancy-oriented; practical; experienced; and problem-centered, I sought to earn my participants' focus and commitment towards actual use while respecting their autonomy. The following is a sample of Week 5 reflective journal data that indicated intent to use the collaboration technology tools in subsequent weeks of the course.

> Student 7, Line 57: "At this point, I have not collaborated with my classmates yet, but I know that we have group assignments coming up in the near future. Using the Introductions discussion board was fun to virtually meet other students in class a bit."

Student 2, Line 9: "I watched the videos on using multimedia functions in Google Groups, but based on my past experiences using Googles tools I didn't feel that I learned anything new from them. I could definitely see their value for someone who is newer to the platform, though. I haven't felt like I've used the tools in the most meaningful ways yet; I've used them when required but I'm not really to a point where I've used them organically. I think I'll be able to give better insights to this question after Week 6, when we start working in peer groups. Right now the majority of this course has been student-professor interaction via our reflection journals."

In an effort to leverage this perception of intent to use and being reminded that the educational problem identified in collaboration with my cooperating instructors was to encourage organic learner-driven online discussion board collaboration, I determined that my Week 9 instructional intervention would be shift from a tutorial emphasis to a motivational intervention emphasizing the 'Why and When to' use dynamic discussion board tools, features, and functions for collaboration beyond that which was teacher-centered (see Figure 11). The pervasive Mindset and Technological Self-Efficacy themes seemed to require iterative changes that might

Figure 11. A screenshot from the Week 9 Instructional Intervention video.

encourage and suggest applications of collaboration tool use for dynamic online communication and for informal learning. The intervention was re-designed between Weeks 6-8 for implementation in Week 9 based on the participants' expressed feedback and key findings that emerged from constant comparative analysis of these data gathered.

Phase Two

According to my instructors, Week 9/Phase Two occurred during the height of the Fall 2014 semester. Within the span of Weeks 6-9, students engaged in continued collaborative tasks specific to the requirements of their course with no additional suggested researcher nor the instructor-driven structured activities or exercises. During Week 9, students were preparing to take their midterms with most of them also in discussion (collaboration) about final team project plans. Students had awareness and sustained access to the dynamic discussion board functions and features within their given collaboration technology platforms--Blackboard and Google as well as just-in-time access to the initial screencast tutorials (instructional intervention) for their personal support as required. Voluntary participation in the study was lower than I had expected among enrollees of my five graduate online courses. My disappointment with lower than anticipated survey participation was contrasted by my satisfaction with the rich journal data shared by all those who volunteered to participate in this phase of the study.

Second Iteration of the Re-Designed Instructional Intervention. The second iteration of the re-designed instructional intervention abandoned the screencast "how-to" tutorial approach for a more motivational approach in response to indications of Week 5 needs. This video presentation was titled: Collaborate! Work in Dynamic Ways Together. The video was designed using Google Slides presentation featuring large colorful animated text with narration produced using Camtasia to run under 5 minutes long: 3 minutes, 16 seconds**.** The visual presentation

displayed one idea: per slide utilizing text zoom animation and fade-in slide transition. I narrated the presentation outlining the skills covered in the Phase 1 video in the first 33 seconds of the video. At :37 in the video, I pose the three major concerns revealed by the Week 5 reflective journal data in the form of 3 questions: why use these features; for what purpose in the academic setting; and, when use these features? I proceed to answer each question in a manner that encouraged and challenged viewers to embrace uncertainty, get out of their comfort zone and transfer their newly acquired skill and awareness of the dynamic discussion board functions during student-driven collaboration in a similar manner that they might engage in any other social media outlet. The goal of this Phase Two design decision was to counter interpretations of user perceptions indicated by Week 5 data and to stimulate actual use of the collaboration tools, functions and features towards course tasks beyond that which teacher-directed to further examine how collaboration technology tools mediate student-led collaboration processes.

Within the span of Weeks 6-9, students engaged in continued collaborative tasks specific to the requirements of their course with no additional suggested researcher nor instructor-driven structured activities or exercises. During Week 9, students were preparing to take their midterms with most of them also in discussion (collaboration) about final team project plans. Students had awareness and sustained access to the dynamic discussion board functions and features within their given collaboration technology platforms--Blackboard and Google as well as just-in-time access to the initial screencast tutorials (instructional intervention) for their personal support as required.

Week 9 Qualitative. The Week 9 reflective journal data indicated strong perceptions toward the usefulness of the dynamic discussion board functions and features within both collaboration technology platforms--Blackboard and Google. Yet, a new overarching theme

seemed to emerge that questioned the value of investing time and effort required to intentionally use the dynamic Blackboard and Google Groups discussion board multimedia functions and features for collaboration (e.g., video and image insert among others):

> Student 37, Line 329: "The video for week 9's discussion also reminds us all that learning is retained more if you insert audio/video instead of merely text. I agree. Like other classmates I hesitate to insert audio or video. But for me it is just due to the fact that I don't have time to simply play around with it in order to feel comfortable enough to use audio/video in my presentations now, That will change as time goes on."

> Student 2, Line 1: "I initially used the Record from Webcam option during our class introductions. However, we haven't used any of them throughout our small group discussions. I think that using the recording option is a good way to establish a social presence. So, the only issue is the fact that we really haven't used them. Would using them add more substance to our discussions? Would it be value added? Or would we be using them simply because they are available?"

These perceptions or this mindset, I believed, impacted intrinsic motivation within the individual student, the team/group, or the online community of learners. Nonetheless, the Week 9 reflective journal data did include indications that other dynamic interactive collaboration tools, features, and functions were desired and/or may have been used for collaboration communication processes beyond the online discussion board:

> Student 6, Line 20: "... I like interactive conversations (Skype, etc) rather than creating a video."

> Student 33, Line 261: "There are a few challenges with collaborating online: 1) It is a "pull" system not a "push" system, so I found myself checking every day (even a couple times a day) to see if one of my team members had posted an update to my document or had posted new information to their documents, so that I could comment or provide additional information. It's kind of like checking the mailbox every day for a letter that you think is coming, but you are not sure when. 2) Also, as you post new comments and old ones get pushed down... It is not critical, but there is no way to know if she sees that particular comment. I think emailing her might be better. Real-time interaction gives you an opportunity to follow-up on things like that."

These respondents' perceptions are consistent with research by Oztok, Zingaro, Brett & Hewitt (2013), that found learners' asynchronous or synchronous tool use was context specific, and that choice of asynchronous or synchronous tool impacted learners' sense of social presence and perceptions of online collaborative learning processes. However, it should be included that Oztok et al. (2013) also noted that their most active asynchronous learners proved to also be their most active synchronous learners. This suggested to me acting on one's intent was critical to the transfer of explicit knowledge towards the development of tacit knowledge around the use of Advanced Content Editor Discussion Board collaboration tools. Again, because I was examining the opportunity gap for greater organic student-centered collaboration in the online discussion board by adult learners by Week 9 it became apparent to me that andragogy theory was "a model of assumptions, which includes pedagogical assumptions" (Knowles, 1984, p.62). I was clearly operating on some assumptions of my own to be discussed in detail in Chapter 5.

Week 9 Quantitative. The Malhotra & Galletta (1999) Extended TAM survey administered online gathered perceptions from N=18 participants regarding the dynamic discussion board multimedia functions and features based on the following variables: Usefulness, Ease of Use; Actual Use, Behavioral Intentions, Attitude Toward Using as well as the measurement scales for psychological attachment: Internalization, Identification, and Compliance, see Appendix E. At the end of Week 9, an analysis of aggregated Blackboard/Google data was also standardized into continuous variables that I might interpret and report on the variables as measured along its associated 7 point Likert-type scale. This Week 9 survey data continued to measure the same PU and PEU variables of the Davis (1989) TAM, but with the addition of Actual Use, Behavioral Intentions, Attitude Toward Using as well as the measurement scales for psychological attachment: Internalization, Identification, and

Compliance, see Appendix E. Among 18 respondents, Table 6 displays that the Week 9 survey participants indicated continued collective agreement on the Perceived Ease of Use (PEU) at Mean=5.49 and Perceived Usefulness (PU) at 4.35 variable among both Blackboard and Google Groups users just as participants at Phase One results on the same variables. Table 6 also displays that Blackboard users (23%) indicated approximated disagreement on their Behavioral Intentions (Mean=3.44, 3=Disagree) to use the tool while Google Groups users with a Mean=4.10 rated 4="Neither Agree nor Disagree". A comparison of this singular descriptive statistic against the qualitative data confirmed that Behavioral Intent to use the discussion board functions and features was present at some level, but not particularly acted upon:

Student 4, Line 14: "I use videos for my own education, but I have yet to create one to promote myself or some educational concept. I am looking forward to developing one."

Student 33, Line 281: "I am going to suggest that my group meet online in real-time to provide more direct feedback to each other. I have a rough vision of what I want to do, but I am concerned that my colleagues might be in the weeds. It is hard to tell from what they have posted thus far."

The strongest indications on the Perceived Ease of Use, Perceived Usefulness, Internalization, Identification, Compliance, and Behavioral Intention towards use (Table 6) variables were among the Google Groups users: Student 29, 225: "...In terms of collaboration, I always preferred other ways than BB (like Google doc). I just find it easier and more user friendly." In contrast, Blackboard users reported higher Actual Use frequency (Table 7) with the collaboration tool. This data comes as no surprise as Blackboard is the preeminent learning and management solution at this Midwestern urban University setting. Further, given that my study

participants have attained graduate level status in the higher education and online academic setting, their exposure to the Blackboard platform (however rigorous or not) is highly likely. Blackboard Inc. boasts an 80% market share of the "world's top academic institutions" and they "support and work with 92% of the top online bachelor degree programs." (http://www.blackboard.com/about-us/who-we-are.aspx). Plus, the sample of Blackboard users represented in this design-based research study was larger: three of the five courses used Blackboard.

Table 6. Comparison of Descriptive Statistics: Malhotra & Galletta (1999) Extended TAM

Statistics

		SS_PEU	SS_PU	SS_INT	SS_ID	SS_COMP	SS_BEHIn
N	Valid	18	18	18	18	18	18
	Missing	0	0	0	0	0	0
Mean		5.49	4.35	4.37	4.31	2.90	3.63
Median		5.75	4.00	4.50	4.50	3.00	3.63
Std. Deviation		1.030	1.697	1.404	1.586	.963	1.618
Skewness		-.323	.087	-.151	-.079	-.041	.222
Std. Error of Skewness		.536	.536	.536	.536	.536	.536
Minimum		4	2	2	2	1	1
Maximum		7	7	7	7	5	7

SS_PEU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	1	5.6	5.6	5.6
	4	2	11.1	11.1	16.7
	5	2	11.1	11.1	27.8
	5	1	5.6	5.6	33.3
	5	1	5.6	5.6	38.9
	6	1	5.6	5.6	44.4
	6	1	5.6	5.6	50.0
	6	1	5.6	5.6	55.6
	6	3	16.7	16.7	72.2
	6	2	11.1	11.1	83.3
	7	1	5.6	5.6	88.9
	7	2	11.1	11.1	100.0
	Total	18	100.0	100.0	

SS_PU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	5.6	5.6	5.6
	2	1	5.6	5.6	11.1
	2	1	5.6	5.6	16.7
	3	2	11.1	11.1	27.8
	3	1	5.6	5.6	33.3
	4	2	11.1	11.1	44.4
	4	2	11.1	11.1	55.6
	5	2	11.1	11.1	66.7
	6	1	5.6	5.6	72.2
	6	2	11.1	11.1	83.3
	6	1	5.6	5.6	88.9
	7	2	11.1	11.1	100.0
	Total	18	100.0	100.0	

SS_INT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	5.6	5.6	5.6
	2	1	5.6	5.6	11.1
	3	1	5.6	5.6	16.7
	3	1	5.6	5.6	22.2
	4	1	5.6	5.6	27.8
	4	1	5.6	5.6	33.3
	4	1	5.6	5.6	38.9
	4	1	5.6	5.6	44.4
	5	2	11.1	11.1	55.6
	5	2	11.1	11.1	66.7
	5	1	5.6	5.6	72.2
	5	1	5.6	5.6	77.8
	6	1	5.6	5.6	83.3
	6	1	5.6	5.6	88.9
	6	1	5.6	5.6	94.4
	7	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

SS_ID

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	5.6	5.6	5.6
	2	1	5.6	5.6	11.1
	2	2	11.1	11.1	22.2
	3	1	5.6	5.6	27.8
	4	2	11.1	11.1	38.9
	4	1	5.6	5.6	44.4
	4	1	5.6	5.6	50.0
	5	3	16.7	16.7	66.7
	5	1	5.6	5.6	72.2
	6	2	11.1	11.1	83.3
	6	1	5.6	5.6	88.9
	7	1	5.6	5.6	94.4
	7	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

SS_COMP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	5.6	5.6	5.6
	2	1	5.6	5.6	11.1
	2	1	5.6	5.6	16.7
	2	1	5.6	5.6	22.2
	2	1	5.6	5.6	27.8
	3	1	5.6	5.6	33.3
	3	1	5.6	5.6	38.9
	3	3	16.7	16.7	55.6
	3	3	16.7	16.7	72.2
	4	2	11.1	11.1	83.3
	4	1	5.6	5.6	88.9
	4	1	5.6	5.6	94.4
	5	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

SS_BEHIn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	11.1	11.1	11.1
	2	1	5.6	5.6	16.7
	2	3	16.7	16.7	33.3
	4	3	16.7	16.7	50.0
	4	1	5.6	5.6	55.6
	4	1	5.6	5.6	61.1
	4	2	11.1	11.1	72.2
	5	1	5.6	5.6	77.8
	5	1	5.6	5.6	83.3
	6	1	5.6	5.6	88.9
	6	1	5.6	5.6	94.4
	7	1	5.6	5.6	100.0
	Total	18	100.0	100.0	

Statistics

Platform			SS_PEU	SS_PU	SS_INT	SS_ID	SS_COMP	SS_BEHIn
BB	N	Valid	13	13	13	13	13	13
		Missing	0	0	0	0	0	0
	Mean		5.46	4.18	4.03	3.92	3.00	3.44
	Median		5.67	4.00	4.50	4.33	3.00	3.50
	Std. Deviation		.975	1.702	1.293	1.409	1.016	1.448
	Skewness		-.006	.121	-.499	-.421	-.088	.015
	Std. Error of Skewness		.616	.616	.616	.616	.616	.616
	Minimum		4	2	2	2	1	1
	Maximum		7	7	6	6	5	6
GG	N	Valid	5	5	5	5	5	5
		Missing	0	0	0	0	0	0
	Mean		5.57	4.80	5.27	5.33	2.65	4.10
	Median		5.83	5.00	5.17	6.00	3.00	3.75
	Std. Deviation		1.283	1.789	1.407	1.716	.859	2.111
	Skewness		-1.140	.052	.148	-.440	-.607	.076
	Std. Error of Skewness		.913	.913	.913	.913	.913	.913
	Minimum		4	3	4	3	2	1
	Maximum		7	7	7	7	4	7

The Phase 2/Week 9 survey instrument included semantic Likert scales yielding multivariate data for the variables: ACTUAL USE & ATTITUDE TOWARD USING. Given the small sample size, I chose to present the ACTUAL USE & ATTITUDE TOWARD USING variables as frequency data and compute a factor analysis as the effect would have been too small to perceive significance. Table 7 indicates the Week 9 Actual Use and Attitude Towards Using variables and their yields according to the 18 respondents. On the Actual Use variable, Week 9 respondents reported 2 or 3 times of slightly infrequent use of the discussion forum multimedia functions between 1-5 hours per week. With regard to the idea of considering use of the multimedia communications function in their jobs, GG users reported Attitude Towards Using ratings with more instances on the extreme favorable spectrum of the Likert scale. BB users, in contrast, reported only a single extreme spectrum rating: foolish.

Table 7. Frequency Distribution of Variables--Actual Use and Attitude Toward Using: Malhotra & Galletta (1999) Extended TAM

Platform	Actual Use (N=18)							Total
	2. How many times do you believe you use discussion forum multimedia functions during a week?							
	Not at all	Less than once a week	About once a week	2 or 3 times a week	Several times a week	About once a day	Several times each day	
BB	1	2	3	4	1	1	0	12
GG	0	2	0	1	1	0	1	5
	1	4	3	5	2	1	1	18
	3. How many hours do you believe you use discussion forum multimedia functions every week?							
	Less than 1 hr.	Between 1-5hrs.	Between 5-10hrs.	Between 10-15hrs.	Between 15-20 hrs.	Between 20-25hrs.	More than 25 hours.	Total
BB	6	7	0	0	0	0	0	13
GG	2	2	0	0	0	0	1	5
	8	9	0	0	0	0	1	18
	1. How frequently do you believe you use discussion forum multimedia functions?							
	Extremely frequent	Quite frequent	Slightly frequent	neither	slightly infrequent	quite infrequent	extremely infrequent	Total
BB	0	1	4	0	4	3	1	13
GG	1	0	0	1	1	0	2	5
	1	1	4	1	5	3	3	18

Platform	Attitude Toward Using (N=18)							Total
	Wise - Foolish							
	extremely wise	Quite wise	slightly wise	neither	Slightly foolish	Quite foolish	extremely foolish	
BB	0	4	3	3	2	0	1	13
GG	1	2	0	1	1	0	0	5
	1	6	3	4	3	0	1	18
	Negative - Positive							
	extremely negative	Quite negative	slightly negative	neither	Slightly positive	Quite positive	extremely positive	**Total**
BB	0	1	1	6	4	1	0	13
GG	0	0	0	2	0	2	1	5
	0	1	1	8	4	3	1	18
	Harmful - Beneficial							
	extremely harmful	quite harmful	slightly harmful	neither	slightly beneficial	quite beneficial	extremely beneficial	**Total**
BB	0	0	1	6	4	2	0	13
GG	0	0	0	2	0	2	1	5
	0	0	1	8	4	4	1	18
	Good - Bad							
	extremely good	quite good	slightly good	neither	slightly bad	quite bad	extremely bad	**Total**
BB	0	3	6	4	0	0	0	13
GG	1	2	0	2	0	0	0	5
	1	5	6	6	0	0	0	18

Iterative Design Decision: Practitioners. As a design-based research methodology requires collaboration with practitioners in the evaluation of complex problems in authentic contexts (Brown, 1992; Collins, 1992), another interesting finding resulted from my PrePhase One decision to create and utilize Google Groups as a method to facilitate organized and dynamic communication with my participating instructors via a dedicated email address throughout the course of the research study. Recognizing that my instructors' feedback was data, I noted that my instructors' actual use of the collaboration tool mirrored the findings of their

students. That is, communication and collaboration actually using the Participating Instructors Collaborative Google Groups INBOX discussion forum began well. There was two-way communication during Pre-Phase One and Week 5 using the collaboration tool. By Week 9, my instructors one by one began to revert back to direct correspondence with me using my personal email address(es) and not using the dedicated Participating Instructors Collaborative Google Groups INBOX established to communicate with the researcher/PI. A review of my archived email correspondence with my instructors seemed to suggest that I, as the researcher, had made a unilateral design decision with regard to creating the Participating Instructors Collaborative Google Groups INBOX. When I had not received any communication from my instructors to discourage my decision, I proceeded with my design decision with confidence that I had their support.

My system of organization was challenged having to wade through my various personal email accounts for my instructors' feedback data, but I persevered. Eventually, my instructors responded to my inquiries about their collaborative behavior change. Privacy concerns over sharing student data in the collaborative space was cited by the instructors as the impetus for the switch. This reason was perplexing as this Google Group discussion forum was closed to anyone I had not enrolled. Open communication and collaboration with the practitioner is germane to conducting design-based research. As such, I responded to their feedback with an iterative design decision to change the interactive function of my collaborative inbox group discussion forum use with my instructors. The Participating Instructors Collaborative Google Groups INBOX became one-way communication tool, see Figure 12. I continued to use the Participating Instructors Collaborative Google Groups INBOX discussion forum in ways that modeled its dynamic rich text editor features and functionality in practice. As with the students, use of the Collaborative

Google Groups INBOX discussion forum was largely driven by me functioning as the "more

knowledgeable other" (Vygotsky, 1978) and had not resulted in the active exchange among my

instructors as I had anticipated.

Figure 12. Image from the rich text email correspondence sent to cooperating instructors expressing the iterative communication design decision for Phase Three.

Table 8. Summary Phase Two/Week 9 Themes

OPEN CODES		
Missed feature in video		
Collaboration quality	Lack of experience	Reflective
Teacher feedback	Interest in video production	Value added
Skill/efficacy concern	design	Time intensive
Time constraints	Informal social learning	Text only sufficient
Group conflict	Inappropriate for academia	Intent to use just have not
Grading concerns	Appropriate for K-12	Prefer synchronous tools
Desire for integrated tools	Appropriate for Facebook	

Emergent Themes/Categories	Raw Journal Data Support	ITERATIONS OF THE Instructional Intervention
Week 9 PHASE ONE Themes • Too much work to use • Not academic to use multimedia functions in DB • Low skill/confidence to attempt use • Desire for REAL-TIME collaboration tools Categories I. Mindset II. Technological Self-Efficacy III. Synchronous Desires	[Classmate], I really liked your introductory video! However, is the benefit worth the time/effort? I initially used the Record from Webcam option during our class introductions. However, we haven't used any of them throughout our small group discussions. I think that using the recording option is a good way to establish a social presence. So, the only issue is the fact that we really haven't used them. Would using them add more substance to our discussions? Would it be value added? Or would we be using them simply because they are available? I personally got improved in using more technology, and I am getting better and better in utilizing any opportunities of utilizing technology, but finding the time	Phase Two Encouragement to Use (Motivational)

becomes an obstacle. I like to add an audio or video, but time is a major problem since I have other assignments and responsibilities to do, so what do you think guys?

[Researcher note: Exemplar of appropriate informal use of image insert to enhance ODB communication]

…The video for week 9's discussion also reminds us all that learning is retained more if you insert audio/video instead of merely text. I agree. Like other classmates I hesitate to insert audio or video. But for me it is just due to the fact that I don't have time to simply play around with it in order to feel comfortable enough to use audio/video in my presentations now, That will change as time goes on…

Researcher Notes/Reflections: Phase TWO

Coursework expectation had increased by Week 9 for the participants in the courses. Education via tutorials and learning by using was indicated as having made the difference in perceived value of collaboration technologies for continued use. As emerging instructional designers, they became quite reflective about identifying what organic and dynamic collaboration is and is NOT; they offered suggestions for improved collaboration LMS end user experiences; they were challenged to use collaboration tools for collaboration more, but felt constrained by course

requirements and time. Thinking about Principles of UDL, color should not be used alone to convey meaning-- pair with a symbol (e.g., those color blind & to support memory). Color text has professional and academic application for differentiating items in a list; Using emoticons can make sure friendly comments are communicated as such; Real-time chat is beneficial for synchronous meeting. TRUTH: Incorporating diverse strategies may be time-consuming-- pairing audio w/visual; text w/video; or graphs, charts, drawings, photos w/text. I began to wonder about the demographic makeup of my purposeful sample of online participants. Were they nontraditional participants? Did this make a difference? They are online grad students. Time-constraints did not permit IRB delays to add demographic data requests= limitation (?) I reached out to my practitioners for demographic insights. Most reported general demographics: "Masters students, PhD students and Ed Specialist students" remotely located.

End of Phase Two Design Decision. Based on the students' expressed feedback and key findings that emerged from constant comparative analysis of these data gathered at the end of Week 9, the intervention was re-designed to not just focus upon collaboration in general, but toward collaboration as a system of engagement enhanced by rich text editor and multimedia use for dynamic communication in the online environment to improve the community of participants' sense of presence and facilitate deeper understanding or potentially stimulate active learner-generated discourse. The Phase 2 instructional intervention was a three-minute Google Slide presentation featuring large colorful animated text throughout the video presentation. The visual presentation displays one idea: per slide utilizing text zoom animation and fade-in slide transition. I narrate the presentation outlining the skills covered in the Phase 1 video in the first 33 seconds of the video. At 00:37 in the video, I pose the three major concerns revealed by the Week 5 reflective journal data in the form of 3 questions: why use these features; for what purpose in the academic setting; and, when use these features? I proceed to answer each question in a manner that encouraged and challenged viewers to embrace uncertainty, get out of their comfort zone and transfer their newly acquired skill and awareness of the dynamic discussion

board functions during student-driven collaboration in a similar manner that they might engage in any other social media outlet. In hindsight, I failed to remind viewers in this presentation that they would experience no negative impact on their grades as they practiced these new skills in their own collaboration experiences for the course…perhaps, this revelation may have served as a motivating point.

Phase Three

      Week 14 Qualitative: Practitioners. According to feedback from my instructors, collaboration during Week 14 was in its final, and likely, most important stages. Participants were actively completing their team projects. Some participants may have completed their team projects one week before or after this final data collection phase; but chances were more likely that project completion was of greatest concern and priority at this final phase in my research. This instructor feedback data was significant toward establishing a context for the attrition noted by the end of the course (Week 14) quantitative survey data.

      Week 14 Qualitative: Participants. Week 14 participants' reflective journal data confirmed the quantitative survey data with continued acknowledgement of the PU variable toward the Google functions.

> Student 2, Line 9: "I watched the videos on using multimedia functions in Google Groups, but based on my past experiences using Googles tools I didn't feel that I learned anything new from them. I could definitely see their value for someone who is newer to the platform, though."

The impact of the instructional interventions on collaboration processes was mixed.

> Student 4, Line 38: "I will say that the videos didn't alter much of my interaction with classmates on either a good or bad side. In fact, it didn't alter my ideas at all. I have a certain way that I have been trained to use these tools by past professors and I guess the Phases weren't enough for me to change anything. I did struggle with some of the collaborative piece in this class though. As I have mentioned before, I felt disconnected most of the time primarily because we didn't use Blackboard or any other type of forum."

Yet, participants used the collaboration tools with pleasure and some frustration that was eventually overcome in time. The instructional intervention videos were used and were appreciated by the students. Actual collaboration tool use of the supported rich text editor and multimedia functions onboard the Blackboard and Google platforms were minimally demonstrated by the students unless compelled to do so by instructional task design or instructor-directed requirement. Most students indicate time and technological self-efficacy as constraints that impacted their actual collaboration tool use.

> Student 2, Line 14: "This video [Week 14] was the best presentation. I find the process of collaboration with other students somewhat problematic. I am not sure how to collaborate online and how to measure if the collaboration is successful or a waste of time. The idea of collaborative technology is necessary, but its use is not always clear or easy to use."

Respondents disclosed use of other collaboration tools of a more synchronous communication variety impacted their collaboration processes. Integrated voice and instant messaging chat tools were mentioned with indication that participants felt greatest technological self-efficacy Google tools.

> Student 1, Line 6: "Tools/technology used that had an impact on collaboration with my peers was a voice chatting service that was used in conjunction with Google Documents. The service allowed for not only us to talk but also for drawing out of ideas which could be transferred into the document. Also with the document the addition of images helped collaboration, it helped convey thoughts and improve the process."

> Student 7, Line 75: "For our final project in this class, my group used Google Hangouts. Although the group function was set up for us via Bb, we found Google to be a much better resolution to our needs. By seeing my group members, it mimicked being with them face-to-face. I felt more comfortable working with them this way and felt like I got to know them much better. Although this is not the only way to collaborate, I definitely agree that some social aspect of classes is beneficial to making participants feel engaged in the learning process and committed to the class."

> Student 3, Line 21: "Most of the collaboration with my classmates was based on typing messages into each other's documents to share ideas and comments or meeting with each other virtually in an online meeting. Both of these methods worked fine, but you need a

combination of both to be really productive. Posting messages to each other's assignments works and it gives you the flexibility to post whenever you want."

Analysis of the qualitative data seemed to indicate that the iterative process of this design-based research study (Research Q4) had increased curiosity about the dynamic discussion board functions available in BB and GG; but, had not necessarily changed the participants' collaboration tool use behaviors.

> Student 6, Line 58: "Curiosity may have increased, knowing that some functions that are available on Bb haven't been tapped into, but not much action placed behind it. Looking at the tool box in the thread or reply area of Bb can be so overwhelming for me to look at, that I use the most minimal and basic aspects. I feel much more comfortable, as a learner, and subscriber, using communication forms such as Google chat. It incorporates "real time" face-to-face communication, which has the functions of I-messaging, color, imagery, etc. all things mentioned to enhance collaboration."

> Student 6, Line 64: "Being that my peers and I, and other students alike, use black board for academic reasons, the stigma I see that makes it less appealing, regardless of its awesome functionality is the ability to be more appealing, meaning, making it feel less academic and more social. Understand, that I am well aware the Bb serves academic purposes, but so does Google chat, and other counterparts."

This finding would seem to support the notion that the human element was the key determinant with less emphasis on the collaboration technology tool in mediating collaboration processes in the online learning environment.

> Student 5, Line 45: "Having a good team to work with is essential to getting the most out of the process. I think this is where most online collaboration efforts break down. Any collaboration technology can work, but if you do not have a team that is fully engaged in the process, then it does not matter how great the technology is. Unfortunately, you cannot predict how well people are going to work together or how much effort each individual will put into the collaboration effort. If you gave me a team of four people that were all fully engaged, we could use walkie-talkies where we could only talk one-at-a-time and we could make that work for the project. If you gave me a team of four people and two or three don't care about the project or how well they do, then you could give everyone telepresence cameras and high-def displays and it would not help them be successful. They would just look better failing."

Table 9. Summary Phase Two/Week 14 Themes

	OPEN CODES	Preferred use of other collaboration tools
Tool use not always clear or easy Only used text Skill/efficacy concerns	Time consuming Growth mindset unaffected	Online presence lacked not using tools
Emergent Themes/ Categories	**Raw Journal Data Support**	**ITERATIONS OF THE Instructional Intervention**
Week 14 PHASE THREE Themes • insufficient time to change mindset identified in Phase Two • Interventions generally appreciated, but not enough to sustain behavior change • Collaborative -tool preference	I will say that the videos didn't alter much of my interaction with classmates on either a good or bad side. In fact, it didn't alter my ideas at all. I have a certain way that I have been trained to use these tools by past professors and I guess the Phases weren't enough for me to change anything. ...using Bb, especially to collaborate, or to enhance communication has not had any major impact, even after looking at the presentation, I've viewed 75% or more in its entirety. Curiosity may have increased, knowing that some functions that are available on Bb haven't been tapped into, but not much action placed behind it. Looking at the tool box in the thread or reply area of Bb can be so overwhelming for me to look at, that I use the most minimal and basic aspects. I feel much more comfortable, as a learner, and subscriber, using communication forms such as Google chat. It incorporates "real time" face-to-face communication, which has the functions of I-messaging, color, imagery, etc. all things mentioned to	Phase Three Exemplar Applications in Theory & In Practice (Best Practices Instruction)

	enhance collaboration. Being that my peers and I, and other students alike, use blackboard for academic reasons, the stigma I see that makes it less appealing, regardless of its awesome functionality is the ability to be more appealing, meaning, making it feel less academic and more social. Understand, that I am well aware the Bb serves academic purposes, but so does Google chat, and other counterparts.	
Notes/Reflections: Phase Three		
This study emphasizes the need for not only micro level shifts in instructional practices & strategies; but mega shifts in our values driven by increasingly responsive educational technology advances considering what is made capable thru our engagement with it as the tool it is. Challenging the Status Quo - I wondered how many of these same participants used personal social media in more than simple textual ways then abandoned the power of dynamic communication techniques in the academic space? This comparison should be drawn in future research. Mega= online course culture Macro= community of learner behaviors Micro= individual learner mindset Mega= global social digital media learning landscape Macro= higher education Micro= online course level		

Week 14 Quantitative. Phase Three gathered quantitative survey data concerning the characteristics of the Advanced Content Editor Discussion Board and Forum features with an emphasis on the Insert/Edit Image function from the BB users (See Appendix F); and, the characteristics of Google Groups and Documents with an emphasis on the Insert Image function in particular for that platform, see Appendix G. The Dasgupta, Granger, & McGarry (2002) TAM questionnaire (Appendices F & G) consisted of 32-questions with a 7-point Likert scale

of Agreement. Administered online at the end of the course (Week 14) the instrument returned results from N=8 respondents. These data were triangulated in a recursive process with the Week 14 reflective journal data for enhanced interpretation. The yield of the Phase Three/Week 14 survey data indicated a mean of 5.42 and 5.03, 5=Slight Agreement on the PU and PEU variables of both platforms. The PUInsertImage and PEUInsertimag function specifically also resulted in approximated slight agreement (Mean 4.53 and 5.22, respectively, 5=slightly agree) from both GG and BB combined. Positive ratings among GG users on the PEU variable proved consistent throughout the DBR study. GG users indicated approximated strong agreement (Mean 6.50≈7=strong agree) on the PEU variable referring to the dynamic editor functions of the Google products of this study. With regard to PEU of the insert function, GG users indicates agreement (Mean=6.25, 6=agree). In stark contrast to the GG and GDocs users, BB users reported indecision on the PEU variable (Mean 4.10, 4=Neither agree nor disagree) in reference to the Blackboard Advanced Content Editor Discussion Board and Forum features. These contrasting results between Google and Blackboard users are of no surprise as Google applications are likely more readily used outside of the academic setting affording users greater tacit knowledge and self-efficacy with their use. Plus, the insert function is a more widely used function whatever the application or platform.

Table 10. Comparison of Descriptive Statistics: Dasgupta, Granger & McGarry (2002) TAM

Statistics

		SS_DBenh	SS_PU	SS_PEU	SS_PUInsertIm age	SS_PEUInsertI mage
N	Valid	6	6	6	6	6
	Missing	0	0	0	0	0
Mean		4.83	5.42	5.03	4.53	5.22
Median		4.63	5.33	5.30	4.42	5.50
Std. Deviation		.993	1.246	1.957	1.600	1.737
Skewness		.662	.140	-.624	-.070	-1.175
Std. Error of Skewness		.845	.845	.845	.845	.845
Minimum		4	4	2	2	2
Maximum		6	7	7	7	7

Frequency Table

SS_DBenh

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	3	50.0	50.0	50.0
	5	1	16.7	16.7	66.7
	5	1	16.7	16.7	83.3
	6	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

SS_PU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	1	16.7	16.7	16.7
	4	1	16.7	16.7	33.3
	5	1	16.7	16.7	50.0
	6	1	16.7	16.7	66.7
	7	1	16.7	16.7	83.3
	7	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

SS_PEU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	16.7	16.7	16.7
	4	1	16.7	16.7	33.3
	4	1	16.7	16.7	50.0
	6	1	16.7	16.7	66.7
	7	1	16.7	16.7	83.3
	7	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

SS_PUInsertImage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	16.7	16.7	16.7
	4	2	33.3	33.3	50.0
	5	1	16.7	16.7	66.7
	5	1	16.7	16.7	83.3
	7	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

SS_PEUInsertImage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	16.7	16.7	16.7
	5	1	16.7	16.7	33.3
	5	1	16.7	16.7	50.0
	6	1	16.7	16.7	66.7
	7	1	16.7	16.7	83.3
	7	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

Statistics

Platform			SS_DBenh	SS_PU	SS_PEU	SS_PUInsertI mage	SS_PEUInser tImage
BB	N	Valid	4	4	4	4	4
		Missing	0	0	0	0	0
	Mean		4.59	5.33	4.30	4.58	4.71
	Median		4.00	5.17	4.10	4.67	4.83
	Std. Deviation		1.188	1.414	2.056	2.062	1.983
	Skewness		2.000	.367	.574	-.234	-.373
	Std. Error of Skewness		1.014	1.014	1.014	1.014	1.014
	Minimum		4	4	2	2	2
	Maximum		6	7	7	7	7
GG	N	Valid	2	2	2	2	2
		Missing	0	0	0	0	0
	Mean		5.31	5.58	6.50	4.42	6.25
	Median		5.31	5.58	6.50	4.42	6.25
	Std. Deviation		.088	1.296	.141	.118	.354
	Minimum		5	5	6	4	6
	Maximum		5	7	7	5	7

Summary

Chapter 4 provided an analysis of adult online student perceptions regarding collaboration technology use following the design, development, implementation, and evaluation of an instructional intervention that initially demonstrated the use of dynamic text editor and multimedia discussion board features in Blackboard & Google Groups. Constant-comparison analysis of reflective journal data triangulated with survey data gathered within a three phase iterative feedback loop resulted in decidedly different instructional interventions at each phase driven by these data. Findings that addressed Research Q1 related to the impact of the instructional intervention on student collaboration technology tool use from Phase One included improved awareness of functions; noted potential for use, but no need for the tools; and perceptions that multimedia functions in discussion boards were nonacademic. Findings by

Phase Two revealed indications of constraints related to Research Q2: Too much work to use; Not academic to use multimedia functions in DB; and Low skill/confidence to attempt use. Indications of enhancements (Research Q3) to their collaboration experiences and tool use included a desire for REAL-TIME collaboration tools; improved remote teaming productivity and time management; transfer of new knowledge to other courses and personal work experiences; greater collaborative document work; and expanded knowledge of advance online functionality found in the university LMS. The evaluation of the Phase Three findings to address Research Q4 revealed: insufficient time to change mindset identified in Phase Two; Interventions generally appreciated, but not enough to sustain behavior change; and, Participants' collaboration tool preferences.

Chapter 5 describes what was learned from the findings over the three phases as well as outlines this design-based research study's: implications for instructional design and further research; acknowledged assumptions and limitations; rationale and significance to instructors, instructional designers, participants as well as future researchers. Finally, I synthesize the yield of this study towards the development of practical contextually sensitive design principles, strategies, or suggestions for online collaboration processes impacted by collaboration technology use.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

The impact of collaboration technology tools in mediating collaboration was explored through the voice of the graduate level adult online learner. A series of instructional screencasts designed to demonstrate and support the use of dynamic text editor functions and multimedia features for authentic collaboration learning tasks and learner-driven discussion board communication in two online discussion forum platforms: Blackboard Learn (BB) and Google Groups (GG) served as the iteratively designed intervention of this design-based research study. Amid the activity system of conditions presented by authentic collaborative learning tasks and human social elements, the goal of this design-based research study was to examine how collaboration might be impacted by the use of dynamic text editor functions and multimedia features in a commonly used collaboration tool: online discussion board. The three-fold purpose of this design-based research study was to: (1) examine the perceptions of adult online participants regarding collaboration technology use and the instructional intervention videos that supported tool use; (2) track the design, development, implementation, and evaluation of an instructional intervention that first demonstrated the use of dynamic text editor and multimedia features in BB & GG; and, (3) determine the impact of the instructional intervention on our educational problem identified as a behavior: organic learner-driven online discussion board collaboration. The first chapter of this design-based research study identified the disconnect between 21st century workplace collaboration fluency expectations and sustained use of collaboration technology for learning as integrated by instructional designers or practiced by participants in academia particularly in higher education. The literature review called for more social constructivist descriptive research within authentic contexts to examine the factors

concerning social cognition, task context or pedagogy, and technology integration that are often the source of educational problems with collaborative learning. Chapter Three described an overview of this design-based research study's methodology to include the: (a) rational for design-based research; (b) research design; (c) participants, setting and sampling; (d) data collection sources and analysis methods; (e) data collection instrumentation; and, (f) design project timeline. Chapter Four provided an analysis of adult online learners' qualitative and quantitative data regarding their collaboration technology use following the design, development, implementation, and evaluation of an instructional intervention that initially demonstrated the use of dynamic text editor and multimedia discussion board features in Blackboard & Google Groups. The purpose of Chapter Five is to synthesize my findings over the three phases towards answering the research questions and formulating practical contextually sensitive design principles, strategies, or suggestions for online collaboration processes impacted by collaboration technology use. Implications for instructional design and further research; acknowledgement of this design-based research study's assumptions and limitations; rationale and significance to instructors, instructional designers, learners as well as future researchers will also be found in this chapter. The following research questions guided this study:

Q1. How does an instructional intervention in the use of collaboration technology influence collaboration experiences?

Q2. How do participants perceive their collaboration experience is constrained using collaboration technology?

Q3. How do participants perceive their collaboration experience is enhanced using collaboration technology?

Q4. Does the iterative process of this design-based research study impact participants perceptions of collaboration?

This design-based research study examined the perceptions of adult online participants regarding the impact of instructional interventions designed to support their collaboration processes in three iterative design phases: Phase One/Week 5; Phase Two/Week 9; and, Phase Three/Week 14. At each phase, participants' qualitative journal data and quantitative survey data triangulated with cooperating instructors' data generated through email correspondence. The Phase One/Week 5 intervention presented as a series of live-action screencast video tutorials that demonstrated how to locate and use dynamic Advanced Content Editor discussion board features of Blackboard Discussion Forums, Google Discussion Groups, and Google Documents for enhanced online collaboration. Phase One/Week 5 screencasts were embedded in each course's LMS as just-in-time support throughout the span of this study. The subsequent instructional interventions underwent the following iterative design changes in response to my interpretation of participants' needs per their qualitative journal data and quantitative survey data: at Phase 2, a socio-technical motivational videos\was designed to encourage spontaneous ubiquitous use of the features; and, by Phase 3, a video presentation was designed to extol research-based principles, theories, and exemplars toward dynamic communication for online collaboration in higher education and the instructional design workplace beyond.

Research Question 1. How does an instructional intervention in the use of collaboration technology influence collaboration experiences? Overall, the instructional interventions did not impact collaboration experiences as evident by the lack of self-reported demonstration of active student-driven tool use for enhanced collaboration processes. Throughout the study, however, participants indicated increased awareness of the functions and demonstrated deep

reflection about the potential of the tools for meaning making across diversities of culture, age, gender, and ability. Participants overall expressed appreciation for exposure to this new information, yet many students had not found occasion to use the dynamic Advanced Content Editor discussion board features for collaboration tasks whether instructor-led by course tasks or student-driven by information sharing. The Perceived Ease of Use (PEU) variable measured by all three survey instruments indicated consistent high mean values of agreeability. Was this a direct impact of my instructional screencast tutorials? I think so. Tutorials modeled by a more knowledgeable other quite regularly give a perception lending to ease of use. Perceived Usefulness waned likely in direct relationship with other mediating factors anchored in the students mindset or

> "an implied relationship between the division of labor and the worker is mediated by the worker's perception of the role affecting his or level of participation; and an implied relationship exists between rules and the activity/object, and is "mediated by the cultural setting and social context in which the activity occurs" (Boileau, 2011, 50).

Research Question 2. How do participants perceive their collaboration experience is constrained using collaboration technology? A critical constraint was a prevailing perception among participants that use of the dynamic Advanced Content Editor discussion board features in discussion posts were nonacademic. Thinking about Principles of UDL, color should not be used alone to convey meaning but be paired with a symbol (e.g., consideration toward the color blind and to support memory). Color text has professional and academic application for differentiating items in a list; while using emoticons can assure that friendly comments are communicated as such. There was sentiment related to a lack of technological self-efficacy or low skill/confidence towards appropriate use of the tools for academic purposes. Others simply

felt that using dynamic Advanced Content Editor discussion board features required too much work for little value (grade) so they were unwilling to offer the time to the endeavor. It is conceivable that the combination of new information conveyed by my research and new information introduced by their course content increased their cognitive load. Coursework expectations had increased by Week 9 for the participants in all of the courses. Further, it is a truth that the act of incorporating diverse strategies may be time-consuming-- pairing audio w/visual; text w/video; or graphs, charts, drawings, photos with text. I began to wonder about the demographic makeup of my purposeful sample of online participants. Were they nontraditional participants? Did this make a difference? Time-constraints of this design-based research study did not permit the potential of IRB delays to add demographic data requests. Instead, I communicated with my instructors for demographic insights. Most reported that their courses consisted of students with general demographics: Masters students, PhD students and Ed Specialist students remotely located.

Research Question 3. How do participants perceive their collaboration experience is enhanced using collaboration technology? The data offered evidence that participants might use the dynamic Advanced Content Editor discussion board features in other courses. Increased awareness of the functions spurred interest among some participants to challenge their teammates to start using the tools. I believe participants were imparted food for thought, encouraged, or even inspired; but, I am not hopeful for major transformations or manifestations of actionable change unless it be situated by deliberate instructional design or direct mediation by the community of online learners. Student 6, Line 58: "Curiosity may have increased, knowing that some functions that are available on Bb haven't been tapped into, but not much action placed behind it." The students who did engage with the collaboration technology tools

overwhelmingly reported "it helped convey thoughts and improve the process"; and generally expanded their knowledge about functionalities within their course management system they could consider for future teaming opportunities. My most encouraging response was from Student 39, Line 254 I've never seen a class have videos like these before only just the basic help pages. I hope that this starts a trend. I think students would get a lot more out of the discussion boards if they had a more in-depth knowledge of what all they could do."

Research Question 4. Does the iterative process of this design-based research study impact participants perceptions of collaboration? As graduate instructional design students, participants became quite reflective about recognizing what dynamic organic student-driven collaboration was and was not. Many participants offered their suggestions for improved collaboration as end-users within the university's learning management system (i.e., upgrade communication system: instant messaging option in BB, reduce cognitive load: streamline tools required for course--too many tools available). To draw meaning from these data further, it would appear that acquiring explicit knowledge as conveyed by my Phase One/Week 5 series of live-action screencast video tutorials was beneficial for improved distribution of knowledge about the rarely used dynamic Advanced Content Editor discussion board features, but offered little to no impact on the actual transfer of student-driven tacit knowledge as indicated by self-reported active use of the dynamic Advanced Content Editor discussion board features for collaboration group work or communication within the academic online discussion forum environment. This outcome was curious to me. After all, the very same collaboration technology tools, functions & features are available to participants in the BB/GG platforms are present and readily used in today's ubiquitous social media applications. This revelation leads to my assumption as a researcher that this sample population engaged in some level of informal

collaboration technology use or social media sharing that was natural to their meaning making and information sharing experiences. This also suggested to me that the barriers to dynamic student-driven collaboration may have been beyond the scope of this design-based research study due to its time constraints on completion within the 14-week Fall 2014 semester. Further, Engeström's (1987) Activity Systems Theory lends insight into the dynamic relationships that motivate or impede their interaction with technology and in collaboration with one another.

The results of this design-based research study suggest that inclusive design of online computer supported collaborative learning at the higher education level with emphasis on adult learners should give great consideration towards a social constructivist approach to teaching and learning built on principles of Universal Design for Learning and Adult Learning Theory. Recognizing that learning (and teaching) is culturally situated (Vygotsky, 1978), it would seem that participants of this design base research study each with their multi-varied points of view, traditions and interests have indeed experienced contradictions within several of the activity systems. These six mediating relationships according to Engeström (2001) "are not regarded negatively but rather as opportunities for expansive learning which can occur when instructors adapt their teaching or the adult learners adapt their learning approaches in ways that enable the "objects of activity systems to be shared, or jointly constructed" (Wood, 2015, 2) toward the development of a new dynamic academic online collaborative learning culture of trust-building and info sharing that readily exists in ubiquitous social media networks outside of the realm of academic, yet functions as a channel for informal teaching and learning on a variety of subjects. It seems that the very culture in these nonacademic information sharing networks seems to be motivation enough to overcome resistant mindsets towards such risky expansive collaboration

learning behaviors, activities, and processes. Fascinating! Clearly, other mediating relationships are at work within the presenting activity system.

Implications for Instructional Design

Higher education online learning environments must be deliberately designed toward establishing cultures of collaboration. Knowles (1984) and Bandura (1986) would likely agree that learner cognitive processes would respond within a learning environment that is designed to model purposeful use of collaboration technology that reflect authentic application of situated online collaborative tasks. As an emerging instructional designer keen on the new and emerging technologies, designers should be reminded to take a user-centered approach to the design, development and implementation of interventions for the online environment. The 21st century is a ubiquitous multimedia-driven marketplace. The academic environment-- both face-to-face and online-- in stark contrast is all too often utilitarian and lifeless. Hence, the results of this design-based research study that pointed to a student mindset that constrained dynamic academic student-driven collaboration and collaboration tool use not unlike that found in social media networks so commonly used today for informal social learning and content sharing.

Online education is believed to be a cost effective method of instructional delivery to counter dwindling education funding. Purposeful design of tasks for and content delivered in the online learning environment applying principles of Universal Design for Learning (UDL) could support online collaborative learning by meeting the needs of a larger span of learners. Leveraging collaboration tools familiar to them may motivate learners to persist in sharing their construction of knowledge. The UDL framework is grounded in three principles: Multiple means of representation – using a variety of methods to present information, provide a range of

means to support; Multiple means of action and expression – providing learners with alternative ways to act skillfully and demonstrate what they know; Multiple means of engagement – tapping into learners' interests by offering choices of content and tools; motivating learners by offering adjustable levels of challenge. Designers would do well to apply UDL principles as the norm for the online course creation. Through deliberate curriculum design, learners with varying skills and abilities would be accommodated, and the shift toward dynamic communication in online discussion forums could begin for richer collaboration. This action might encourage a culture of trust, broad collaboration, and sharing among learners. Changing an adult learner's mindset may take significant time as illustrated by the findings of this study; but, only because a collaborative culture was not established by deliberate course design, directly modeled, and required in course tasks. The iterative journey of agile instructional design (Clark and Gottfredson, 2009) in practice would likely find appropriateness toward determining what contextual set of variables work in designing for collaboration in online learning environments. Determining how to evaluate systems of online collaboration is complex. AGILE instructional design requires an infrastructure of continuous formative and summative assessment with valid and reliable measurement tools to triangulate data from a variety of sources to draw conclusions toward actionable design decisions aligned with the evaluation's purpose or mission.

Implications for Further Research

Much computer supported collaborative learning (CSCL) literature has a focus on the technology tool. While this study began in a similar fashion, the nature of the design-based research methodology allowed for new insights to emerge from the data; namely, the need for mindset shifts established by deliberate attempts to define and create a sustainable online collaborative culture. Truly, "The learning community is the vehicle through which learning

occurs online… Without the support and participation of a learning community, there is no online course" (Palloff and Pratt, 1999, p. 29). Given the varied determinants of a research topic as dynamic as online collaboration, I have concluded further research examining collaboration technology use of adult learners in online settings should focus on designing the learning environment to develop and support the habits of mind or the learning mindset (Clark and Gottfredson, 2009) required of a community of learners for rich academic collaboration. Habits of Mind are a dynamic human value judgments composed of "many skills, attitudes, cues, past experiences, and proclivities" that manifest in patterns of behavior in different situations (Costa and Kallick, 2008, p. 17). Motivated by the result of this study, I would encourage further research that might compare social media collaboration against academic collaboration to isolate the contextual cues and patterns that indicate dynamic collaborative online behaviors. Variables to investigate might include the Dimensions of the Habits of Mind.

Value - Choosing to employ a pattern of intellectual behaviors rather than other, less productive patterns.

Inclination - Feeling the tendency to employ a pattern of intellectual behaviors.

Sensitivity - Perceiving opportunities for, and appropriateness of, employing the pattern of behaviors.

Capability - Possessing the basic skills and capacities to carry through with the behaviors.

Commitment - Constantly striving to reflect on and improve performance of the pattern of intellectual behaviors.

Policy: Making it a policy to promote and incorporate the patterns of intellectual behaviors into actions, decisions, and resolutions of problematic situations. (Costa and Kallick, 2008, p. 17)

Future research should consider incorporating social learning analytics found aboard learning management systems for data gathering methods and triangulation of data in examination a single function or feature of a dynamic collaboration technology tool. The integration of such educational big data mechanisms could greatly assist in making invisible collaboration processes known and lend authentic real-time data necessary for meaningful iterative agile instructional design decision-making. Further, it is my contention that a design-based research approach makes research actionable grounded in emerging theory and should find suitability in a variety of education reform initiatives" with consideration towards research goals (and researchers), design goals (and designers), and practice goals (and practitioners)" (Joseph, 2004, p.241).

Assumptions

I assumed that the adult learners enrolled in graduate level Instructional Technology courses were active participants of a ubiquitous social networked 21st century culture (Rogers, 1962; 1983; 2003) who themselves through collaboration might reimagine the use technology tools for academic purpose. I leaned to heavily on a social constructivist approach with emphasis on allowing my adult learners too much choice with regard to the Advanced Content Editor Discussion Board function and features for collaboration and too little situated problem centered instruction (See Implications For Future Research). As such, many of my assumptions entering into this research study were with regard to my participants' social learning characteristics to include a mindset for collaboration, and a ubiquitous sense of technological self-efficacy. I felt that being graduate students my participants would: 1) possess a working knowledge of data sharing collaboration technologies be they audio, video, or text; 2) have reliable internet connectivity and some device through which to access it; and, 3) fully incorporate the dynamic text editor functions and multimedia features in a formal and particularly informal manners for

social sharing and collaborative learning once awareness was established. Again, this notion was a reflection of my overriding assumption that my participants engaged in ubiquitous use of social media networks outside of the academic setting. To counter these assumptions, I purposed to design, develop, and implement an instructional intervention aligned with just in time supplantive strategies to support novices in learning and applying the collaboration tools to task (Smith and Ragan, 1999) while incorporating generative strategies (Wittrock, 1974) within collaborative activity designed to provide meaningful motivation (Knowles, 1984) toward the use of tools for the duration of the study.

Limitations of the Study

The acknowledged limitations of this design-based research study were a direct result of its longitudinal effects and attrition. Design-based research methodology requires collaboration with practitioners in the evaluation of complex problems in authentic contexts (Brown, 1992; Collins, 1992). It is not uncommon for professors to learn what course they are to teach just months before the course is to convene or for an adjunct professor to assume an existing course of another professor. As such, upon IRB approval, my collaboration and communication with my participating online professors was immediate, and ongoing towards the design and implementation of an appropriate instructional intervention aligned with a shared learning outcome born from the practitioners' shared educational problem. The attrition that diminished the confidence of my Weeks 9 and 14 quantitative survey data was likely a function of inopportune timing. The timing of my Weeks 9 and 14 data collection found competition with a spike of coursework. The result proved to be an opportunity cost to my data collection in that participants were faced with the choice between voluntary participation in my DBR study and the demands of their required course workload. Thankfully, the survey instrument was designed

to reinforce metrics investigated by the survey administered prior, such that some strong participant indications could be drawn while discounting weaker data. These data were triangulated with rich, consistent, and candid primary qualitative source data from my participating participants and instructors to afford overall reliability.

Rationale and Significance

The responsiveness of higher education courses to pedagogical shifts in instructional design unique to online environments is a defining mark of quality online teaching and learning experiences. Communication and collaboration technologies are becoming increasingly interactivity with may challenge existing principles of Andragogy and the assumptions of Adult Learning Theory (Knowles, 1984; Kearsley, 2010). This challenge encouraged the rationale driving this study that was to support the use of collaboration technology to promote collaboration in online courses in order to identify indications of constraint and enhancement useful for future design of quality online teaching and learning experiences.

The yield of my design-based research study has practical significance to instructors, instructional designers, and participants as well as scholarly significance to future researchers. Instructors, instructional designers, and participants will benefit from usable knowledge from this study as they navigate decisions centered upon identifying their collaboration needs and leveraging ever increasing interactive and integrated collaboration technology tools to mediate collaboration outcomes and authentic academic tasks of online courses. This descriptive design-based research development study will contribute to the body of scientific knowledge by yielding procedural and substantive instructional design principles (van den Akker, 1999) or the development of an innovative intervention relevant for educational practice (Plomp, 2013). Procedural design principles outline the characteristics of the design approach; while, substantive

design principle describe the characteristics of the intervention itself (Plomp, 2013). This study may also find significance toward future research in the construction of local instructional strategies around the impact of collaboration technology on collaboration (Gravemeijer & Cobb, 2006). This design-based study condensed to a design principle would be the following: Collaboration may best be facilitated by online learning environments which establish a culture of dynamic communication for collaboration by leveraging technology tools through deliberate Universal Design for Learning.

Conclusion

Instructional designers in their professional roles, and as students of their craft, must function as agents of transformative online collaborative learning change in higher education by leveraging collaboration technology tools to facilitate dynamic systems of engagement. The online teaching and learning model in all its configurations will likely increase at all levels of academia. Guided by social cognitive theory from a constructivist teaching and learning perspective or epistemology that is largely student-centered, instructional designers who can incorporate the tools of effective collaboration engagement will likely propose, design and develop instructional solutions that should begin to shift the mindset and corresponding actions of adult learners such that they become producers of content or construct knowledge through rich collaboration. Pedagogical paradigm shifts in higher education should include alignment with progressive Organizational Development research that suggests a shift toward conceptualizing collaboration as a mindset and an organizational orientation (Bushe & Marshak, 2014) that must be given deliberate design attention for 21st century organizational growth and productivity.

APPENDIX A

WAYNE STATE UNIVERSITY

CONCURRENCE OF EXEMPTION

To: Kecia Waddell
Teacher Education

From: Dr. Deborah Ellis *a. Mosley - Williams*
for Chairperson, Behavioral Institutional Review Board (B3)

Date: July 10, 2014

RE: IRB #: 063414B3X

Protocol Title: Design-Based Research Study Examining the Impact of Collaboration Technology Tools in Mediating Collaboration

Sponsor:

Protocol #: 1406013128

The above-referenced protocol has been reviewed and found to qualify for **Exemption** according to paragraph #1 of the Department of Health and Human Services Code of Federal Regulations [45 CFR 46.101(b)].

- Revised Social/Behavioral/Education Exempt Protocol Summary Form (received in the IRB Office 6/21/2014)
- Revised Protocol - Dissertation Proposal (received in the IRB Office 6/21/2014)
- Research Information Sheet (dated 6/15/2014)
- Recruitment Scripts (2) - Student Script and Student Script for Journals
- Data Collection Tools: For participant use - Technology Acceptance Model (TAM) Davis survey, TAM Extended survey and TAM Adapted survey. Learner's Reflective Journal Prompts. For researcher's use - Socio-technical Graphic Organizer Planning Tool and Research-Designer's Reflective Journal Prompts

This proposal has not been evaluated for scientific merit, except to weigh the risk to the human subjects in relation to the potential benefits.

- Exempt protocols do not require annual review by the IRB.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://irb.wayne.edu/policies-human-research.php).

NOTE: Forms should be downloaded from the IRB Administration Office website http://irb.wayne.edu at each use.

APPENDIX B

Impact of Collaboration Technology Tools in Mediating Collaboration

Research Informed Consent

Title of Study: Design-Based Research Examining the Impact of Collaboration Technology Tools in Mediating Collaboration

Principal Investigator (PI):   Kecia J. Waddell
                               Wayne State University - College of Education
                               Instructional Technology, Admin & Organizational Studies
                               586.372.8412

Purpose

You are being asked to be in a research study to examine your perceptions of the instructional collaboration technology intervention you used for tasks in this course designed to transform collaborative learning experiences enhanced by technology. This study is being conducted at Wayne State University. **Please read this form and ask any questions you may have before agreeing to be in the study.**

In this research study, collaboration will be examined by exploring the perceived impact of an instructional intervention that coaches the use of collaboration technology for authentic collaboration learning tasks. The goal is to examine how collaboration technology tools are perceived to mediate collaboration amid the dynamics presented by collaborative learning tasks and the human social element.

Study Procedures

If you agree to take part in this research study, you will be asked to volunteer your perceptions about the design and development of the collaboration tool training as well as your feelings, experiences, and use of the collaboration technology for collaborative learning tasks in this course.

1. After engaging in a collaboration technology training intervention and using a collaboration technology in collaborative learning tasks required in this course, you will reflect on your experiences as prompted by a reflection question in your course journals. 2. 2. Then you will be contacted via email during Week 5, Week 9, and Week 15 requesting your participation to complete a 15 minute anonymous online survey. The Week 5 survey will ask questions pertaining to your perceptions of the collaboration technology tool intervention usefulness and ease of use. The Week 9 survey will focus on questions pertaining to your intended use, attitude toward use, and actual use of the collaboration

technology for course tasks. The survey during Week 14 will ask questions to determine your Perceived Ease of Use and Perceived Usefulness of the collaboration technology tool having experienced redesigns motivated by your feedback from the weeks prior.

3. Upon consent to share your journal reflections with the researcher, the researcher will delete or mask the identity of all journal data sets. Journal data will include no identifiers, but be condensed to themes and codes; all surveys will be anonymous

Benefits

The possible benefit to you for taking part in this research study is critical reflection upon collaboration and acquisition of knowledge, skills, and tools you can use to facilitate your own collaborative learning experiences mediated by collaboration technology--personally and academically. Additionally, information from this study may benefit other people now or in the future.

Risks

There are no known risks at this time to participation in this study.

Study Costs

Participation in this study will be of no cost to you.

Compensation

You will not be paid for taking part in this study.

Confidentiality

All information collected about you during the course of this study will be kept confidential to the extent permitted by law. You will be identified in the research records by a code name or number. Information that identifies you personally will not be released without your written permission. However, the study sponsor, the Institutional Review Board (IRB) at Wayne State University, or federal agencies with appropriate regulatory oversight [e.g., Food and Drug Administration (FDA), Office for Human Research Protections (OHRP), Office of Civil Rights (OCR), etc.) may review your records.

When the results of this research are published or discussed in conferences, no information will be included that would reveal your identity.

Voluntary Participation/Withdrawal

Taking part in this study is voluntary. You have the right to choose not to take part in this study. You are free to only answer questions that you want to answer. You are free to withdraw from participation in this study at any time. Your decisions will not change any present or future relationship with Wayne State University or its affiliates, or other services you are entitled to receive.

The PI may stop your participation in this study without your consent. The PI will make the decision and let you know if it is not possible for you to continue. The decision that is made is to

protect your health and safety, or because you did not follow the instructions to take part in the study

Questions

If you have any questions about this study now or in the future, you may contact Kecia J. Waddell or one of her research team members at the following phone number 586.872.8412. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

APPENDIX C

Recruitment Scripts

<u>**Student Script**</u>

I have been approved by the HIC office to conduct a study called: Design-Based Research Examining The Impact Of Collaboration Technology Tools In Mediating Collaboration. I am asking you to volunteer to be a participant in this study by completing 3 anonymous online surveys over the course of the next 15 weeks: Week 5, one during Weeks 9 and 14 with a digital journal request at the completion of the course. Each online survey will take approximately 15 minutes to complete. Your participation and feedback is valuable. I ask that you complete each survey within seven days of receiving this email. You will find a full information sheet about the study at the link below.

Please follow this link to the survey: [insert hyperlink here]

Thanks in advance for your participation.

Kecia J. Waddell

Additional Recruitment Script for End of Course request to Journals

<u>**Student Script for Journals**</u>

I have been approved by the HIC office to conduct a study called Design-Based Research Examining The Impact Of Collaboration Technology Tools In Mediating Collaboration. Now that the instructor has submitted your final grade for the course, I am asking you to volunteer to be a participant in this study by providing the instructor access to your digital journal. Changing the access permissions to the digital journal will take approximately 5 minutes to complete. Your decision to volunteer to participate in this study must be made within five days of receiving this email. During those 5 days you need to do the following:
- Check the permission settings of your journal. Ask yourself:
  - Does the instructor have access to my journal?
    - If yes,
      - And you want to volunteer in the study, do nothing
      - And you do not want to volunteer in the study, remove the instructor from the shared permissions.

- If no,
    - And you want to volunteer in the study, add the instructor to the shared permissions
    - And you do not want to volunteer in the study, do nothing.

On the 6th day after receiving this email the instructor will download all student journals of which he/she has access to and will remove any identifying information. At that time the instructor will notify you via email that your journal has been saved elsewhere and you may now proceed to changing the permission settings as you wish.

I value your participation, and ask that you check and change the permission settings of your journal within five days of receiving this email. You can find a full information sheet about the study by clicking on the link.

Thanks in advance for your participation.
Kecia J. Waddell

APPENDIX D

The Technology Acceptance Model (Davis, 1989)

DIRECTIONS: For each of the following statements, please indicate your level of agreement on a 7-point scale (1=strongly disagree and 7=strongly agree).

PERCEIVED USEFULNESS

Strongly agree	Agree	Partially agree	Neither agree nor disagree	Partially disagree	Disagree	Strongly disagree
7	6	5	4	3	2	1

1. Using [Insert collaboration technology tool] in my job would enable me to accomplish tasks more quickly.

2. Using [Insert collaboration technology tool] would improve my job performance.

3. Using [Insert collaboration technology tool] in my job would increase my productivity.

4. Using [Insert collaboration technology tool] would enhance my effectiveness on the job.

5. Using [Insert collaboration technology tool] would make it easier to do my job.

6. I would find [Insert collaboration technology tool] useful in my job.

PERCEIVED EASE OF USE

Strongly agree	Agree	Partially agree	Neither agree nor disagree	Partially disagree	Disagree	Strongly disagree
7	6	5	4	3	2	1

7. Learning to operate [Insert collaboration technology tool] would be easy for me.

8. I would find it easy to get [Insert collaboration technology tool] to do what I want it to do.

9. My interaction with [Insert collaboration technology tool] would be clear and understandable.

10. I would find [Insert collaboration technology tool] to be flexible to interact with.

11. It would be easy for me to become skillful at using [Insert collaboration technology tool]

12. I would find [Insert collaboration technology tool] easy to use.

Note: Insert collaboration technology tool = discussion group multimedia functions

APPENDIX E

TAM Extended to Account for Social Influences (Malhotra & Galletta, 1999)

Scales For Measuring Various Constructs

Perceived Ease of Use	Very likely (VL)		Likely (L)		Unlikely (U)		Very Unlikely (VU)
1. Learning to operate discussion forum multimedia functions is easy for me.	7	6	5	4	3	2	1
4. I find discussion forum multimedia functions to be flexible to interact with.	7	6	5	4	3	2	1
2. I find it easy to get discussion forum multimedia functions to do what I want to do.	7	6	5	4	3	2	1
5. It is easy for me to become skillful at using discussion forum multimedia functions.	7	6	5	4	3	2	1
6. I find discussion forum multimedia functions easy to use	7	6	5	4	3	2	1
3. My interaction with discussion forum multimedia functions is clear and understandable.	7	6	5	4	3	2	1

Perceived Usefulness	Very likely (VL)		Likely (L)		Unlikely (U)		Very Unlikely (VU)
8. Using discussion forum multimedia functions would improve my job performance.	7	6	5	4	3	2	1
7. Using discussion forum multimedia functions in my job would enable me to accomplish tasks more quickly.	7	6	5	4	3	2	1
12. I would find discussion forum multimedia functions useful in my job.	7	6	5	4	3	2	1
9. Using discussion forum multimedia functions in my job would increase my productivity.	7	6	5	4	3	2	1
10. Using discussion forum multimedia functions would enhance my effectiveness on the job	7	6	5	4	3	2	1
11. Using discussion forum multimedia functions would make it easier to do my job.	7	6	5	4	3	2	1

Actual Use

2. How many <u>times</u> do you believe you use discussion forum multimedia functions during a week?

not at	less than once a	about once a	2 or 3 times a	several times a	about once a	several times each

all	week	week	week	week	day	day

3. How many hours do you believe you use discussion forum multimedia functions every week?

Less than 1 hr.	Between 1-5 hrs.	Between 5-10 hrs.	Between 10-15 hrs.	Between 15-20 hrs.	Between 20-25 hrs.	More than 25 hrs.

1. How frequently do you believe you use discussion forum multimedia functions?

extremely frequent	quite frequent	slightly frequent	neither	slightly infrequent	quite infrequent	extremely infrequent

Behavioral Intentions	Strongly agree(SA)		Agree (A)		Disagree (D)		Strongly disagree (SD)
2. I intend to use discussion forum multimedia functions for communicating with others.	7	6	5	4	3	2	1
4. I intend to use discussion forum multimedia functions frequently in my job.	7	6	5	4	3	2	1
1. I intend to use discussion forum multimedia functions in doing my job.	7	6	5	4	3	2	1
3. I intend to use discussion forum multimedia functions for planning meetings.	7	6	5	4	3	2	1

Attitude Toward Using

Please check (X) your response about using discussion forum multimedia functions on the following four scales based upon what you think to be the most appropriate response for filling in the blank.

All things considered, my using discussion forum multimedia functions in my job is a(n) _____ idea.

3. Wise -Foolish

extremely wise	quite wise	slightly wise	neither	slightly foolish	quite foolish	extremely foolish

4. Negative - Positive

extremely negative	quite negative	slightly negative	neither	slightly positive	quite positive	extremely positive

2. Harmful - Beneficial

extremely harmful	quite harmful	slightly wise	neither	slightly beneficial	quite beneficial	extremely beneficial

1. Good - Bad

extremely good	quite good	slightly good	neither	slightly bad	quite bad	extremely bad

Measurement Scales for Psychological Attachment

Internalization	Strongly agree(SA)		Agree (A)		Disagree (D)		Strongly disagree (SD)
2. What the use of multimedia communication functions stands for is important for me.	7	6	5	4	3	2	1
1. The reason I prefer multimedia communication functions is because of the underlying organizational values.	7	6	5	4	3	2	1
3. I like using multimedia communication functions primarily based on the similarity of my values and the organizational values underlying its use.	7	6	5	4	3	2	1
Identification	Strongly agree(SA)		Agree (A)		Disagree (D)		Strongly disagree (SD)
6. I feel a sense of personal ownership about the use of multimedia communication functions.	7	6	5	4	3	2	1
5. I talk up the use of multimedia communication functions to my colleagues as a great use.	7	6	5	4	3	2	1
4. I am proud about using multimedia communication functions	7	6	5	4	3	2	1
Compliance	Strongly agree(SA)		Agree (A)		Disagree (D)		Strongly disagree (SD)
9. My private views about use of multimedia communication functions are different than those I express publicly.	7	6	5	4	3	2	1
7. Unless I'm rewarded for using discussion forum multimedia functions in some way, I see no reason to spend extra effort in using it. 10. In order for me to get rewarded in my job, it is necessary to use multimedia communication functions.	7	6	5	4	3	2	1
8. How hard I work on using multimedia communication functions is directly linked to how much I am rewarded.	7	6	5	4	3	2	1

APPENDIX F

Adaptation of the Dasgupta, Granger, & McGarry (2002) Davis' TAM Questionnaire: BB users

Please circle the one selection that most represents your perspective for the question.
To what extent would you characterize Google Groups and Documents functions as having the ability to:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1. Give immediate and timely feedback	1	2	3	4	5	6	7
2. Transmit a variety of different cues beyond the explicit message (nonverbal cues)	1	2	3	4	5	6	7
3. Tailor messages to your own or other personal circumstances	1	2	3	4	5	6	7
4. Use rich and varied language	1	2	3	4	5	6	7
5. Provide immediate feedback	1	2	3	4	5	6	7
6. Convey multiple types of information (verbal and nonverbal)	1	2	3	4	5	6	7
7. Transmit varied symbols (words, number, pictures):	1	2	3	4	5	6	7
8. Design messages to your own or others' requirements	1	2	3	4	5	6	7
9. Using Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) would enable to me accomplish learning more quickly	1	2	3	4	5	6	7
10. Using Blackboard Advanced Content Editor	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
Features (i.e., any combination of text, audio, images, animation, or video) would improve my educational performance							
11. Using Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) would increase my learning productivity	1	2	3	4	5	6	7
12. Using Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) would enhance my learning effectiveness	1	2	3	4	5	6	7
13. Using Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) makes learning easier for me	1	2	3	4	5	6	7
14. I would find Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) useful in all my higher education learning experiences:	1	2	3	4	5	6	7
15. Learning to operate Blackboard Advanced Content Editor	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
Features (i.e., any combination of text, audio, images, animation, or video) was easy for me							
16. My interaction with Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) is clear and understandable	1	2	3	4	5	6	7
17. I find Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) to be flexible to interact with	1	2	3	4	5	6	7
18. It would be easy for me to become skillful at using Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video)	1	2	3	4	5	6	7
19. I would find Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images, animation, or video) easy to use	1	2	3	4	5	6	7
20. The use of Blackboard Advanced Content Editor Features (i.e., any combination of text, audio, images,	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
animation, or video) keeps me totally absorbed in the task							
Focusing on Insert/Edit Image:							
21. Using Blackboard's Insert/Edit Image function would enable me to accomplish learning more quickly	1	2	3	4	5	6	7
22. Using Blackboard's Insert/Edit Image function would improve my educational performance	1	2	3	4	5	6	7
23. Using Blackboard's Insert/Edit Image function would increase my learning productivity	1	2	3	4	5	6	7
24. Using Blackboard's Insert/Edit Image function would enhance my learning effectiveness	1	2	3	4	5	6	7
25. Using Blackboard's Insert/Edit Image function makes learning easier for me	1	2	3	4	5	6	7
26. I would find Blackboard's Insert/Edit Image function useful in all my higher education learning experiences	1	2	3	4	5	6	7
27. Learning to operate Blackboard's Insert/Edit Image function was easy for me	1	2	3	4	5	6	7
28. My interaction with Blackboard's Insert/Edit Image function is clear and understandable	1	2	3	4	5	6	7
29. I find Blackboard's Insert/Edit Image	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
function to be flexible to interact with							
30. It would be easy for me to become skillful at using Blackboard's Insert/Edit Image function	1	2	3	4	5	6	7
31. I would find Blackboard's Insert/Edit Image function easy to use	1	2	3	4	5	6	7
32. The use of Blackboard's Insert/Edit Image function keeps me totally absorbed in the task	1	2	3	4	5	6	7

APPENDIX G

Adaptation of the Dasgupta, Granger, & McGarry (2002) Davis' TAM Questionnaire: GG

users

Please circle the one selection that most represents your perspective for the question.
To what extent would you characterize Google Groups and Documents functions as having the ability to:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1. Give immediate and timely feedback	1	2	3	4	5	6	7
2. Transmit a variety of different cues beyond the explicit message (nonverbal cues)	1	2	3	4	5	6	7
3. Tailor messages to your own or other personal circumstances	1	2	3	4	5	6	7
4. Use rich and varied language	1	2	3	4	5	6	7
5. Provide immediate feedback	1	2	3	4	5	6	7
6. Convey multiple types of information (verbal and nonverbal)	1	2	3	4	5	6	7
7. Transmit varied symbols (words, number, pictures):	1	2	3	4	5	6	7
8. Design messages to your own or others' requirements	1	2	3	4	5	6	7
9. Using Google Groups and Documents functions would enable to me accomplish learning more quickly	1	2	3	4	5	6	7
10. Using Google Groups and Documents functions would improve my educational performance	1	2	3	4	5	6	7
11. Using Google Groups	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
and Documents functions would increase my learning productivity							
12. Using Google Groups and Documents functions would enhance my learning effectiveness	1	2	3	4	5	6	7
13. Using Google Groups and Documents functions makes learning easier for me	1	2	3	4	5	6	7
14. I would find Google Groups and Documents functions useful in all my higher education learning experiences:	1	2	3	4	5	6	7
15. Learning to operate Google Groups and Documents functions was easy for me	1	2	3	4	5	6	7
16. My interaction with Google Groups and Documents functions is clear and understandable	1	2	3	4	5	6	7
17. I find Google Groups and Documents functions to be flexible to interact with	1	2	3	4	5	6	7
18. It would be easy for me to become skillful at using insert collaboration tool name/type]	1	2	3	4	5	6	7
19. I would find Google Groups and Documents functions easy to use	1	2	3	4	5	6	7
20. The use of Google Groups and Documents functions keeps me totally absorbed in the task	1	2	3	4	5	6	7
Focusing on Insert Image function:							

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
21. Using Google's Insert Image function would enable me to accomplish learning more quickly	1	2	3	4	5	6	7
22. Using Google's Insert Image function would improve my educational performance	1	2	3	4	5	6	7
23. Using Google's Insert Image function would increase my learning productivity	1	2	3	4	5	6	7
24. Using Google's Insert Image function would enhance my learning effectiveness	1	2	3	4	5	6	7
25. Using Google's Insert Image function makes learning easier for me	1	2	3	4	5	6	7
26. I would find Google's Insert Image function useful in all my higher education learning experiences	1	2	3	4	5	6	7
27. Learning to operate Google's Insert Image function was easy for me	1	2	3	4	5	6	7
28. My interaction with Google's Insert Image function is clear and understandable	1	2	3	4	5	6	7
29. I find Google's Insert Image function to be flexible to interact with	1	2	3	4	5	6	7
30. It would be easy for me to become skillful at using Google's Insert Image function	1	2	3	4	5	6	7
31. I would find Google's Insert Image function easy to use	1	2	3	4	5	6	7
32. The use of Google's	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
Insert Image function keeps me totally absorbed in the task							

APPENDIX H

Socio-technical Graphic Organizer Planning Tool

Course Name	Existing scenario (Statement of Education Problem)
Vision/Goals/Values	
Reason for vision/goal/value	
How collaboration presently work in the course	
People (Learner characteristics)	
Infrastructure for Collaboration	
Existing Technology	
Course Culture around Collaboration	
Processes/practices	
Benefits	
Costs	
Risks	

Metric to improve	Alternative (Aimed to overcome issue)

APPENDIX I

Dynamic Researcher to Instructor Email Correspondences using Google Groups INBOX
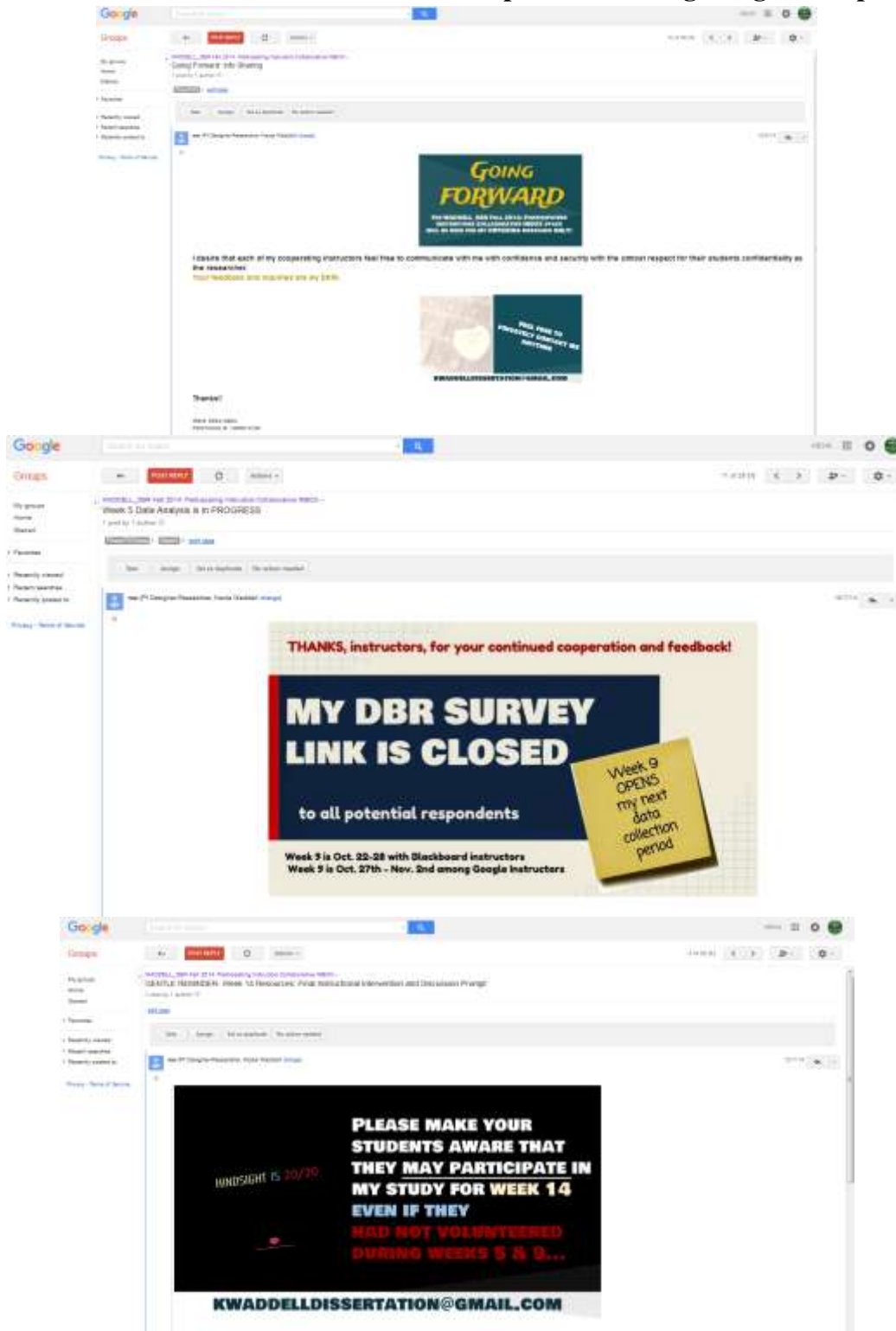
APPENDIX J

Reflective Journal Prompts

Research-Designer's Reflective Journal Prompts

For each phase:
- Describe the event or situation in detail.
- Reflect on your feelings, and analyze what was significant about event or situation.
- Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of the event or situation.
- Explain how the event or situation will influence future design decisions.

Learner's Reflective Journal Prompts

WEEK 5: An instructional intervention in the use of [insert collaboration technology name] was designed to you support your collaborative tasks for this course. Reflect and share how the intervention resource and using [insert collaboration technology name] has impacted your collaboration experience. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.

WEEK 9: Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of using the instructional intervention resource and using [insert collaboration technology name] for your most recent collaboration task. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology

WEEK 14: Evaluate how the following changes: [list iterative re-design items] impacted your collaborative experience for better or for worse. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.

APPENDIX K

Raw Phase One/Week 5 Journal Data Aligned with Student

1   It was only a couple years ago that I was introduced to Google Drive. Once I went on there and
2   had experience with it I found it to be an invaluable tool. Like many others my life seems to be
3   hectic with not enough time to do the things I enjoy. It's not always easy for a group that at this
4   stage most likely have kids or careers to meet up to create power points and such. This
5   technology has made it possible to still collaborate with one another and not just talking on a
6   phone and one person doing all the work. Group members can contribute with projects in real
7   time from wherever they are. I know we haven't used it really for collaborating in this class, but
8   at some point I know it will be an effective tool. [Student 1]

9   I watched the videos on using multimedia functions in Google Groups, but based on my past
10   experiences using Googles tools I didn't feel that I learned anything new from them. I could
11   definitely see their value for someone who is newer to the platform, though. I haven't felt like
12   I've used the tools in the most meaningful ways yet; I've used them when required but I'm not
13   really to a point where I've used them organically. I think I'll be able to give better insights to
14   this question after Week 6, when we start working in peer groups. Right now the majority of this
15   course has been student-professor interaction via our reflection journals. [Student 2]

16   I am a second career educator so I had quite a lengthy time between college experiences. When I
17   was in college the first time I remember my college having a computer lab which consisted of 10
18   huge desktop computers that were housed in a tiny room on the top floor of an old building. We
19   didn't use technology too much back them. My second time in college was a little more tech
20   heavy but still not too much. Now that I am a teacher everything is tech. Tech tech tech tech. It
21   gets a little old at times, always being reachable. Our kids are always using technology too so
22   when they are asked to use technology in school for a majority of the time even they get tired of
23   it. After all of that I still, obviously, believe that technology has helped us more that hindered us.
24   I have used the collaboration tools to communicate with other classrooms full of kids from other
25   states. I have been involved with tech heavy conference calls (using Google or some other
26   engine) to make sure that me and my team have the latest up to date research on how to educate
27   students. I have been able to calm an otherwise uncontrollable child by using my "Mommy
28   Cam" idea in kindergarten. Yes, technology has helped me. Now in response to collaborating
29   with my classmates, I have mixed emotions. I actually find it difficult to use technology to
30   actively collaborate with my classmates. I have only done one project like this though so I am
31   holding out hope that the more I do it the better I will like it. As far as the collaborative process, I
32   again find it a difficult process because we are not meeting or even really speaking face to face
33   as I am used to. I understand that I have to grow out of my comfort level but currently it is
34   difficult for me. I do, however, feel there are great collaboration technologies out there that help
35   people do what they need to do regardless of physical location. I love the idea of truly capturing
36   the power of technology for my students and really helping them see just how big the world is
37   and just how much is waiting for them out there. [Student 3]

38   I am enjoying using the Google document to get feedback on my work. At this point, I have not
39   used the Google docs to collaborate with classmates, but I am sure it will be helpful. [Student 4]

40 Instructional intervention has thus far made the collaboration experience easy to deal with. My
41 classmates typically respond or comment within a day of someone posting or submitting an
42 email to the class Google link. By everyone having a Google account, we receive notices from
43 our instructor as soon as they are sent because I personally receive alerts on my smartphone
44 when I get an email to my gmail account. Receiving this notification will allow me to react to
45 changes in the syllabus or new timelines for assignments. In the past I have used Google Drive
46 and Google Hangouts to communicate with my classmates on group projects. This was very
47 beneficial since this class in online and we did not have to drive to campus to meet to work on a
48 project. Google Drive is a fantastic collaboration technology as it allows you to see where others
49 are in a project, which alleviates one from having to send nagging emails to get updates on their
50 status. Multimedia functions are great for this program and could also be beneficial for true
51 online courses if classmates choose to use this resource instead trying to set meeting times
52 outside of class to work on a project. [Student 5]

53 Google Discussion Groups and Google Docs are great tools when there is a need to collaborate
54 remotely. There isn't really a perfect substitute for sitting down in the same room with others,
55 however these tools do allow for live discussion. Another positive aspect is that one can take a
56 little time to think and reflect before sharing. [Student 6]

57 At this point, I have not collaborated with my classmates yet, but I know that we have group
58 assignments coming up in the near future. Using the Introductions discussion board was fun to
59 virtually meet other students in class a bit. The Reflection Journal where we post our responses
60 and Dr. X responds to them and we have an asymmetric dialog is very interesting. It seems to
61 work pretty well for this type of class where there is a lot of creativity and it leaves room for Dr.
62 X to ask follow-up questions, which is nice. The technology itself, Google Drive, is fine. I have
63 been using Google Drive for a while so it was already familiar to me. I had not used the
64 discussion board function before, but I have done discussion boards in other learning
65 management systems, so that concept is familiar to me too. So, no major issues from me
66 regarding the technology we are using for class. [Student 7]

67 The intervention gave me more information than I had before about the different functions that
68 were available to me for collaborating. I have been receiving emails about posts from the
69 discussion board, but had been unaware that I could reply from my inbox. That feature I believe
70 will help with collaboration since many many people now have their email at the fingertips at all
71 time. The conversation will be able to flow and ideas grow by there being less limits on when
72 people are able to reply to each other. I do not have much experience using the multimedia
73 functions yet, but I can see how they would be a great asset in collaboration. The ability to share
74 words, pictures, video, code and so on to be able to have visual instead of just words would
75 increase the connectivity between all parties involved in the collaboration regardless of how far
76 away from each other they were.When creating a project with classmates these tools would allow
77 for the whole formation to be done collaboratively. Files could be shares and as they were
78 updated there would be a trail to reflect back on. A sounding board there for all involved to be
79 able to throw out ideas [Student 8]

80 The collaborative aspect of this class or any online course is only as effective as people use them.
81 I believe there is a level of antisocial behavior at work when someone chooses an online course. I
82 think the instructional intervention of this class allows me to be as active or inactive socially as I

83 wish. I have not participated in much group work yet so my collaborative experience is limited
84 right now. [Student 9]

85 I believe that it makes collaboration easier. The ability to connect without having to be face-to-
86 face is amazing. It helps for ease of use and quick access to information and communication.
87 Being able to use Google documents to see others work and connect with another or a group
88 instantly saves time and allows for full communication between people who may not have the
89 opportunity to do so without this technology. This helps save money, time, and increase
90 productivity. Also, it allows a variety of opportunity to collaborate with people different
91 background, cultures, education, etc. allowing more experience and a broader base of growth
92 within projects, discussions, etc. My personal experience has been positive and informative.
93 Seeing all of the possibilities and technology available is a great foundation for future use and
94 collaboration. [Student 10]

95 Although, at this stage, collaboration has been limited, I know that future class sessions will
96 make extensive use of team and group activities. I have used these features of Google Apps in
97 other classes and found them to be very useful. An important aspect of these apps is the ability
98 to collaborate on a document in 'real time', i.e. to be online with group members and edit or
99 revise a document. That recreates the in-person experience with the added benefit that everyone
100 can see the changes in real time. [Student 11]

101 Using Google Docs has been a great collaborative experience so far in regards to this journal. I
102 enjoy the ease of use from not having to send or submit a new document each week and the
103 interactivity of being able to respond to your comments has been extremely useful. [Student 12]

104 I did not find the videos on how to use the multimedia functions helpful, and I am not sure how
105 the videos have impacted our collaborative experience. Any ideas? [Student 13]

106 What did you not find helpful about the videos? Are you not sure how you would use the
107 information or did the videos leave you with questions about how to actually embed the media?
108 The video tutorials provided some great suggestions for how to engage each other in a
109 collaborative environment that is more dynamic and provides a stronger sense of personal
110 connection and community. It also provided some opportunities for integreating different forms
111 of media into the environment that can help to clarify point of view, share resources, and help to
112 more clearly communicate expectations. [Student 14]

113 I agree that there were some good suggestions. I find that the blackboard discussion
114 environment is really similar to Moodle so most things are similar (but other parts of the LMS
115 are VERY different!) I do think there are good opportunities to use photos, videos, etc. Many
116 discussion board activities are fine with text-based communication. However, it is definitely
117 helpful to have other options. [Student 15]

118 Didn't find the Discussion Hints & Tips videos to be helpful either... I also have not been able to
119 find the "Subscribe" button she mentions either. Anyone know how to set up notifications for our
120 group discussion board here? [Student 16]

121 I think you can set up notifications if you start the thread. [Student 17]

122 A fundamental aspect of learning is the collaborative process. Students bring unique skills, life
123 experiences and knowledge to the classroom and through working in groups or pairs; the
124 learning becomes enriched and robust. By working together, students are able to foster
125 understanding and create meaning. Roles are traded and interchanged as one student teaches and
126 another one learns and peers support individuals. Discussion boards are a helpful tool for
127 facilitating collaborative learning. They provide an easy, effective means of communication for
128 students, helping overcome geographic boundaries and time constraints. This communication
129 fosters connection through relationship building. Once familiarity is established through this
130 communication, trust can be developed and a collaborative learning environment is possible.
131 This is ideal for the student. I really enjoy a positive and productive learning group. Working
132 with a handful of people allows me to test my theories and understanding of topics with
133 relatively low risk. And my experience over the years has been good. I have met and worked
134 with diverse groups who taught me so much, including new prospective and work solutions. The
135 support I give and receive is instrumental in developing a deep, multi-faceted study. Groups feel
136 comfortable and inspire me to push forward. However, my experience with Bb has been
137 frustrating. I find it clunky, counter-intuitive and slow. Three, four steps into a process, I still
138 have not completed my objective. To help alleviate my frustration, I watched the posted videos
139 several times over and they were helpful. But my experience still remains awkward, thwarting
140 the learning process. [Student 18]

141 I totally agree on the benefit of small groups. When I chose my school for undergrad I picked a
142 school with small class sizes because I knew that I wouldn't be as comfortable in a lecture hall
143 with 100+ people raising my hand to ask questions. Being able to engage in discussion lets me
144 know that I'm understanding the topic and it also gives the benefit of hearing other approaches
145 and ideas. [Student 19]

146 [Classmate], great point about Blackboard being clunky and slow. Every year Blackboard
147 designers try to improve the features to provide users more options however I find that the
148 improvements also means slower performance. This year seems to be the slowest yet although I
149 do appreciate that PDFs can now be uploaded through SafeAssign, maybe next year Excel will
150 be added. [Student 20]

151 I also agree with your comments about Blackboard being clunky and awkward. I often find
152 myself just wanting to do what I need to do with it and get out of here. Your comments about the
153 effectiveness of the discussion boards were thoughtful and enlightening. I agree that working in
154 small groups is helpful to the learning process and I appreciate the ideas and intelligent and
155 thoughtful perspectives of classmates. The discussions also challenge me to share my ideas more
156 than I would in a classroom setting where I would be one of the students that would observe
157 more than participate in the discussions. [Student 21]

158 Blackboard is a tool is a great way to inspire and increase communication between classmates
159 and the instructor without having to be in the same location at the same time. It also provides a
160 way to view another student's commentary and that exposure, in turn, facilitates learning. The
161 collaborative discussion board tool is a level playing field for all students and implements
162 equality and engagement. In other words, in a classroom environment a student can easily
163 "hide" in plain sight. Online discussion tool promotes and enables expression of ideas,
164 perspectives, and counterpoints within the construct of coursework. [Student 22]

165 I think for me at this point, I haven't had a hugely authentic use for the multimedia functions in
166 Blackboard. I can see them coming in handy if I was trying to reference a specific visual
167 component, but I haven't necessarily had to do that yet. I like knowing that they're there, though.
168 Especially since we work solely online, I feel like it's important to have the ability to share
169 pictures and videos like you would in a brick-and-mortar environment. I do like the aspect of
170 discussion boards in general. Again, with the fact that we don't have in-class hours for
171 discussion, being able to have a venue to engage in conversation around the content is critical.
172 The multimedia tools make for a more robust conversation, I just haven't had an image, video, or
173 audio piece to share. I also would prefer to be able to embed video, which is a feature I miss over
174 on the Google discussion boards. The videos were really cool though, because I usually just go
175 hands-on when I'm trying new features and I have to edit and re-work my discussion board
176 posts; with the videos I could see how to use the tools and what the end result would look like.
177 [Student 23]

178 I agree with you that the multimedia functions aren't used extensively, most people are just
179 comfortable with text with a discussion board forum. It is almost as if the effort to creatively use
180 images, video, or audio is more work. I really love the flexibility that online courses provide
181 however it does require discipline and organization by the student. It also requires that
182 instructors are very clear with instruction on assignments and expectations as well as constant
183 monitoring of student engagement. [Student 24]

184 I think with multimedia it's also tricky in an academic setting, because I don't want to do a vlog-
185 style response when writing seems more 'academic,' you know? I'm always afraid it will look
186 like I'm taking the easy way out by talking to the camera rather than writing my thoughts. Also
187 it's a lot easier to create an articulate argument in writing than with video. [Student 25]

188 I haven't found it necessary to use the multimedia tools either and like you I just try to figure out
189 how to use a particular tool when needed and move on to the next task. I also agree with you that
190 the video was helpful in demonstrating where the tools were and how to use them, so it's nice to
191 have that as a resource to refer to if necessary. [Student 26]

192 The intervention resource was helpful, brief and focused. I appreciated how Kecia kept the
193 presentations under 5 minutes, I was able to understand the content for each subject quickly and
194 felt comfortable that I would be able to use the functions successfully. I think that using
195 embedded links would be most valuable for collaborating with classmates since it provides
196 access to related resources and further engage the discussion. Also, the word processing tools are
197 quite useful for content organization and provides a pleasant aesthetic that makes it easier for the
198 group to read and understand the posted information. Finally, I think that the use of embedded
199 video is an effective visual learning tool if used thoughtfully. I often lose interest if the video is
200 too long. [Student 27]

201 I agree, the videos were brief and had a nice flow. Long video are an attention killer for sure!
202 The multimedia tools enable expression of ideas, perspectives, and counterpoints although most
203 of us just really use the word processor. [Student 28]

204 It is a good way of sharing the ideas and knowledge with each other but I think it works with
205 some people and it does not with others especially if they are from different cultures. Some

206 people do not feel good through typing or texting, they prefer a real communication with other
207 also that make them learn more. [Student 29]

208 Ok. I liked the blackboard. It is a good way of keeping in touch and collaborate learning with my
209 group at any time and from anywhere. In fact, I wish if we have an access to the other groups to
210 learn from them as well. Everyone in the group can talk and get engaged with others regardless
211 of any obstacles of the communications that could happen in live classroom. The Hints & Tips
212 helped a lot in the beginning and we can go back to it at any time we need it. [Student 30]

213 I get your point on the access of the discussion boards BUT (there is a story behind the BUT) I
214 just don't think that they truly spur a good debate like a real face to face conversation would. And
215 maybe that is just the extrovert n my screaming out. I feed off other energy and ideas and there is
216 just not much of it at my computer..... [Student 31]

217 I agree with your viewpoint as well, especially that your texts can not show and can misinterpret
218 your message. The "BUT" gives us some wider solutions when we have obstacles like being in a
219 broad distance. I know that the IT students meet every other week at the campus, which is great.
220 BUT, you know what? adding a personal picture ID to the discussion board will be great,
221 although some people are not comfortable with that, and I totally understand. There are so many
222 judgmental people lives around us, BUT we have to think in a positive way and ignore them.
223 [Student 32]

224 1) I believe that using the multimedia does not add much to the discussion because it then
225 becomes more of an information sharing session then a true discussion of ideas and thoughts.
226 Some of the basic functions like hyperlinking add to the experience a little because it helps the
227 other students access the information more easily. Maybe it is has been the topics we are
228 discussing that prevents the advanced use of the tools but I feel like most discussion board
229 questions are designed to be discussing ideas and thoughts. Most of the topics in this course so
230 far have been personal thoughts not research based so posting videos and other external
231 documents & files was not necessary. [Student 33]

232 1) I think that the multimedia functions in Blackboard will be very useful for collaborating in the
233 future. Features like being able to post videos from YouTube with the Mashup function and they
234 ability to record them yourself is a big asset when we do not meet face to face. By being able to
235 have a organized discussion on the message board with all aspects built in we can truly
236 collaborate. Embedding PowerPoint presentations that are being worked on together I think is a
237 great feature. From watching the videos I learned that you can tweak the dimensions of pretty
238 much anything you post media wise. I did not know that and am glad I'm aware of it now in case
239 anything I try to post looks cut off. It's really amazing all of the things you can do now! 😊
240 [Student 34]

241 1. The "Discussion Hint and Tips" videos are very helpful to me when communicating within
242 blackboard. I find myself revisiting the videos for my other course. I wish I would have had this
243 type of instruction in undergrad. I didn't realize there was a function for mathematical equations;
244 it would have been useful in my online econ class. I too found that the "Dynamic Discussion
245 Board Features" video informative. The webcam feature would be very useful in personalizing
246 material that I want to share on blackboard, once I get better at using it. [Student 35]

247 I didn't know about the math equations either till watching the video. I think it's excellent that
248 they are now included and shows how more types of classes are being taken on line that the type
249 of function is needed. [Student 36]

250 Yes! In the past I was just in the dark, the instructional videos are helpful. I just wonder if all
251 online classes provide helpful hints. [Student 37]

252 I hope this doesn't show up twice, it seems Blackboard at the first response I did. If it magically
253 shows back up I apologize for the double post. [Student 38]

254 I've never seen a class have videos like these before only just the basic help pages. I hope that
255 this starts a trend. I think students would get a lot more out of the discussion boards if they had a
256 more in-depth knowledge of what all they could do. [Student 39]

257 I was already familiar with the math equation editor, but personally I prefer knowing the Latex
258 coding for math (like a computer math language). As long as the website has the plugin that
259 supports it. This is the site I use to create equations, expressions, and other mathematical things.
260 LaTeX Equation Editor [Student 40]

261 (1) After watching the three videos, I found the last video to be very useful. It showed me few
262 new things that are good addition to the blackboard forum. I really liked the idea of recording
263 yourself from webcam and ability to post it without going through YouTube. Also the change
264 resolution is nice so the video can fit. At one point I will plan on making a webcam response to
265 test out how it works. I also liked the option of adding various versions of media. The mashups
266 option is nice too. Those options are good especially if we want to share our material that we can
267 use for our e-portfolio or other things. [Student 41]

268 Thanks Matt for starting the discussion! I look forward to your webcam response, I might do it as
269 well, it will help to build my confidence. [Student 42]

270 Maybe depending on what discussions are upcoming we could all reply via webcam. It would be
271 an interesting experiment in new ways to have a discussion on Blackboard. Could be
272 fun! [Student 43]

273 I had an online math class from WCCCD that used blackboard as the point of contact and
274 interaction. It wasn't explained very well as to how we could use the features but my past
275 training with the Wayne State Blackboard team gave me some advantage. I was supposed to be
276 the liaison for the College of Engineering to the Blackboard team but it never really took off. I
277 even have my own blackboard course created which I have been trying to develop for training
278 purposes for the student assistants that we employ. All I need to do now is learn how to design
279 the training. One of the features that I have used for collaboration with my coworkers is the live
280 virtual classroom feature. Through that we can interact and share ideas in real time. No one
281 really wants to use it any more though but it made it easier to collaborate with each other even if
282 someone had to be in another building. My major issue with discussion boards though is that I
283 tend to get lost in them. There get to be too many forums and threads spread out that I forget
284 which ones I am trying to follow and I don't have the time to read every post in one sitting. The

285   small group breakout from the whole class makes this easier to keep up with but I still feel I may
286   be missing something important. [Student 44]

287   I agree with [classmate] - thank you for starting these [classmate]! You're awesome! I've taken
288   several classes at WSU that use Blackboard as the main means of communication and I sort of
289   have a love-hate relationship with it. I love the small group breakout like [classmate] said. It
290   makes things more manageable and less overwhelming. I don't have to read through 800 posts to
291   find the ones relevant to me, I can just come straight to my group page and chill with you guys.
292   Plus, because I'm traveling for work and living all around the state for the foreseeable future,
293   there's no way I could be involved in groups that had to meet/collaborate in person. My schedule
294   is riDONKulous and where I have windows of time is never going to be when anyone else can
295   meet. So I love them because they're convenient and easy and I can work on them in my own
296   time. However, I don't think blackboard is good for all types of classes. I took a stats class (at
297   WSU) and the whole thing was done through BB with very little communication. Now, stats is a
298   horrible class anyway, but when you put it online and then tell everyone to chat about it on BB,
299   you're asking for disaster. I think we even had a group project for that class with 10 people and
300   we had to meet via wiki groups/chat. It was awful. To try and coordinate 10 peoples' schedules to
301   meet at one time to chat over wiki.... not good. no bueno. It gave me a really negative outlook on
302   how to use BB and useful forms of communication through it. [Classmate] - maybe it's just an
303   online Math thing that doesn't work for BB? Group collaboration is really important and I think
304   the best thing for me with blackboard is just that I can play around with it on my own time and
305   post things at my leisure. [Student 45]

306   I had no idea that all of these tools were available to us on Blackboard discussion boards! From
307   the webcast options to the ability to embed media, there are many ways to have our discussions
308   be much more than your normal Text based discussions. I think the webcast/screenshot options
309   would be very helpful when it comes to group projects, or other projects (say, development of
310   the E-Portfolio) that we may not all be experts in - others with more experience could help their
311   fellow group members with this tool. Showing by example or demonstration is oftentimes more
312   effective than typing out text-based instructions. [Student 46]

313   You and me both [classmate]!I wasn't truly aware of all the functions Bb was capable of doing in
314   the discussion board. I too thought the webcast option would be the most practical in use for
315   group discussion. The videos displaying the functions were helpful for exposing all the different
316   utilities and options offered, but other than loading a picture of myself for introduction purposes,
317   I haven't used any of these. The need hasn't presented itself, at least not as of yet, although,
318   learning/practicing the skills to use Bb in its fullest entity would be an ideal goal. It's actually
319   good to know that all these functions exist. I have only used Bb discussion board in its simplest
320   form. The option to broaden the experience should lead to a much more engaging experience for
321   my peers and myself, in all courses. I'm not too savvy, so I'll have to keep up practice and revisit
322   the "Tips and Tricks" [Student 47]

323   There are so many features that I was unaware of about blackboard. I've taken online classes for
324   the past couple of years and had no idea there was a webcast feature available on pipeline. The
325   three videos that was provide by Ms Waddell was very informative and easy to follow and keep

326   me interested. I have a much better understanding about the discussion board feature in
327   Blackboard. [Student 48]

328   The instructional videos introduced me to Blackboard functions that I was not previously aware
329   of. Once I watched the videos, most of the tasks were easy to duplicate, such as inserting an
330   image into the discussion post. I was actually already able to use this function this semester in
331   another class to share an important image that related to our discussion content. Sharing that
332   image impacted the collaboration experience with my class because they were able to use a
333   visual aid to help them understand my explanation and comment/respond to my post. Further
334   small group collaborations have been done outside of Blackboard, such as Google Docs, so they
335   have not taken advantage of these resources. My main concern involved using the Mashup
336   feature. I attempted to insert a QuickTime video done exactly the same way as was done in the
337   video, but the function was not working on Blackboard. I contacted the Help Desk but they were
338   unable to assist me and could not provide an explanation as to why it did not work. Thankfully, I
339   was able to figure out how to do a YouTube video instead. [Student 49]

340   The requirement to use integrative technology within the first week of class was a benefit to
341   students for several reasons: 1) It told students the course was going to require technology skills,
342   2) it provided another instructional medium for students to learn about their classmates through
343   images and video rather than only text, and 3) it provided the instructor with information on
344   technology proficiency among the class. The week 1 activity did have an impact on
345   collaboration, but I felt it was more beneficial for student to have an opportunity to practice
346   using the technology to make sure that it worked early in the semester. Also, knowing who has a
347   strong technical background might help to better implement the collaboration process in a group.
348   In order to collaborate with peers or anyone online, a technical skill set is definitely important to
349   have and demonstrate. For example, a group needs to make sure everyone understands how to
350   access shared documents, post questions and replies and maybe post a video or use a webcam.
351   There are a lot of different technologies available in Blackboard that could be used for
352   collaboration including Bb Collaborate and Video Everywhere. These technologies are just as
353   good as using Google Docs but there can be a learning curve to setting up these technologies for
354   groups within Blackboard. Therefore, many groups choose to use Google Docs simply because
355   most individuals already have an account and have used the technology prior to class. When a
356   group has a strong technical background and is able to handle the technology with ease, they are
357   able to form a process in which they will collaborate such as by using a shared collaborative
358   document and/or use webcams to discuss concepts and ideas for projects or to solve problems.
359   [Student 50]

360   In the beginning of this course, we were asked to attach mashups, videos, and images to our
361   posts. I admit when I first came into this degree, I had no idea what to expect. I thought a lot of
362   what we would be learning would be about teaching, but as I was introduced to what
363   Instructional Technology is, I was very intrigued to find out more. It dealt with technology and
364   dealing with instructional methods that use technology and so on and so forth. The fact that a lot
365   of our courses are online, and that we are required to use the Blackboard system was all foreign
366   to me. I have never taken an online course, and have never heard about a system such as
367   Blackboard. I have gone to universities that aren't so 'big' on technology. Attending university
368   overseas is a different world of teaching and learning from what we are learning and what is

369   being taught here at Wayne State University. Overseas, a lot of what we are taught is based on
370   memorization and informative methods, rather than practical or associated with technology. The
371   Middle East lacks a lot in terms of technological teaching. Subsequently, considering how I
372   have come from a background of little knowledge of the Blackboard system nor any online
373   course experience, the instructional intervention we were asked to do in the beginning of this
374   course was something I believe, expectedly, I did not complete correctly. We were asked to post
375   a mashup, a video, and an image. I was able to complete 2 of the tasks, but I hope that with
376   continual practice, I'll be able to complete them all correctly. My opinion on the instructional
377   intervention where we were tasked to do multimedia functions on our introductory posts in the
378   beginning of this course is that I believe by doing tasks like these, we will be able to fully grasp
379   the concept of Blackboard usage, which will in turn help us enhance our overall online course
380   experience, as well as, future instructional technology tasks. I have not used this instructional
381   intervention while collaborating with my classmates, as of yet, however, as this course moves
382   along, I am hoping to adopt this intervention into my collaborations. I believe that this will pose
383   as visuals for better understanding of an individual trying to deliver messages across or possibly
384   an additional information that will help with explaining certain ideas in a more interpretive way.
385   [Student 51]

386   The ScreenCasts are a great tool because they provide a direct, quick, and easy instruction to
387   follow. What is astounding to me is that I am now on my 3rd year at Wayne State and I had
388   never before viewed this type of instructional assistance when using blackboard. So, I did not
389   know how to do any advanced functions in Bb before this course. I believe that having us use
390   these tools during the week 1 introductory posts/intervention was very beneficial to myself and
391   my colleagues because it got us started with using technological functions that we may not have
392   used I the past. It gave mean insight into how using new technologies in this course would go.
393   There is a lot of trial and error and "playing around" with Bb and Dreamweaver. I believe that
394   this is beneficial though, because as I try to do one thing, I learn how to do another thing. The
395   most beneficial pieces that I learned how to do were 1. How to do a hyperlink in Bb 2. How to
396   insert the mash-up and embedded Media 3. Subscribing to a board. I have used all 3 of these
397   functions in Bb. In terms of collaboration, I have subscribed to my own Group Discussion posts
398   and used the hyperlink function to post our link for our group project in the Week 4 Discussion
399   Board. I also used the mash-up and embedded media option in the Introductory Post and our
400   team used it in our Week 4 team assignment. I believe I will continue to use these functions and
401   hope to learn about additional ones to increase the level of collaboration that I have with my
402   team and classmates. I feel that being able to include embedded media in our team assignment
403   was great because it showed a sample video versus just trying to describe what our team was
404   thinking of. I think that is the benefit of all collaboration tools, it is another means of
405   communication in an online environment rather than just trying to describe everything, we can
406   use more visuals and aids to communicate our thoughts. [Student 52]

407   Honestly, I never knew how to use the functions we learned on the first week, like embedding
408   and mashups. I had taken many courses on blackboard before but I was never required to use
409   those functions, and never told about them. I tried to do them without watching the videos first
410   but could not figure it out. Once watching the videos it was very easy to do! It's just a matter of
411   knowing where to go! I think it can def help in collaborating with your group. I think one way is
412   with the mashup and embedding a video. I use to just post the link in there and then you can

413 copy and paste it but with the videos we saw you can use a hyperlink or just embed the video and
414 you can just click play. It makes it easier so that everything can be done on blackboard. [Student
415 53]

416 I wasn't truly aware of all the functions Bb was capable of doing in the discussion board. I too
417 thought the webcast option would be the most practical in use for group discussion. The videos
418 displaying the functions were helpful for exposing all the different utilities and options offered,
419 but other than loading a picture of myself for introduction purposes, I haven't used any of these.
420 The need hasn't presented itself, at least not as of yet, although, learning/practicing the skills to
421 use Bb in its fullest entity would be an ideal goal It's actually good to know that all these
422 functions exist. I have only used Bb discussion board in its simplest form. The option to broaden
423 the experience should lead to a much more engaging experience for my peers and myself, in all
424 courses. I'm not too savvy, so I'll have to keep up practice and revisit the videos. [Student 54]

425 I am going to be very honest as a research student providing my reflection. I really think
426 collaboration is very difficult given the various levels of the students in terms of technology
427 skills and time constraints. People tend to do what they know best to be able to participate at a
428 much more skilled level. This response then limits their learning potential because they are
429 providing the skills they already know so other members of the team see them as productive and
430 so they don't hold up progress trying to learn something different or new. Trying to set times to
431 meet and talk face to face long distance is also always an issue due to the same factor of skill
432 level. Some people know one method, Skype and some know another such as Google but most
433 often all do not know both. This then becomes a problem and frustration for someone on the
434 team who is outvoted. A simple task like trying to email someone back who did not provide
435 their email becomes a major obstacle for someone which adds to Remember these are just my
436 thoughts. Also I did not do question one yet of your survey because it seems to be a little
437 involved but I will go back to it. I have never made a tube video so that is a process I need to
438 learn prior to answering your question. [Student 55]

439 I liked the blackboard. It is a good way of keeping in touch and collaborate learning with
440 my group at any time and from anywhere. In fact, I wish if we have an access to the other groups
441 to learn from them as well. Everyone in the group can talk and get engaged with others
442 regardless of any obstacles of the communications that could happen in live classroom. The
443 Hints & Tips [my Instructional Intervention] helped a lot in the beginning and we can go back to
444 it at any time we need it.[Student 56]

APPENDIX L

Raw Phase Two/Week 9 Journal Data Aligned with Student

1   I initially used the Record from Webcam option during our class introductions. However, we
2   haven't used any of them throughout our small group discussions. I think that using the
3   recording option is a good way to establish a social presence. So, the only issue is the fact that
4   we really haven't used them. Would using them add more substance to our discussions? Would
5   it be value added? Or would we be using them simply because they are available? [Student 1]
6   [Classmate] - I really liked your introductory video! However, is the benefit worth the
7   time/effort? For example, I am in my pajamas and watching the news right now. If I were to
8   record a video, I'd probably want to make myself look slightly better and I'd need to turn off (or
9   mute) the TV. Nothing wrong with that, but is any benefit worth the lack of convenience? In
10   some cases, maybe! In others, probably not! [Student 2]

11   [Classmate], I agree, videos are a lot of work! However I do love watching them when others put
12   in the effort! [Student 3]
13
14   I use videos for my own education, but I have yet to create one to promote myself or some
15   educational concept. I am looking forward to developing one.[Student 4]

16   I think as far as our collaborations here go, the discussion board posts alone are sufficient. It
17   might be cool to try some type of Skype or Google chat at some point, because that is at least
18   interactive, but videos can feel like you are just talking to yourself! [Student 5]
19
20   Yeah, I agree with what you said about videos, [Classmate]. I like interactive conversations
21   (Skype, etc) rather than creating a video [Student 6]

22   A fundamental requirement for collaboration technology is communication. One benefit of the
23   process is that each week is an opportunity for improving your communication and writing
24   skills. As described in chapter 19, instructional designer tend to be great communicators as we
25   learn, develop training modules, and the teach it. Great communication skills require lots of
26   practice and refinement. Collaborating with my classmates helps build these skills for future
27   use. The only downside of online discussion forums is the inability to physical meet my peers.
28   In other words, I know my classmates virtually however if I walked passed them on campus I
29   doubt that we would recognize each other.[Student 7]

30   The multimedia tools for this class haven't really come into play for me, nor have they within the
31   context of my IT6110 course (which is also captured by this study). For me, I feel like the
32   discussion boards are best used for written responses. In a natural classroom context I feel
33   comfortable speaking, but because of the produce-edit context of an online course I feel less
34   comfortable responding in any way other than writing. Written responses give me the ability to
35   write, re-write, and make sure that what I'm presenting is carefully thought out. I feel like that's
36   the expectation for online courses. When recording a video I would either be speaking off-the-
37   cuff or presenting pre-written materials. I love the comfort level that comes with speaking
38   casually, and I think it gives more authentic ideas to react to, but I don't feel like it gives me as

39 complex or 'academic' of a response. And if I am writing out a response to record, then I'm just
40 making more work for myself! I can just submit the written ideas rather than creating a written
41 response and then making a video of that written response. The newest video also suggest adding
42 scholarly multimedia to back up my points, but again that just adds on to the "more work than is
43 otherwise necessary" realm. While I understand that it's important to work hard and spend time
44 on assignments, we already have academic resources on these topics that we're all required to
45 read and reflect on already, going out to find even MORE materials on top of that is just an extra
46 layer of effort on top of balancing all of our required academic work. This whole response was
47 written off-the-cuff so I apologize that it also kind of makes me sound lazy, but I couldn't record
48 a video of my response because I'm responding on my lunch hour at work-- such is the nature of
49 asynchronous classes! 😊 [Student 8]

50 I just read [Classmate's] response and was relieved. I concur with your major point about the
51 interactive/collaborative component of the course (and IT 6110). I am working diligently to
52 complete quality coursework. I find the material engaging and have enjoyed the assignments,
53 finding them relevant and thought-provoking. The reflection questions help me as well.   As I
54 complete the questions, I return to my notes, the readings, the videos and any other information
55 to clarify and crystallize my thoughts. However, the steps that involve commenting on others
56 'work feels stilted. There is a struggle with my loyalty to the members and providing them with
57 solid commentary, and my feeling that the exercise is contrived. I would prefer to use Google
58 Docs or similar software for collaborating purposes. It is more user-friendly than
59 Blackboard.[Student 9]

60 About the discussion of Instructional Intervention video, I really truly admire all of the efforts
61 they are doing to improve and facilitate learning. I personally got improved in using more
62 technology, and I am getting better and better in utilizing any opportunities of utilizing
63 technology, but finding the time becomes an obstacle. I like to add an audio or video, but time is
64 a major problem since I have other assignments and responsibilities to do, so what do you think
65 guys?

66   [Student 10]

67 About the discussion of Instructional Intervention video, I agree with you about the time and also
68 I want mention that some people like to interact and work more with people and just using
69 machines like computers. Because of that I think it is a hard job for instructional designers to
70 design an effective way of collaborating by using technology to meet the learners' needs and help
71 them to improve. [Student 11]

72   I think the collaboration technology now is common and new. So I think it needs more attention
73   and improve. Also, the instructional designers who work on doing similar to this project should
74   be aware about the participant's needs and backgrounds because many people prefer interact
75   with people more than interact with machines such as computers or phones. First they should
76   teach them how the significant of using this kind of collaboration and why then start to create the
77   design what work to them.[Student 12]

78   I have learned a lot from these videos, but I have an issue with them. I don't know if I'm just not
79   hip with the times or what, but I just don't think that an academic discussion is the time for
80   rainbow <word 'rainbow' is typed in 4 colors>. text and 🙂 . The impression I got from the
81   videos was that any discussion on Blackboard could be improved by adding these types of
82   things. I do think that being able to include PowerPoint, videos and many things like that does
83   enhance the collaboration between peers. I just felt like some of the more artistic things you can
84   do might not always need to be used. I am not trying to be negative and now that I am writing
85   this I guess I could see how some things like text color could possibly help to get across tone
86   which would be helpful when collaborating since it is hard to tell the tone people are trying to
87   relay in text. The intervention has given me a lot to think about and as I'm reflecting on it I'm
88   learning new things.[Student 13]

89   Having those different things like underlining, or bold, or italics, or whatever is nice. Especially
90   when someone wants to get the point across. I also feel that doing too much of this would harm
91   the person who is on the receiving end. I also agree with you that using the rainbow text on
92   academic discussion board is just now professional. 😎😎 like such🙂. This should be left to the
93   Facebook and other social media websites. [Student 14]

94   Nothing says professional like a winky face! On a serious note, the bold, underline etc are great
95   tools and it would be nice if as Blackboard and all online courses evolve if there were more ways
96   created to help emphasis text/points and have more professional ways of conveying emotion
97   through text. One thing that wasn't touched on in the videos, but I think is huge with
98   collaborating with peers is spell checking. I personally am a horrible speller and a lot of time my
99   mind goes faster than my fingers so I end up with word soup sometimes. By having the review
100   tools such as spell check it makes collaborating easier because people are able to understand
101   what each other is saying. [Student 15]

102   I also agree with the smiley faces and rainbow text, there is a time and place for those types of
103   enhancements.[Student 16]

104   To comment about Blackboard, messages be it through a verbal or written channel can be
105   misinterpreted. More often though, it's the written word that is. You made use of an emoticon to
106   display a "light or cheerful tone". I often like to put words in bold for emphasis. However it
107   could be interpreted as something else if I typed it in all caps and bold. "**Do Not**" compared
108   to **"DO NOT"** which could be interpreted as I think my readers may not be able to follow
109   instructions so let me make myself clear. I guess it all boils down to the channel, the sender, and
110   the recipient. You can write a message in one form to someone who knows you and send the
111   same message to a complete stranger. The individual who knows you had no problems with the
112   message, but the stranger might.[Student 17]

113 We had similar discussion couple weeks ago and I agree that highlighting, underlining, or
114 making text bold makes the text to stand out and gives a hint that this is something important.
115 When it comes to the blackboard posts, I can see this being helpful when trying to get the point
116 across and **make sure** that certain words stand out. I use this a lot in my math modules I made.
117 Sometimes I put hints to the questions, but if I do not bold them or underline them, students
118 cannot see them. But I have noticed that even with the bold and underline, students still miss it so
119 I make the font bigger. I agree that making those changes to tact do create a more engaging text
120 or something. Also points out what they have to pay attention to. [Student 18]

121 As I shared in another post, I use formatting to place emphasis on content so that it becomes a
122 focal point for the viewer of the content/message. The misconception comes into play when
123 communication consists of this formatting. I have not heard of a situation yet, where putting
124 emphasis on words using red font, bold, uppercase letters, etc. has created a negative tone in
125 instructional material. Ahhh....But who knows.[Student 19]

126 have used Blackboard for quite some time; however, I have not used all of the features/tools that
127 are available. I have always viewed Blackboard Discussion Board as an excellent tool for
128 learners to bounce ideas off each other, gain insight into different perspectives on topics, and to
129 have an open peer-to-peer Q&A or FYI forum. I have tried using coursesites.com (the free
130 version of Blackboard), however, attempts to have students login always resulted in connectivity
131 issues with the server chugging along attempting to load the course content. Overall, I believe
132 that the licensed version of Blackboard is robust and supports teaching and learning.[Student 20]

133 What I think works is that our instructor has provided the students with expectations. For
134 example; posts are to be entered by Thursday. However, we are all adults, have families,
135 children, jobs and unforeseen circumstances that may not allow for the students to meet these
136 expectations.   I have watched the discussion and intervention videos and I must say that I'm not
137 sure that I am participating in an organic online learning environment. I find that the discussions
138 are staggered and don't flow. I wish that we could go deeper into our discussions between
139 Friday – Sunday. Perhaps using the video feature will be more interactive and engaging for our
140 group.   I do believe that we do collaborate, but I think that we should all step out of our box and
141 take risks when collaborating.   Any takers?[Student 21]

142 I personally found the use multiple colors to be too busy and distracting. What I see as an
143 underlying issue to the use of online discussion boards like Blackboard has, is the lack of
144 interaction in a real time setting. I have used Google Docs for work and in other classes I have
145 taken. There is a real time collaboration that can happen there. I have been typing while someone
146 else was commenting and it provided instant feedback as well as real time dialog between us that
147 helped me to clarify what they were saying then rather than having to post and hope they replied
148 in a timely fashion. I know that if I were to record my responses in a video format they would be
149 delivered sooner but it would limit the times and places that they could be viewed as well as I
150 cannot view that type of content at work other than at lunch. The greatest challenge for me is the
151 timely reactions. Without a real time option for collaboration, the effectiveness is greatly reduced
152 when any time constraints are imposed. [Student 22]

153 The underlying issues, challenges, opportunities, and insights that I felt regarding the videos
154 were as follows; the instructional sequences stated several different instructional strategies such

155 as gaining attention which is the informing the learning of the objectives so that the audiences
156 your teaching don't get bored and lost as to what your trying to deliver. It's also very important
157 to recall to the prior knowledge of the audience which in my case would be my students and or
158 other colleagues of mine. Feedback is very necessary when you're an instructor so that you can
159 know what is needed to adjust and needed to add or delete from the lecture or class. The
160 blackboard discussions are helpful and filled with useful information I am able to use in my
161 classroom or a professional development session if I had to administer one for the district or for
162 my building. Overall the video feature is useful and interesting. I have used the models and used
163 them before in my classroom environment I also like the blackboard model. Which for us Wayne
164 State Students it is a life saver! All of these could be used if you clearly understand them in some
165 sort of capacity no matter what your career choice is currently.[Student 23]

166 Before this class I was not familiar width blackboard. At my old university we used Moodle, but
167 even weigh that we never used it to communicate with each other. I'm pretty sure Moodle has
168 this group collaboration part to it. The main challenge I have had is becoming familiar with using
169 blackboard and its features. It's awesome that we actually can communicate and collaborate
170 without actually having to be in the same room. The more I use it the more ill become familiar
171 with it. I'm looking forward, with the help of my group members, to becoming fluent in
172 blackboard. I've never really thought about instructional design as something that I am doing
173 everyday while I work. After reading about instructional design and the different theories behind
174 it I can see that I use it every day. Something as simple as teaching a writing lesson on using
175 time words. I had to design the lesson which I decided that we would take prebaked cookies and
176 apply the frosting and sprinkles. They had to write about what they did first, what came next,
177 then what did they do. They were able to learn in a more creative way while being able to enjoy
178 a cookie at the end of the lesson. As an ID I had to come up with the lesson, figure out what
179 materials I would need, how I would present the lesson, what the kids will do while waiting in
180 line. [Student 24]

181 Here is an issue that I had not experienced before in terms of collaboration. After the initial
182 submission and grading we have the option to return and rewrite. Two of the group decided to
183 do this. We didn't hear from the other two so we just went on. Actually during the initial write
184 of the paper the two who did not respond on the option to rewrite were weak members. One in
185 face did not follow through. So when the two of us went on with the rewrite I figured it didn't
186 matter on the grade because we were a group regardless of who did the second write. This was
187 an issue. One of the group responded after the submission of the rewrite. Angry but all was
188 worked out. So here is the ethical question. Should all of the group of four get the rewrite grade.
189 In my opinion yes. I feel it is up to the members to communicate. If the group has non
190 communicative members then it is up to the group to settle. Once the group is formed the work
191 is within the group. The out is if the group does not perform well then the out is for the group to
192 disband and reform if they like as another group. In this course that option is offered and I think
193 that it is a good option. Reforming allows the team to self select if there had been an issue of a
194 member not holding their own. But, whatever grade is assigned to the group goes to all members
195 of the group. Just my opinion. [Student 25]

196 The biggest issue I had was with Bb not functioning as it should have been. Although I was
197 doing the steps correctly, the system was not working. Although this was frustrating at first, I
198 was able to "think outside of the box" and strategically come up with an alternative for

199 accomplishing my task. Currently, I am taking two IT courses. In one of them, my group prefers
200 to communicate via Google docs. Although Bb multimedia functions may be helpful, we have
201 found that other resources are much more appropriate for the scope of our project. In my other
202 class, I have used Bb multimedia functions once. I believe that this use was helpful in
203 communicating my ideas to my peers. It was not really a collaborative effort, but it did help
204 move the conversation forward. Besides for that one time, I have not had any more appropriate
205 opportunities to use these Bb functions.[Student 26]

206 There are a lot of different tools presented for groups in Bb, but not much instruction as far as
207 how to use the tools themselves. The interface and layout of Bb tools is cumbersome to use and
208 feels outdated, and there is no opportunity to collaborate in real time. Blackboard also seems to
209 have glitches depending on what browser you are using as well. Some tools perform better using
210 IE and others using Chrome or Firefox. I found using Google Docs as a collaborative tool much
211 more user friendly than any tool in Blackboard. You are able to see updates and chat in real time
212 which is a powerful tool. I feel Blackboard should update their interface similar to how Google
213 has designed theirs.[Student 27]

214 There are a lot of different tools presented for groups in Bb, but not much instruction as far as
215 how to use the tools themselves. The interface and layout of Bb tools is cumbersome to use and
216 feels outdated, and there is no opportunity to collaborate in real time. Blackboard also seems to
217 have glitches depending on what browser you are using as well. Some tools perform better using
218 IE and others using Chrome or Firefox. I found using Google Docs as a collaborative tool much
219 more user friendly than any tool in Blackboard. You are able to see updates and chat in real time
220 which is a powerful tool. I feel Blackboard should update their interface similar to how Google
221 has designed theirs.[Student 28]

222 One of the major problems that I had with Blackboard was when I was using Wimba while I was
223 a Teaching Assistant for EDP 7350. I remember that Wimba required the installation of a java
224 that prior to the use of wimba, and still even after I tried to install that, wimba wasn't working.
225 In terms of collaboration, I always preferred other ways than BB (like Google doc). I just find it
226 easier and more user friendly.[Student 29]

227 The Discussion Board is a good tool for communicating with colleagues or group members about
228 specific topics. The biggest benefit is when Blackboard is used as a Virtual Café, where it
229 functions more like a blog giving colleagues an opportunity to share their knowledge, helpful
230 tips, or pick each other's brain One challenge that I had the first time I used Blackboard was with
231 the Discussion Board, and what I thought was the default view. I would click the Post number to
232 access the Discussion Board which takes you to the Collection View. I found it visually taxing to
233 initially see a "full page" list of posts. As I continued to use Blackboard, I discovered that by
234 clicking the item in the Forum column this will take you to the List View, which is a condensed
235 view. Another challenge is not being able to delete a post. The instructor must enable this
236 feature. Now that I've used Blackboard for quite some time, I find it to be a flexible and
237 supportive tool as both a student and instructor.[Student 30]

238   I have found the presentations helpful and I understand their purpose, but my experience using
239   collaborative media is limited. This is the first year I have had to respond to others using
240   Blackboard and Google Groups. My preference is Google Groups. I find it easier to use. I have
241   found the conversations with my group in Google groups to be more collegial and pertinent than
242   Blackboard Discussion Group. I am aware that, in Blackboard, there are tools to use to create
243   more dynamic conversations, but I am not sure if it is always needed. I would like to learn more
244   about creating presentations using videos and maybe different presentation software to create
245   personal responses. I would like my responses to be more than talking to the computer and
246   uploading to a group. The presentations have been helpful, but I would like to know more about
247   the software used and how it was uploaded to YouTube or other collaborative
248   technologies.[Student 30]

249   I just began using Google Groups or a Google Drive or anything Google related about two years
250   ago. I started using it at the behest of one of my young and hip colleagues. He showed how these
251   items were very collaborative. I have since learned that I can upload something on my GDrive
252   and access it from any computer without having to email it and save and so on. So I can say that
253   I am a fan of these collaboration tools. However, as of late I have been having trouble with them.
254   I have a hard time with checking multiple open forms that other people can comment on. I also
255   have trouble keeping up with all of the open forms that I can comment on. Perhaps it is just that I
256   am a bit older and not as quick or maybe I just need to try harder.[Student 31]

257   This being my first experience with the features in Google, I think that it is serving a great
258   collaboration opportunity within my educational process. I think that it allows for ease of access
259   and is easy to pick up and understand. Issues with these functions are the lack of formatting
260   available. I think that the tool is great but sometime limited.[Student 32]

261   There are a few challenges with collaborating online: It is a "pull" system not a "push" system,
262   so I found myself checking every day (even a couple times a day) to see if one of my team
263   members had posted an update to my document or had posted new information to their
264   documents, so that I could comment or provide additional information. It's kind of like checking
265   the mailbox every day for a letter that you think is coming, but you are not sure when. Also, as
266   you post new comments and old ones get pushed down, how do you get your collaborators to see
267   a response to something you posted a few days ago? For example, Joan mentioned a chart she
268   uses in her job. I posted a reply to her comment and asked if she could send me a copy. It is not
269   critical, but there is no way to know if she sees that particular comment. I think emailing her
270   might be better. Real-time interaction gives you an opportunity to follow-up on things like that.
271   Different collaborators provide different qualities of feedback. Team Member 1 provided
272   insightful comments. I can see that she "gets it". She may not understand my topic, but she
273   understood who my learners were. Team Member 2 provided supportive comments, but they
274   were not useful in helping me move forward with my design. Team Member 3 did not provide
275   any comments that I saw. So, it truly is a mixed bag of results. Sometimes, asynchronous
276   communication is really slow. Like playing chess by postcard. We met online in a virtual room

277   during our group project and that was very useful, although one of our members had trouble with
278   the technology. If you have a team member that does not come up to speed on collaboration
279   technology quickly, they will fall behind or not be very useful to the group. They could have
280   great ideas, but if they cannot participate, then they are not productive. Dr. XX feedback is the
281   most critical and it has been timely and useful. (Really!) I am going to suggest that my group
282   meet online in real-time to provide more direct feedback to each other. I have a rough vision of
283   what I want to do, but I am concerned that my colleagues might be in the weeds. It is hard to tell
284   from what they have posted thus far. So far it is about what I would expect. :) [Student 33]

285   I still like Google Docs. It is a very convenient way to work on a document individually so that
286   your instructor can see your progress and provide valuable feedback in a timely manner. It also
287   helps when working in a group, however there could be issues that arise. One thing that I
288   encountered this semester is when we working on a group document, we assigned ourselves
289   different colors so it would be clear which group member provided what information. Well on of
290   my group members overwrote some of my information in her own color. This was very
291   frustrating as I know how much information I provided, however I could not recall the exact
292   information. Not having the information saved on a separate word document I had to go back
293   and try to research the information I initially provided.[Student 34]

294   One thing that I am a bit unhappy with is the cognitive load Blackboard brings to me. I feel as
295   though it has an overwhelming amount of tools and intervention resources, especially those of
296   which we do not use. Also, the fact that we are working with this site, I would expect a better
297   communication threshold, similar to Google Docs or Hangouts, that can create a better sense of
298   communication with group mates, peers, and professors. I find it a hassle to have to go back and
299   forth between Blackboard and other various websites in order to communicate with others or
300   even complete assignments. I know that there are many tools that can be used on Blackboard in
301   order to do so, however, there are TOO many. (lol!) A couple of suggestions: • Reduce
302   cognitive load: if simpler ways for students to navigate without having to see a whole bunch of
303   confusing options would be a great thing.• Upgrade communication system: I find Blackboard to
304   be lacking in 'updated' communication resources for peers. If something similar to Google
305   Hangouts or Skype were to be created via this site, it would be very useful and less hassle for
306   students to communicate with their peers.[Student 35]

307   [Classmate], I agree with you about the amount of tools available on the Tools screen being
308   overwhelming in Blackboard. It would be nice if the system was able to limit what we saw on
309   the screen and not have everything available. I think Blackboard is working on updating their
310   user interface and collaboration tools so depending on when WSU decides up to upgrade their
311   Blackboard system, you may see some improvements in future semesters. [Student 36]

312   Hi [Classmate]! I totally support your suggestions. Also, I would like to see an "instant"
313   messaging option on BB. I think that would be great.[Student 37]

314   As I read through a lot of my fellow IT 6100 classmates' thoughts on the instructional
315   intervention video, I had a lot of those same feelings. I also believe that it makes it a lot less
316   stressful on the grad student if they already had some prior Google docs experiences prior to
317   taking a class like this. It's just far less stress to start. I have been out of school for many years
318   so I have no point of reference as it relates to Moodle or Blackboard. Because I have been in the
319   workforce for 30 years (as I started very early in high school working part time in an office
320   setting back when Microsoft Word was brand new to all), I do have experience with Google as it
321   relates to Gmail (for one of my few email choices), Gdrive (as I store all my important personal
322   docs on their cloud in case of hard drive damage), storing all my smart phone telephone contacts
323   (in case phone gets damaged) on the cloud in Google contacts, using Google Voice for my
324   texting and voicemail to other non-personal tasks (where I don't want the person knowing my
325   personal cell number), etc. Plus.Google.Com/Photos keeps all my pictures since we all
326   mistakenly delete valuable pictures from time to time. Alas I am going off topic a bit. Suffice it
327   to say Google has many practical things we all can use for our daily lives and I used a lot of them
328   before taking this class. So it is not just good for the class but good for you in general to be
329   broad in your knowledge of on line tools. The video for week 9's discussion also reminds us all
330   that learning is retained more if you insert audio/video instead of merely text. I agree. Like
331   other classmates I hesitate to insert audio or video. But for me it is just due to the fact that I don't
332   have time to simply play around with it in order to feel comfortable enough to use audio/video in
333   my presentations now, That will change as time goes on. The only other thing I wanted to
334   mention is that my group experienced the time lapse/feedback issue wherein one person made
335   comments and the next person didnt until the next day so it dragged out. This can be easily fixed
336   by doing what I read other groups doing in getting the group to set rules/expectations/scheduling.
337   Then the back and forth dialoging will be more beneficial. [Student 38]

APPENDIX M

Raw Phase Three/Week 14 Journal Data Aligned with Student

1   I found the videos informative, but they did not have a significant impact on my collaboration
2   with my peers. I have used both Google Hangouts and Blackboard previously and have
3   experience with message board which are set up similarly to those. I do think that the reminder
4   of what is available may have had a small impact on the amount I used the tools, but not
5   significantly. The tips and tricks I do believe are good for beginning students to help them
6   understand what is available to them and encourage them to use the tools. Tools/technology used
7   that had an impact on collaboration with my peers was a voice chatting service that was used in
8   conjunction with Google Documents. The service allowed for not only us to talk but also for
9   drawing out of ideas which could be transferred into the document. Also with the document the
10 addition of images helped collaboration, it helped convey thoughts and improve the process. The
11 third video was interesting, but threw a lot of information out in a short amount of time. It was
12 difficult to keep up with what was being shown on the screen and what was being said. [Student
13 1]

14 Phase 3 Instructional Intervention Resource Video: This video was the best presentation. I find
15 the process of collaboration with other students somewhat problematic. I am not sure how to
16 collaborate online and how to measure if the collaboration is successful or a waste of time. The
17 idea of collaborative technology is necessary, but its use is not always clear or easy to use.
18 .[Student 2]

19 Kecia - One side comment here - For future reference, it would have been useful for you to have
20 the links for all three videos here so that I could review them all in the context of your question. I
21 remember watching the first video, but I could not find the link. Most of the collaboration with
22 my classmates was based on typing messages into each other's documents to share ideas and
23 comments or meeting with each other virtually in an online meeting. Both of these methods
24 worked fine, but you need a combination of both to be really productive. Posting messages to
25 each other's assignments works and it gives you the flexibility to post whenever you want. One
26 downside is that I was checking for updates to my teammates assignments in Google Drive a
27 couple times a day. If they go all week without posting anything, then I wasted my time checking
28 so often. I wanted to give them prompt feedback, but they were delayed on posting updates.
29 Maybe there is a way for Google Drive to send you a message whenever anything changes? But
30 that could be annoying too. I do not want to get five updates on one day because [a classmate]
31 edited his document five different times. Meeting online periodically was very useful to
32 exchange ideas and comments in real time. It also allows for more back-and-forth discussion to
33 clarify intent. Without a synchronous meeting of some kind, it will be very time consuming. We
34 used Adobe Connect a couple times and I think we used AnyMeeting as well for one meeting.
35 [Student 3]

36   I can honestly say that completing these things for the dissertation were my least favorite things
37   to do. I understand that we were helping out a fellow student but the first videos or Phase 1, was
38   super long, confusing and boring so I think that set a tone for me and Phase 2 & 3. I will say that
39   the videos didn't alter much of my interaction with classmates on either a good or bad side. In
40   fact, it didn't alter my ideas at all. I have a certain way that I have been trained to use these tools
41   by past professors and I guess the Phases weren't enough for me to change anything. I did
42   struggle with some of the collaborative piece in this class though. As I have mentioned before, I
43   felt disconnected most of the time primarily because we didn't use Blackboard or any other type
44   of forum. [Student 4]

45   Having a good team to work with is essential to getting the most out of the process. I think this is
46   where most online collaboration efforts break down. Any collaboration technology can work, but
47   if you do not have a team that is fully engaged in the process, then it does not matter how great
48   the technology is. Unfortunately, you cannot predict how well people are going to work together
49   or how much effort each individual will put into the collaboration effort. If you gave me a team
50   of four people that were all fully engaged, we could use walkie-talkies where we could only talk
51   one-at-a-time and we could make that work for the project. If you gave me a team of four people
52   and two or three don't care about the project or how well they do, then you could give everyone
53   telepresence cameras and high-def displays and it would not help them be successful. They
54   would just look better failing. [Student 5]

55   While I understand the concept of research, and the importance of its data, the interaction aspect
56   of communication in terms of using Bb, especially to collaborate, or to enhance communication
57   has not had any major impact, even after looking at the presentation, I've viewed 75% or more in
58   its entirety. Curiosity may have increased, knowing that some functions that are available on Bb
59   haven't been tapped into, but not much action placed behind it. Looking at the tool box in the
60   thread or reply area of Bb can be so overwhelming for me to look at, that I use the most minimal
61   and basic aspects. I feel much more comfortable, as a learner, and subscriber, using
62   communication forms such as Google chat. It incorporates "real time" face-to-face
63   communication, which has the functions of I-messaging, color, imagery, etc. all things
64   mentioned to enhance collaboration. Being that my peers and I, and other students alike, use
65   black board for academic reasons, the stigma I see that makes it less appealing, regardless of its
66   awesome functionality is the ability to be more appealing, meaning, making it feel less academic
67   and more social. Understand, that I am well aware the Bb serves academic purposes, but so does
68   Google chat, and other counterparts. I do hope this is an insightful response to your
69   research.[Student 6]

70   Most of my IT classes have used the constructivism approach, which encourages learners to
71   communicate with each other and the instructor. This allows the instructor to act as more of a
72   guide and equal partner in the learning process, while encouraging open communication. Since
73   online classes lack the traditional face-to-face interaction, collaboration is key to student
74   engagement, which can also affect retention and learning outcomes.

75 For our final project in this class, my group used Google Hangouts. Although the group function
76 was set up for us via Bb, we found Google to be a much better resolution to our needs. By seeing
77 my group members, it mimicked being with them face-to-face. I felt more comfortable working
78 with them this way and felt like I got to know them much better. Although this is not the only
79 way to collaborate, I definitely agree that some social aspect of classes is beneficial to making
80 learners feel engaged in the learning process and committed to the class.[Student 7]

APPENDIX N

Raw Journal Data per Phase Aligned with Research Questions

Phase ONE/Week 5 - Reflective Journal Prompt
WEEK 5: An instructional intervention in the use of Blackboard discussion forum multimedia functions was designed to you support your collaborative tasks for this course. Reflect and share how the intervention resource and using Blackboard discussion forum multimedia functions have impacted your collaboration experience. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology. WEEK 5: An instructional intervention in the use of the multimedia communication functions of Google discussion Groups and Google Documents was designed to you support your collaborative tasks for this course. Reflect and share how the intervention resource and using multimedia functions have impacted your collaboration experience. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
It's not always easy for a group that at this stage m**ost likely have kids or careers** to meet up to create power points and such. This technology has made it possible to still collaborate with one another and not just talking on a phone and one person doing all the work.			✖	
At this point, I have not used the Google docs to collaborate with classmates, but I am sure it will be helpful.				
I am enjoying using the Google document to get feedback on my work.				
Instructional intervention has thus far made the collaboration experience easy to deal with.	✖			
My classmates typically respond or comment within a day of someone posting or submitting an email to the class Google link. By everyone having a Google account, we receive notices from our instructor as soon as they are sent because I personally **receive alerts on my smartphone** when I get an email to my gmail account. Receiving this notification will allow me to react to changes in the syllabus or new timelines for assignments.			✖	
In the past I have used Google Drive and Google Hangouts to communicate with my classmates on group projects. This was very beneficial since this class in online and we **did not have to d**rive to **campus to meet to work on a project.** Google Drive is a fantastic collaboration technology as it allows you to see where others are in a project, which alleviates one from having to send nagging emails to get updates on their status.				
Multimedia functions are great for this program and could also be beneficial for true online courses if classmates choose to use this resource instead				

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
trying to set meeting times outside of class to work on a project.				
Google Discussion Groups and Google Docs are great tools when there is a need to **collaborate remotely. There isn't really a perfect substitute for sitting down in the same room with others, however** these tools do allow for live discussion. **Another positive aspect is that one can take a little time to think and reflect before sharing.**			✗	
At this point, I have not collaborated with my classmates yet, but I know that we have group assignments coming up in the near future.				
The Reflection Journal where we post our responses and [professor] responds to them and we have an asymmetric dialog is very interesting. It seems to work pretty well for this type of class where there is a lot of creativity and it leaves room for [professor] to ask follow-up questions, which is nice.			✗	
I had not used the discussion board function before, but I have done discussion boards in other learning management systems, so that concept is familiar to me too. So, no major issues from me regarding the technology we are using for class.				✗
The intervention gave me more information than I had before about the different functions that were available to me for collaborating.				✗
I have been receiving emails about posts from the discussion board, but **had been unaware that I could reply from my inbox. That feature I believe will help with collaboration since many many people now have their email at the fingertips at all time.** The conversation will be able to flow and ideas grow by there being less limits on when people are able to reply to each other.	✗		✗	
I do not have much experience using the multimedia functions yet, **but I can see how they would be a great asset in collaboration. The ability to share words, pictures, video, code and so on to be able to have visual instead of just words would increase the connectivity between all parties involved in the collaboration regardless of how far away from each other they were.** When creating a project with classmates these tools would allow for the whole formation to be done collaboratively. Files could be shares and as they were updated there would be a trail to reflect back on. A sounding board there for all involved to be able to throw out ideas	✗			✗
The collaborative aspect of this class or any online course is only as effective as people use them. **I believe there is a level of antisocial behavior at work when someone chooses an online course.** I think the instructional intervention of this class allows me to be as active or inactive socially as I wish. I have not participated in much group work yet so my collaborative experience is limited right now.				✗
I believe that it makes collaboration easier. The a**bility to connect without having to be face-to-face is amazing. It helps for ease of use and quick access to information and communication.**			✗	

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
Being able to use Google documents to see others work and connect with another or a group instantly saves time and allows for full communication between people who may not have the opportunity to do so without this technology. This **helps save money, time, and increase productivity. Also, it allows a variety of opportunity to collaborate with people different background, cultures, education, etc. allowing more experience and a broader base of growth within projects, discussions, etc.** My personal experience has been positive and informative. **Seeing all of the possibilities and technology available is a great foundation for future use and collaboration.**				
An important aspect of these apps is the ability to collaborate on a document in 'real time', i.e. to be online with group members and edit or revise a document. That recreates the in-person experience with the added benefit that everyone can see the changes in real time.			✕	
Using **Google Docs** has been a great collaborative experience so far in regards to this journal. I **enjoy the ease of use from not having to send or submit a new document each week and the interactivity of being able to respond to your comments has been extremely useful.**				
I did not find the videos on how to use the multimedia functions helpful, and I am **not sure how the videos have impacted our collaborative experience.** Any ideas?	✕			
The **video tutorials provided some great suggestions for how to engage each other in a collaborative environment that is more dynamic and provides a stronger sense of personal connection and community.** It also provided some opportunities for integreating different forms of media into the environment that can **help to clarify point of view, share resources, and help to more clearly communicate expectations.**	✕			✕
I agree that there were some good suggestions. I find that the blackboard discussion environment is really similar to Moodle so most things are similar (but other parts of the LMS are VERY different!) I do think there are good opportunities to use photos, videos, etc. **Many discussion board activities are fine with text-based communication. However, it is definitely helpful to have other options.**				✕
didn't find the Discussion Hints & Tips videos to be helpful either... I also **have not been able to find the "Subscribe" button she mentions either.** Anyone know how to set up notifications for our group discussion board here?	✕			
Discussion boards are a helpful tool for facilitating collaborative learning. They provide an easy, effective means of communication for students, helping overcome geographic boundaries and time constraints. This communication **fosters connection through relationship building. Once familiarity is established through this communication, trust can be developed and a collaborative learning environment is possible. This is**				

Phase ONE/Week 5 *Raw Journal Data* [Researcher's note/memos are bracketed in italics]	RQ1	RQ2	RQ3	RQ4
ideal for the student.				
...great point about Blackboard being clunky and slow. Every **year Blackboard designers try to improve the features to provide users more options** however I find that t**he improvements also means slower performance. This year seems to be the slowest yet although** I do appreciate that PDFs can now be uploaded through SafeAssign, maybe next year Excel will be added.		✕		
The **discussions also challenge me to share my ideas more than I would in a classroom setting** where I would be one of the students that would observe more than participate in the discussions.				
Blackboard is a tool is a great way **to inspire and increase communication between classmates and the instructor without having to be in the same location at the same time.** It also provides a way to view another student's commentary and that exposure, in turn, facilitates learning. The c**ollaborative discussion board tool is a level playing field for all students and implements equality and engagement.** In other words, in a classroom environment a student can easily "hide" in plain sight. **Online discussion tool promotes and enables expression of ideas, perspectives, and counterpoints within the construct of coursework.**				
I **haven't had a hugely authentic use for the multimedia functions in Blackboard.** I can see them coming in handy if I was trying to reference a specific visual component, but I haven't necessarily had to do that yet. I like knowing that they're there, though. Especially since we work solely online, **I feel like it's important to have the ability to share pictures and videos like you would in a brick-and-mortar environment.**				
I do like the aspect of discussion boards in general. Again, with **the fact that we don't have in-class hours for discussion, being able to have a venue to engage in conversation around the content is critical. The multimedia tools make for a more robust conversation, I just haven't had an image, video, or audio piece to share.** I also would prefer to be able to embed video, which is a feature I miss over on the Google discussion boards.	✕			
The **videos were really cool though, because I usually just go hands-on when I'm trying new features** and I have to edit and re-work my discussion board posts; **with the videos I could see how to use the tools and what the end result would look like.**	✕		✕	
...the multimedia functions aren't used extensively, **most people are just comfortable with text with a discussion board forum.** It is almost as if **the effort to creatively use images, video, or audio is more work.**		✕		
I really **love the flexibility that online courses provide** however **it does require discipline and organization by the student.** It also r**equires that instructors are very clear with instruction on assignments and**				

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
expectations as well as **constant monitoring of student engagement.**				
...multimedia it's also tricky in an academic setting, because I don't want to do a vlog-style response when writing seems more 'academic,' you know? I'm always **afraid it will look like I'm taking the easy way out by talking to the camera rather than writing my thoughts.** Also it's a lot **easier to create an articulate argument in writing than with video**.		✕		
I haven't found it necessary to use the multimedia tools either and like you **I just try to figure out how to use a particular tool when needed and move on to the next task.** I also agree with you that **the video was helpful in demonstrating where the tools were and how to use them, so it's nice to have that as a resource to refer to if necessary.**			✕	
The **intervention resource was helpful, brief and focused. I a**ppreciated **how Kecia kept the presentations under 5 minutes,** I was able **to understand the content for each subject quickly and felt comfortable that I would be able to use the functions successfully.** I think that **using embedded links** [hyperlinks] **would be most valuable for collaborating with classmates since it provides access to related resources and further engage the discussion.** Also, t**he word processing tools are quite useful for content organization and provides a pleasant aesthetic that makes it easier for the group to read and understand** the posted information. Finally, I think that t**he use of embedded video is an effective visual learning tool if used thoughtfully.** I often l**ose interest if the video is too long.**	✕		✕	
...the videos were brief and had a nice flow. Long video are an attention killer for sure! The **multimedia tools enable expression of ideas, perspectives, and counterpoints although most of us just really use the word processor** *[text-only functions]*.				
It *[? What, my II videos or CT functions??]* is a **good way of sharing the ideas and knowledge with each other but I think it** works with some **people and it does not with others especially if are from different cultures. Some people do not feel good through typing or texting,** they **prefer a real communication** [f2f] **with other also that make them learn more.** *[Hmmm, could video conferencing options support cultural needs online?]*		✕		
I liked the blackboard. **It is a good way of keeping in touch and collaborate learning with my group at any time and from anywhere.** In fact, **I wish if we have an access to the other groups to learn from them as well. Everyone in the group can talk and get engaged with others regardless of any obstacles of the communications that could happen in live classroom.** The **Hints & Tips** *[my Instructional Intervention]* **helped a lot in the beginning and we can go back to it at any time we need it.**	✕		✕	

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
I get your point on the access of **the discussion boards** BUT (there is a story behind the BUT) I **just don't think that they truly spur a good debate like a real face to face conversation would.** And **maybe that is just the extrovert n my screaming out. I feed off other energy and ideas and there is just not much of it at my computer.....**		✕		
I agree with your viewpoint as well, especially that your texts can not show and can misinterpret your message. The "BUT" gives us some wider solutions when we have obstacles like being in a broad distance. I know that the IT students meet every other week at the campus, which is great. BUT, you know what? **adding a personal picture ID to the discussion board will be great, although some people are not comfortable with that, and I totally understand. There are so many judgmental people lives around us, BUT we have to think in a positive way and ignore them.**	✕			
I believe that **using the multimedia does not add much to the discussion because it then becomes more of an information sharing session then a true discussion of ideas and thoughts.** Some of **the basic functions like hyperlinking add to the experience a little because it helps the other students access the information more easily.** Maybe it is has been the topics we are discussing that prevents the advanced use of the tools but I feel like most discussion board questions are designed to be discussing ideas and thoughts. Most of the **topics in this course so far have been personal not research based so posting videos and other external documents & files was not necessary.** *[Learner: Consider multiple means of expression and representation!* *Teacher: Require it or create a culture that support it!]*	✕			
I think that t**he multimedia functions in Blackboard will be very useful for collaborating in** **future. Features like being able to post videos from YouTube with the Mashup function and they ability to record them yourself is a big asset when we do not meet face to face**. By being able to have a organized discussion on the message board with all aspects built in we can truly collaborate. **Embedding PowerPoint presentations that are being worked on together I think is a great feature.** From watching the videos I learned that you can tweak the dimensions of pretty much anything you post media wise. I did not know that and am glad I'm aware of it now in case anything I try to post looks cut off. It's really amazing all of the things you can do now! <smileface>	✕		✕	
I haven't felt like I've used the tools in the most meaningful ways yet; I've **used them when required but I'm not really to a point where I've used them organically.** I think I'll be able to give better insights to this question	✕			✕

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
after Week 6, when we start working in peer groups. **Right now the majority of this course has been student-professor interaction via our reflection journals.**				
I am a second career educator so **I had quite a lengthy time between college experiences.** When I was in college the first time I remember my college having a computer lab which consisted of 10 huge desktop computers that were housed in a tiny room on the top floor of an old building. We didn't use technology too much back them. My second time in college was a little more tech heavy but still not too much. **Now that I am a teacher everything is tech. Tech tech tech tech.** It gets a little old at times, always being reachable. Our kids are always using technology too so when they are asked to use technology in school for a majority of the time even they get tired of it. After all of that I still, obviously, **believe that technology has helped us more that hindered us**. I have used the collaboration tools to communicate with other classrooms full of kids from other states. I have been involved with tech heavy conference calls (using Google or some other engine) to make sure that me and my team have the latest up to date research on how to educate students. I have been able to calm an otherwise uncontrollable child by using my "Mommy Cam" idea in kindergarten. Yes, technology has helped me.				
Now in response to collaborating with my classmates, **I have mixed emotions. I actually find it difficult to use technology to actively collaborate with my classmates** *[Difference? ADULT LEARNERS].* I have only done one project like this though so I am holding out hope that the more I do it the better I will like it. **As far as the collaborative process, I again find it a difficult process because we are not meeting or even really speaking face to face as I am used to. I understand that I have to grow out of my comfort level but currently it is difficult for me. I do, however, feel there are great collaboration technologies out there that help people do what they need to do regardless of physical location.** I love the idea of truly capturing the power of technology for my students and really helping them see just how big the world is and just how much is waiting for them out there. *[Not on the post-secondary level, though huh?!?]*			✕	✕
The "**Discussion Hint and Tips" videos are very helpful to me when communicating within blackboard. I find myself revisiting the videos for my other course. I wish I would have had this type of instruction in undergrad.** I didn't realize there was a function for mathematical equations; i**t would have been useful in my online econ class. I too found that the "Dynamic Discussion Board Features" video informative. The webcam feature would be very useful in personalizing material that I want to share on blackboard, once I get better at using it.**	✕			

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
I didn't know about the math equations either till watching the video. I think it's excellent that they are now included and shows how more types of classes are being taken on line that the type of function is needed.	✕			
Yes! In the past I was just in the dark, the instructional videos are helpful. I just wonder if all online classes provide helpful hints.	✕			
I've never seen a class have videos like these before only just the basic help pages. I hope that this starts a trend. I think students would get a lot more out of the discussion boards if they had a more in-depth knowledge of what all they could do.	✕			
After watching the three videos, I found the last video to be very useful. It showed me few new things that are good addition to the blackboard forum. I really liked the idea of recording yourself from webcam and ability to post it without going through YouTube. Also the change resolution is nice so the video can fit. At one point **I will plan on making a webcam response to test out how it works.** I also liked the option of adding various versions of media. The mashups option is nice too. Those options are good especially if we want to share our material that we can use for our e-portfolio or other things.	✕			
Thanks XXX for starting the discussion! **I look forward to your webcam response, I might do it as well, it will help to build my confidence.** Reply to XXX: Maybe depending on what discussions are upcoming we could all reply via webcam. It would be an interesting experiment in new ways to have a discussion on Blackboard. Could be fun!	✕			
All I need to do now is learn how to design the training. One of the features that I have used for collaboration with my coworkers is the live virtual classroom feature. Through that we can interact and share ideas in real time. No one really wants to use it any more though but it made it easier to collaborate with each other even if someone had to be in another building. My **major issue with discussion boards though is that I tend to get lost in them. There get to be too many forums and threads spread out that I forget which ones I am trying to follow and I don't have the time to read every post in one sitting.** The small group breakout from the whole class makes this easier to keep up with but I still feel I may be missing something important.		✕		
Group collaboration is really important and I think the best thing for me with blackboard is just that I can play around with it on my own time and post things at my leisure.	✕			
I had no idea that all of these tools were available to us on Blackboard discussion boards! From the webcast options to the ability to embed media, there are many ways to have our discussions be much more than your normal Text based discussions. **I think the webcast/screenshot options would be very helpful when it comes to group projects, or other projects** (say, development of the E-Portfolio) that we may not all be				✕

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
experts in - others with more experience could help their fellow group members with this tool. **Showing by example or demonstration is oftentimes more effective than typing out text-based instructions.**				
The videos displaying the functions were helpful for exposing all the different utilities and options offered, but other than loading a picture of myself for introduction purposes, I haven't used any of these. The **need hasn't presented itself, at least not as of yet, although, learning/practicing the skills to use Bb in its fullest entity would be an ideal goal.** It's actually good to know that all these functions exist. I have only used Bb discussion board in its simplest form. **The option to broaden the experience should lead to a much more engaging experience for my peers and myself, in all courses.** I'm not too savvy, so I'll have to keep up practice and revisit the "Tips and Tricks"				✕
There are so many features that I was unaware of about blackboard. I've taken online classes for the past couple of years and had no idea there was a webcast feature available on pipeline. **The three videos that was provide by Ms Waddell was very informative and easy to follow and keep me interested. I have a much better understanding about the discussion board feature in Blackboard.**	✕			
The instructional videos introduced me to Blackboard functions that I was not previously aware of. Once I watched the videos, most of the tasks were easy to duplicate, such as inserting an image into the discussion post. I was actually already able to use this function this semester in another class to share an important image that related to our discussion content. **Sharing that image impacted the collaboration experience with my class because they were able to use a visual aid to help them understand my explanation and comment/respond to my post.**	✕		✕	✕
Further **small group collaborations have been done outside of Blackboard, such as Google Docs, so they have not taken advantage of these resources.** My main concern involved using the Mashup feature. I attempted to insert a QuickTime video done exactly the same way as was done in the video, but the function was not working on Blackboard. I contacted the Help Desk but they were unable to assist me and could not provide an explanation as to why it did not work. **Thankfully, I was able to figure out how to do a YouTube video instead.**	✕	✕		
T**he week 1 activity did have an impact on collaboration, but I felt it was more beneficial for student to have an opportunity to practice using the technology to make sure that it worked early in the semester.** Also, knowing who has a strong technical background might help to better implement the collaboration process in a group.	✕			
In order to collaborate with peers or anyone online, a technical skill set is definitely important to have and demonstrate. For example, a group needs to make sure everyone understands how to access shared documents,				✕

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
post questions and replies and maybe post a video or use a webcam. There are a lot of different technologies available in Blackboard that could be used for collaboration including Bb Collaborate and Video Everywhere. These technologies are just as good as using Google Docs b**ut there can be a learning curve to setting up these technologies for groups within Blackboard. T**herefore, many groups choose to use Google Docs simply because most individuals already have an account and have used the technology prior to class.				
In the beginning of this course, we were asked to attach mashups, videos, and images to our posts. I admit when I first came into this degree, I had no idea what to expect. I thought a lot of what we would be learning would be about teaching, but as I was introduced to what Instructional Technology is, I was very intrigued to find out more. It dealt with technology and dealing with instructional methods that use technology and so on and so forth considering how I have come from a background of little knowledge of the Blackboard system nor any online course experience, the instructional intervention we were asked to do in the beginning of this course was something I believe, expectedly, I did not complete correctly. We were asked to post a mashup, a video, and an image. I was able to complete 2 of the tasks, but I hope that with continual practice, I'll be able to complete them all correctly.				✕
I have not used this instructional intervention while collaborating with my classmates, as of yet, however, as this course moves along, I am hoping to adopt this intervention into my collaborations. I **believe that this will pose as visuals for better understanding of an individual trying to deliver messages across or possibly an additional information that will help with explaining certain ideas in a more interpretive way.**				✕
The **ScreenCasts are a great tool because they provide a direct, quick, and easy instruction to follow**. What is astounding to me is that I am now on my 3rd year at Wayne State and I had never before viewed this type of instructional assistance when using blackboard. So, I **did not know how to do any advanced functions in Bb before this course. I believe that having us use these tools during the week 1 introductory posts/intervention was very beneficial to myself and my colleagues because it got us started with using technological functions that we may not have used I the past.** It gave me an insight into how using new technologies in this course would go. There is a lot of trial and error and "playing around" with Bb and Dreamweaver. I believe that this is beneficial though, because as I try to do one thing, I learn how to do another thing.	✕			✕
The most beneficial pieces that I learned how to do were: 1. How to do a hyperlink in Bb 2. How to insert the mash-up and embedded Media 3. Subscribing to a board. I have used all 3 of these functions in Bb. In terms of collaboration, I have		✕		

Phase ONE/Week 5 *Raw Journal Data* *[Researcher's note/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
subscribed to my own Group Discussion posts and **used the hyperlink function to post our link for our group project in the Week 4 Discussion Board. I also used the mash-up and embedded media option in the Introductory Post and our team used it in our Week 4 team assignment.**				
I believe I will continue to use these functions and hope to learn about additional ones to increase the level of collaboration that I have with my team and classmates. I feel that **being able to include embedded media in our team assignment was great because it showed a sample video versus just trying to describe what our team was thinking of.** I think that is the benefit of all collaboration tools, it is another means of communication in an online environment rather than just trying to describe everything, we can use more visuals and aids to communicate our thoughts.			✗	✗
Honestly, I never knew how to use the functions we learned on the first week, like embedding and mashups. I had taken many courses on blackboard before but I was never required to use those functions, and never told about them. **I tried to do them without watching the videos first but could not figure it out. Once watching the videos it was very easy to do! It's just a matter of knowing where to go!** I think it can def help in collaborating with your group. I think one way is with the mashup and embedding a video. I use to just post the link in there and then you can copy and paste it but with the videos we saw you can use a hyperlink or just embed the video and you can just click play. It makes it easier so that everything can be done on blackboard.				
The videos displaying the functions were helpful for exposing all the different utilities and options offered, but other than loading a picture of myself for introduction purposes, I haven't used any of these. The need hasn't presented itself, at least not as of yet, although, learning/practicing the skills to use Bb in its fullest entity would be an ideal goal. It's actually good to know that all these functions exist. I have only used Bb discussion board in its simplest form. The option to broaden the experience should lead to a much more engaging experience for my peers and myself, in all courses. **I'm not too savvy, so I'll have to keep up practice and revisit the videos.**				✗

Phase TWO/Week 9 Reflective Journal Prompt
WEEK 9: Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of using the instructional intervention resource and using Blackboard discussion forum multimedia functions for your most recent collaboration task. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology

WEEK 9: Evaluate any underlying issues, challenges, opportunities, insights, etc. that surfaced as a result of using the instructional intervention resource and using the multimedia communication functions of Google discussion Groups and Google Documents for your most recent collaboration task. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology. |

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
Sometimes, **asynchronous communication is really slow.** Like playing chess by postcard. We met online in a virtual room during our group project and that was very useful, although **one of our members had trouble with the technology. If you have** a **team member that does not come up to speed on collaboration technology quickly, they will fall behind or not be very useful to the group. They could have great ideas, but if they cannot participate, then they are not productive**.		✗		
There are a few challenges with collaborating online: 1) It is a **"pull" system not a "push" system, so I found myself checking every day (even a couple times a day) to see if one of my team members had posted an update to my document or had posted new information to their documents, so that I could comment or provide additional information.** It's kind of like checking the mailbox every day for a letter that you think is coming, but you are not sure when. 2) Also, **as you post new comments and old ones get pushed down,** how do you get your collaborators to see a response to something you posted a few days ago? For example, [a classmate] mentioned a chart she uses in her job. I posted a reply to her comment and asked if she could send me a copy. It is not critical, but there is no way to know if she sees that particular comment. I think emailing her might be better. Real-time interaction gives you an opportunity to follow-up on things like that. 3) **Different collaborators provide different qualities of feedback.** Team Member 1 provided insightful comments. I can see that she "gets it". She may not understand my topic, but she understood who my participants were. Team Member 2 provided supportive comments, but they were not useful in helping me move forward with my design. Team Member 3 did not provide any comments that I saw. So, it truly is a mixed bag of results.		✗		
I am **going to suggest that my group meet online in real-time to provide more direct feedback to each other.** I have a rough vision of what I want to do, but I am concerned that my colleagues might be in the weeds. It is			✗	✗

Phase TWO/Week 9 *Raw Journal Data* [Researcher's notes/memos are bracketed in italics]	RQ1	RQ2	RQ3	RQ4
hard to tell from what they have posted thus far.				
Dr. XXX's feedback is the most critical and it has been timely and useful. (Really!)				
The biggest issue I had was with Bb not functioning as it should have been. Although I was doing the steps correctly, the system was not working. Although this was frustrating at first, I was able to "think outside of the box" and strategically come up with an alternative for accomplishing my task. Currently, I am taking two IT courses. In one of them, my group prefers to communicate via Google docs. **Although Bb multimedia functions may be helpful, we have found that other resources are much more appropriate for the scope of our project. In my other class, I have used Bb multimedia functions once. I believe that this use was helpful in communicating my ideas to my peers.** It was not really a collaborative effort, but it did help move the conversation forward. Besides for that one time, I have not had any more appropriate opportunities to use these Bb functions.		✗		✗
There are a lot of different tools presented for groups in Bb, but not much instruction as far as how to use the tools themselves. The interface and layout of Bb tools is cumbersome to use and feels outdated, and there is no opportunity to collaborate in real time. Blackboard also seems to have glitches depending on what browser you are using as well. Some tools perform better using IE and others using Chrome or Firefox. **I found using Google Docs as a collaborative tool much more user friendly than any tool in Blackboard.** You are able to see updates and chat in real time which is a powerful tool. I feel Blackboard should update their interface similar to how Google has designed theirs.		✗	✗	
...In terms of collaboration, I always preferred other ways than BB (like Google doc). I just find it easier and more user friendly.			✗	
The biggest benefit is when Blackboard is used as a Virtual Café, where it functions more like a blog giving colleagues an opportunity to share their knowledge, helpful tips, or pick each other's brain. Now that I've used Blackboard for quite some time, I find it to be a flexible and supportive tool as both a student and instructor.			✗	✗
One thing that **I am a bit unhappy with is the cognitive load Blackboard brings to me. I feel as though it has an overwhelming amount of tools and intervention resources, especially those of which we do not use.** Also, the fact that we are working with this site, I would expect a better communication threshold, similar to Google Docs or Hangouts, that can create a better sense of communication with group mates, peers, and professors. **I find it a hassle to have to go back and forth between Blackboard and other various websites in order to communicate with others or even complete assignments.** I know that there are many tools		✗		

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
that can be used on Blackboard in order to do so, however, there are TOO many. (lol!)				
A couple of suggestions: • Reduce cognitive load: if simpler ways for students to navigate without having to see a whole bunch of confusing options would be a great thing. • Upgrade communication system: I find Blackboard to be lacking in 'updated' communication resources for peers. If something similar to Google Hangouts or Skype were to be created via this site, it would be very useful and less hassle for students to communicate with their peers. *[Desire for integrated tools; Reflective about desired supports for online collaboration]*				✕
I totally support your suggestions. Also, **I would like to see an "instant" messaging option on BB. I think that would be great.**			✕	✕
I have found the presentations helpful and I understand their purpose, but **my experience using collaborative media is limited.** This is the first year I have had to respond to others using Blackboard and Google Groups. **My preference is Google Groups. I find it easier to use.** I have found the conversations with my group in Google groups to be more collegial and pertinent than Blackboard Discussion Group. **I am aware that, in Blackboard, there are tools to use to create more dynamic conversations, but I am not sure if it is always needed.** *[Next iteration intervention should encourage more academic application. Participants are indicating lack of applied knowledge for CT use; lack of experience with CTs]*	✕		✕	
I would like to learn more about creating presentations using videos and maybe different presentation software to create personal responses. **I would like my responses to be more than talking to the computer and uploading to a group.**				
I just began using Google Groups or a Google Drive or anything Google related about two years ago. I started using it at the behest of one of my young and hip colleagues. He showed how these items were very collaborative. I have since learned that I can upload something on my GDrive and access it from any computer without having to email it and save and so on. **So I can say that I am a fan of these collaboration tools. However, as of late I have been having trouble with them. I have a hard time with checking multiple open forms that other people can comment on.** I also have trouble keeping up with all of the open forms that I can comment on. Perhaps it is just that I am a bit older and not as quick or maybe I just need to try harder.		✕		
This being my first experience with the features in Google, I think that it is serving a great collaboration opportunity within my educational process. **I think that it allows for ease of access and is easy to pick up and understand. Issues with these functions are the lack of formatting**		✕	✕	

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
available. I think that the tool is great but sometime limited.				
I initially used the Record from Webcam option during our class introductions. **However, we haven't used any of them throughout our small group discussions. I think that using the recording option is a good way to establish a social presence. So, the only issue is the fact that we really haven't used them.** Would using them add more substance to our discussions? Would it be value added? Or would we be using them simply because they are available? *[Curious about my Quantitative WK.9 Data on the COMPLIANCE metric]*	✗			
I still like **Google Docs. It is a very convenient way to work on a document individually so that your instructor can see your progress and provide valuable feedback in a timely manner.** It also helps when working in a group, however there could be issues that arise. **On thing that I encountered this semester is when we working on a group document, we assigned ourselves different colors so it would be clear which group member provided what information. Well on of my group members overwrote some of my information in her own color. This was very frustrating as I know how much information I provided, however I could not recall the exact information.** Not having the information saved on a separate word document I had to go back and try to research the information I initially provided. *[Lack of knowledge about History function in GDocs. My intervention DID NOT include this function]*		✗	✗	
Here is an issue that I had not experienced before in terms of collaboration. After the initial submission and grading we have the option to return and rewrite. Two of the group decided to do this. We didn't hear from the other two so we just went on. Actually during the initial write of the paper the two who did not respond on the option to rewrite were weak members. One in face did not follow through. So when the two of us went on with the rewrite I figured it didn't matter on the grade because we were a group regardless of who did the second write. This was an issue. One of the group responded after the submission of the rewrite. Angry but all was worked out. So here is the ethical question. Should all of the group of four get the rewrite grade. In my opinion yes. **I feel it is up to the members to communicate. If the group has non communicative members then it is up to the group to settle. Once the group is formed the work is within the group. The out is if the group does not perform well then the out is for the group to disband and reform if they like as another group. In this course that option is offered and I think that it is a good option. Reforming allows the team to self select if there had been an issue of a member not holding their own. But, whatever grade is assigned to the group goes to all members of the group. Just my opinion.**		✗		✗
[Classmate], I really liked your introductory video! However, is the benefit worth the time/effort? For example, I am in my pajamas and		✗		

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
watching the news right now. If I were to record a video, I'd probably want to make myself look slightly better and I'd need to turn off (or mute) the TV. Nothing wrong with that, but is any benefit worth the lack of convenience? In some cases, maybe! In others, probably not!				
I agree, v**ideos are a lot of work!** However I do love watching them when others put in the effort! *[Participants are referring to creating their own videos for audio/visual sharing over text-only communication. My intervention included this type of video creation as well as sharing of video found from 3rd-parties that might support an idea... AGAIN, their point is well taken. Video selection would likely take time... Of course, in informal social networking situations we share video content all the time...Hmmm]*		×		
I use videos for my own education, but I have yet to create one to promote myself or some educational concept. I am looking forward to developing one. *[Recurring themes: no behavior change due to LACK OF perceived TIME to VALUE of EFFORT ratios; no incentive within the course design for self, team/group, or online community of participants in the course(?)]*		×		
I think as **far as our collaborations here go, the discussion board posts alone are sufficient.** It might be cool to try some type of Skype or Google chat at some point, because that is at least interactive, **but videos can feel like you are just talking to yourself!** *[More indication supporting perceptions OF PRESENCE lacking in online setting that impedes collaboration...seemingly]*		×		
... I like interactive conversations (Skype, etc) rather than creating a video *[Desire for greater interactivity noted (prefers video conferencing for collaboration...but WHY? To create PRESENCE? Or, what?!)... It must be "designed for" in the online learning environment: organic collaboration apparently WILL NOT just happen even with necessary tools available.]*		×		
A fundamental requirement for collaboration technology is communication. One benefit of the process is that each week is an opportunity for improving your communication and writing skills. *As described in chapter 19, instructional designer tend to be great communicators as we learn, develop training modules, and the teach it. Great communication skills require lots of practice and refinement.* Collaborating with my classmates helps build these skills for future use. The only downside of online discussion forums is the inability to physical meet my peers. In other words, I know my classmates virtually however if I walked passed them on campus I doubt that we would recognize each other. *[Could the desire for ONLINE PRESENCE be mediated by rich text and multimedia communication in the DB or is it something else: hybrid course design? synchronous course times mediated by video conferencing technologies or IM?]*		×		

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
The multimedia tools for this class haven't really come into play for me, nor have they within the context of my IT6110 course (which is also captured by this study). For me, **I feel like the discussion boards are best used for written responses. In a natural classroom context I feel comfortable speaking, but because of the produce-edit context of an online course I feel less comfortable responding in any way other than writing.** *Recurring PERCEPTION/Attitude about OBD and Online coursework*			✕	
Written responses give me the ability to write, re-write, and make sure that what I'm presenting is carefully thought out. I feel like that's the expectation for online courses. When recording a video I would either be speaking off-the-cuff or presenting pre-written materials. I love the comfort level that comes with speaking casually, and I think it gives more authentic ideas to react to, but I don't feel like it gives me as complex or 'academic' of a response. And if I am writing out a response to record, then I'm just making more work for myself! I can just submit the written ideas rather than creating a written response and then making a video of that written response.		✕	✕	✕
The newest video also suggest adding scholarly multimedia to back up my points, but again that just adds on to the "more work than is otherwise necessary" realm. While I understand that it's important to work hard and spend time on assignments, we already have academic resources on these topics that we're all required to read and reflect on already, going out to find even MORE materials on top of that is just an extra layer of effort on top of balancing all of our required academic work. This whole response was written off-the-cuff so **I apologize that it also kind of makes me sound lazy, but I couldn't record a video of my response because I'm responding on my lunch hour at work-- such is the nature of asynchronous classes!** 😊 *[Good point about anytime, anywhere response options...but we make these media appropriateness decisions daily for nonacademic content-sharing. I was NOT suggesting to ALWAYS reply dynamically...but, moreso identify the opportunities to do so. IMPLICATIONS FOR FURTHER RESEARCH: Conditions for Rich Text and Multimedia Use in ODBs...]*		✕		✕
...the steps that involve commenting on others' work feels stilted. **There is a struggle with my loyalty to the members and providing them with solid commentary, and my feeling that the exercise is contrived.** I would prefer to use Google Docs or similar software for collaborating purposes. It is more user-friendly than Blackboard. *[I'm wondering how this respondent's "struggle with loyalty" would be mediated by GDocs or "similar software for collaborating purposes" over BB???]*		✕		
About the discussion of Instructional Intervention video, I really truly admire all of the efforts they are doing to improve and facilitate learning. I	✕	✕		✕

Phase TWO/Week 9 *Raw Journal Data* [Researcher's notes/memos are bracketed in italics]	RQ1	RQ2	RQ3	RQ4
personally got improved in using more technology, and I am getting better and better in utilizing any opportunities of utilizing technology, **but finding the time becomes an obstacle. I like to add an audio or video, but time is a major problem since I have other assignments and responsibilities to do,** so what do you think guys?				
About the discussion of Instructional Intervention video, I agree with you about the time and also I want mention that some people like to interact and work more with people and just using machines like computers. Because of that I think **it is a hard job for instructional designers to design an effective way of collaborating by using technology to meet the participants' needs and help them to improve.**	✕			
I think the collaboration technology now is common and new. So I think it needs more attention and improve. Also, the instructional designers who work on doing similar to this project should be aware about the participant's needs and backgrounds because many people prefer interact with people more than interact with machines such as computers or phones. **First they should teach them how the significant of using this kind of Collaboration and why then start to create the design what work to them.** [*TRUE... consistent with Adult Learning Theory 101: establish purpose*]				✕
I have learned a lot from these videos, but I have an issue with them. I don't know if I'm just not hip with the times or what, but **I just don't think that an academic discussion is the time for rainbow text and . The impression I got from the videos was that any discussion on Blackboard could be improved by adding these types of things. I do think that being able to include PowerPoint, videos and many things like that does enhance the collaboration between peers.** I just felt like some of the more artistic things you can do might not always need to be used. I am not trying to be negative and now that I am writing this **I guess I could see how some things like text color could possibly help to get across tone which would be helpful when collaborating since it is hard to tell the tone people are trying to relay in text. The intervention has given me a lot to think about and as I'm reflecting on it I'm learning new things.**		✕		✕

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
[I agree with the underlined assertion ... I love how this respondent reflects on what my original intent was-- to encourage perception and influence behavior change...]				
Having those different things like underlining, or bold, or italics, or whatever is nice. Especially when someone wants to get the point across. I also feel that doing too much of this would harm the person who is on the receiving end. I also **agree with you that using the rainbow text on academic discussion board is just now professional. :-P like such <0:-) B-) . This should be left to the Facebook and other social media websites** *[Why? Is there EVER a time on an academic DB: organic informal collaboration, maybe?]*				✗
Nothing says professional like a winky face! On a serious note, the bold, underline etc are great tools and it would be nice if as Blackboard and all online courses evolve if there were more ways created to help emphasis text/points and have more professional ways of conveying emotion through text. One thing that wasn't touched on in the videos*, **but I think is huge with collaborating with peers is spell checking.** I personally am a horrible speller and a lot of time my mind goes faster than my fingers so I end up with word soup sometimes. **By having the review tools such as spell check it makes collaborating easier because people are able to understand what each other is saying.** *[*Correction: Spell-check WAS a featured function in my instructional intervention videos]*				✗
I also agree with the smiley faces and rainbow text, there is a time and place for those types of enhancements. *[I concur as well... there IS a time --even in academia!!]*				✗
To comment about Blackboard, messages be it through a verbal or written channel can be misinterpreted. More often though, it's the written word that is. You made use of an emoticon to display a "light or cheerful tone". I often like to put words in bold for emphasis. However it could be interpreted as something else if I typed it in all caps and bold. "Do Not" compared to "DO NOT" which could be interpreted as I think my readers may not be able to follow instructions so let me make myself clear. I guess it all boils down to the channel, the sender, and the recipient. You can write a message in one form to someone who knows you and send the same message to a complete stranger. The individual who knows you had no problems with the message, but the stranger might.			✗	
We had similar discussion couple weeks ago and **I agree that highlighting, underlining, or making text bold makes the text to stand out and gives a hint that this is something important.** When it comes to the blackboard posts, I can see this being helpful when trying to get the point across and make sure that certain words stand out. I use this a lot in my math modules I made. Sometimes I put hints to the questions, but if I do not bold them or			✗	✗

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
underline them, students cannot see them. But <u>I have noticed that even with the bold and underline, students still miss it so I make the font bigger.</u> I agree that making those changes to [text] do create a more engaging text or something. Also points out what they have to pay attention to. *[This respondent demonstrates use of iterative communication techniques driven by the desire to be understood in his/her own instructional design decisions.]*				
As I shared in another post, **I use formatting to place emphasis on content so that it becomes a focal point for the viewer of the content/message.** The misconception comes into play when communication consists of this formatting. I have not heard of a situation yet, where putting emphasis on words using red font, bold, uppercase letters, etc. has created a negative tone in instructional material. Ahhh....But who knows.			✕	✕
KM: have used Blackboard for quite some time; however, I have not used all of the features/tools that are available. I have always viewed Blackboard Discussion Board as an excellent tool for participants to bounce ideas off each other, gain insight into different perspectives on topics, and to have an open peer-to-peer Q&A or FYI forum. I have tried using coursesites.com (the free version of Blackboard), however, attempts to have students login always resulted in connectivity issues with the server chugging along attempting to load the course content. **Overall, I believe that the licensed version of Blackboard is robust and supports teaching and learning.**			✕	
What I think works is that our instructor has provided the students with expectations. For example; posts are to be entered by Thursday. However, we are all adults, have families, children, jobs and unforeseen circumstances that may not allow for the students to meet these expectations. I have watched the discussion and intervention videos and I must say that I'm not sure that I am participating in an organic online learning environment. **I find that the discussions are staggered and don't flow. I wish that we could go deeper into our discussions between Friday – Sunday. Perhaps using the video feature will be more interactive and engaging for our group. I do believe that we do collaborate, but I think that we should all step out of our box and take risks when collaborating. Any takers?**		✕		✕
DL: I personally found **the use multiple colors to be too busy and distracting. What I see as an underlying issue to the use of online discussion boards like Blackboard has, is the lack of interaction in a real time setting.** I have used Google Docs for work and in other classes I have taken. There is a real time collaboration that can happen there. I have been typing while someone else was commenting and it provided instant feedback as well as real time dialog between us that helped me to clarify what they were saying then rather than having to post and hope they replied in a timely fashion.		✕	✕	

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
I know that i**f I were to record my responses in a video format they would be delivered sooner but it would limit the times and places that they could be viewed as well as I cannot view that type of content at work other than at lunch.** The **greatest challenge for me is the timely reactions. Without a real time option for collaboration, the effectiveness is greatly reduced when any time constraints are imposed.** *[Another instance of desire for real-time feedback and timely feedback and media choice decisions must be made for time and place...]*		✕		✕
Overall the video feature is useful and interesting. I have used the models and used them before in my classroom environment I also like the blackboard model. Which for us Wayne State Students it is a life saver! **All of these could be used if you clearly understand them in some sort of capacity no matter what your career choice is currently.** *[Reflection about collaboration tech and its appropriateness to task. I wish I understood HOW BB is a WSU student "life saver"?]*				✕
Before this class I was not familiar width blackboard. At my old university we used Moodle, but even weigh that we never used it to communicate with each other. I'm pretty sure Moodle has this group collaboration part to it. **The main challenge I have had is becoming familiar with using blackboard and its features.** It's awesome that we actually can communicate and collaborate without actually having to be in the same room. T**he more I use it the more ill become familiar with it. I'm looking forward, with the help of my group members, to becoming fluent in blackboard.**		✕		
As I read through a lot of my fellow IT 6100 classmates' thoughts on the instructional intervention video, I had a lot of those same feelings. I also believe that it makes it a lot less stressful on the grad student if they already had some prior Google docs experiences prior to taking a class like this. It's just far less stress to start. I have been out of school for many years so I have no point of reference as it relates to Moodle or Blackboard. Because I have been in the workforce for 30 years (as I started very early in high school working part time in an office setting back when Microsoft Word was brand new to all), I do have experience with Google as it relates to Gmail (for one of my few email choices), Gdrive (as I store all my important personal docs on their cloud in case of hard drive damage), storing all my smart phone telephone contacts (in case phone gets damaged) on the cloud in Google contacts, using Google Voice for my texting and voicemail to other non-personal tasks (where I don't want the person knowing my personal cell number), etc. Plus.Google.Com/Photos keeps all my pictures since we all mistakenly delete valuable pictures from time to time. Alas I am going off topic a bit. Suffice it to say Google has many practical things we all can use for our daily lives and I used a lot of them before taking this class. So it is not just good for the class but good for you	✕	✕		

Phase TWO/Week 9 *Raw Journal Data* [Researcher's notes/memos are bracketed in italics]	RQ1	RQ2	RQ3	RQ4
in general to be broad in your knowledge of on line tools. **The video for week 9's discussion also reminds us all that learning is retained more if you insert audio/video instead of merely text. I agree.** Like other classmates I hesitate to insert audio or video. But for me it is just due to the fact that I don't have time to simply play around with it in order to feel comfortable enough to use audio/video in my presentations now, That will change as time goes on. The only other thing I wanted to mention is that my group experienced the time lapse/feedback issue wherein one person made comments and the next person didnt until the next day so it dragged out. This can be easily fixed by doing what I read other groups doing in getting the group to set rules/expectations/scheduling. Then the back and forth dialoging will be more beneficial.				
Prior to taking IT6100 my husband tried numerous times to encourage me to use Google docs. I cannot even explain why I did not or would not attempt this but I had no interest. **Just last week I was sharing with him how pleased I was about using Google docs and Google discussion groups because the tool was so easy, accessible and everything is located in the same place. I have taken online classes before, but I have never felt like I was able to get to know or have been provided the opportunity to work in groups where I feel the threads are being read or that the replies to comments are valid and well thought out. My experience using these resources has been very positive therefore having a good outlook on the course. Perhaps the reason is because we are in small groups in most of our discussions therefore we can focus our responses on our individual group members.** What I have also found throughout this learning journey is that the online living discussions through the Google tools does engage the learning, allows for us to get to know our colleagues we as a groups of participants have created our own cognitive dissonance in our discussions. I was not expecting to have such success in these online groups. I want to repeat what was said in the video about there being no rules for when and how. It think that is the beauty of the tool, participants can just put something out there to see if they receive a response! **There are some challenges to online. My personal challenges are that I hesitate to add video or audio in the discussions. I don't know why I feel that way.** Also in the online discussions, there is a lapse in the discussion because the group may not be on at the same time to deliver their thoughts. There may be a solution to that if group members agreed to meet online at a particular time of day during the week. Just a thought. For me I thought the learning of the tool would be a challenge, but that has not been the case for me. I found it to be user friendly and rather fluid.			✕	✕
I must admit I was not happy when I first started using Google tools for this class, but **in week 9, I am happy!! to have explored most of the tools**			✕	

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
offered. I have become efficient in using Google documents and will continue after this course. I continue to find some hidden feature within Google, for example I didn't know when you share a doc, that the sharers can edit the doc at the same time. I used Google slides for the first time for my persona discovery and found that I like it more than PowerPoint.				
Using the Google products is not on the top of my list by any means. I understand the usefulness of Google docs and Presentation and the fact that students can work on a single document in real time. When my students do this, they Skype each other in or they will use Face Time. In my group, one person created a Google Doc and even though there are comments, t**hey are not visible unless I click on the word <comment>. I have never needed to do that before now. I most likely need more exposure to the Google products.**		✕		
I liked this kind of collaboration. In my point of view, it is new way of using technology and showing the benefit of it. I really like how we can add video or audio that could be so helpful as well in collaboration and sharing the ideas and knowledge with each other.			✕	
Using Google (both Discussion Groups and Documents) has been a totally new experience for me. It took me quite some time to get used to, as I am much more familiar with the Blackboard and Moodle platforms. However, the video has served as a nice reminder of the good things about it. For instance, the task of sharing a GoogleDoc (to say nothing of creating one) was entirely foreign and overwhelming to me less than 10 weeks ago. **Now, I find the Share feature to be incredibly useful. I see it as a great collaborative tool, to say the least. The whole notion of sharing and working together on files is nothing short of a revelation, especially if you regularly need to work on documents in a conjoint fashion with others, but don't regularly meet them face-to-face.** I find the Groups/Sites pretty fascinating, but the Discussion Board on the whole has let me down. This is partially because the discussions are few, far between, and not often the liveliest I've seen. Perhaps this is because so many WSU students are used to Blackboard and aren't quite ready to embrace a new platform (or like myself, don't have the time to master it all!). Technology-wise, I'm still not necessarily sold on it being "better" than previous platforms I've used, as far as embedding of videos and the like. However, if I think of using those features in a *collaborative* process, as opposed to simply designing the instruction myself and posting it to some platform, it **is** superior. My wish is that in future classes, I'll learn (and be able to use) more of the "advanced" features of Google, including Discussion Groups, Documents, etc.			✕	

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
The Google discussion groups and Google Docs have been an excellent instructional intervention resource for this class. Both have helped facilitate collaborative learning opportunities as well as situations for timely feedback, which creates a richer educational experience for me. For example, Dawn - my partner for the design project - and I were able to communicate easily, work online together both separately and in synchronicity, update and edit materials quickly and submit quality work with the click of a "share" button. With the logistics of collaborating effectively streamlined, **our learning was focused on higher order thinking and production. This makes sense to me. In addition, I am a big fan of the Google products. They are not perfect, but they offer a wide spectrum of tools and are cost effective.**	✗		✗	✗
I am not on team blackboard at all! Once you get into Google Groups and start playing aroun**d, it's a lot easier than you think to navigate and super for providing real time feedback. I**'m too vain to use Skype or facetime because I do homework while hanging on my couch - my poor group members don't need to be subjected to that!			✗	
I've never taken an online class that uses Google docs to communicate with groups and now I'm wondering why more classes don't use it. I**t's so much more user friendly to use and it's real time, which helps facilitate the communication and collaboration process. Plus, once you share your doc, it shows up in the email of anyone you've shared it with immediately so they know someone has commented or done something and can check it at their leisure.** I've had other online classes that have used the chat features within blackboard (the name escapes me) and it's awful. Having to find a mutual time where everyone can meet can take forever and then having to push a button and speak into the clown's mouth is cumbersome and frustrating. **Google docs is way easier and it facilitates the learning process and collaboration.** One of the challenges is, with any group, is group participation. They may not provide helpful or timely feedback and if that feedback is required, it could potentially hinder the outcome of the project. That doesn't have anything to do with the Google Docs piece and everything to do with who is in your group. I loved collaborating on the group project and thought it was fun!			✗	
Like some other students, prior to this class I had never used the multimedia communication functions of Google discussion Groups and Google Documents. I feel much more comfortable using it now, but it definitely took some getting used to. One of the main issues I feel this platform has in terms of collaboration in Google Documents is it is rather difficult deciphering who in the group said what and when. Rather than having to do things like color code and sign your name, I feel there should be an easier way to identify what content was contributed by whom and when. This would prevent things from being overlooked as well as save	✗		✗	

Phase TWO/Week 9 *Raw Journal Data* *[Researcher's notes/memos are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
<mark>time. I do not want to scathe this platform</mark> too much, because I know it is still fairly new and has a lot of potential. Google is very good at what they do and I am sure it will only get better with time. I also know that the issues I have with it may be due to my own user error as I am still learning and not 100% confident with it.				

Phase THREE/Week 14 Reflective Journal Prompt
WEEK 14: Evaluate how the Phase 1 video tutorials that demonstrated how to locate and use dynamic Advanced Content Editor discussion board features; the Phase 2 socio-technical motivational videos that encouraged spontaneous ubiquitous use of the features; and the Phase 3 presentation that provided exemplars of dynamic communication in academia impacted your collaborative experience for better or for worse. Think and respond in terms of collaborating with your classmates, the collaborative process, and the collaboration technology.

Phase THREE/Week 14 Raw Journal Data *[Researcher's notes are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
I watched the videos on using multimedia functions in Google Groups, but based on my past experiences using Googles tools **I didn't feel that I learned anything new from them. I could definitely see their value for someone who is newer to the platform, though**.	✕			
I found the **videos informative, but they did not have a significant impact on my collaboration with my peers.** I have used both Google Hangouts and Blackboard previously and have experience with message board which are set up similarly to those. **I do think that the reminder of what is available may have had a small impact on the amount I used the tools, but not significantly. The tips and tricks I do believe are good for beginning students to help them understand what is available to them and encourage them to use the tools.**			✕	✕
Tools/technology used that had an impact on collaboration with my peers was a voice chatting service that was used in conjunction with Google Documents. The service allowed for not only us to talk but also for drawing out of ideas which could be transferred into the document. Also **with the document the addition of images helped collaboration, it helped convey thoughts and improve the process.**			✕	
The third video was interesting, but threw a lot of information out in a short amount of time. It was difficult to keep up with what was being shown on the screen and what was being said.				
This video was the best presentation. I find the process of collaboration with other students somewhat problematic. I am not sure how to collaborate online and how to measure if the collaboration is successful or a waste of time. The idea of collaborative technology is necessary, but its use is not always clear or easy to use.	✕	✕		✕
This being my first experience with the features in Google, I think that it is serving a great collaboration opportunity within my educational process. I think that it allows for ease of access and is easy to pick up and understand. Issues with these functions are the lack of formatting available. I think that the tool is great but sometime limited.		✕	✕	
Most of the collaboration with my classmates was based on typing messages into each other's documents to share ideas and comments or meeting with each other virtually in an online meeting. Both of these methods worked fine, but you need a combination of both to be really productive. **Posting messages to each other's assignments works and it**			✕	

Phase THREE/Week 14 Raw Journal Data *[Researcher's notes are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
gives you the flexibility to post whenever you want.				
One downside is that I was checking for updates to my teammates assignments in Google Drive a couple times a day. If they go all week without posting anything, then I wasted my time checking so often. I wanted to give them prompt feedback, but they were delayed on posting updates. Maybe there is a way for Google Drive to send you a message whenever anything changes? But that could be annoying too. I do not want to get five updates on one day because XXX edited his document five different times. *[There is a SUBSCRIBE function in GGroups --not GDrive]*		✕		
...but the first videos or Phase 1, was super long, confusing and boring so I think that set a tone for me and Phase 2 & 3. I will say that the videos didn't alter much of my interaction with classmates on either a good or bad side. In fact, it didn't alter my ideas at all. **I have a certain way that I have been trained to use these tools by past professors and I guess the Phases weren't enough for me to change anything.** I did struggle with some of the collaborative piece in this class though. As I have mentioned before, **I felt disconnected most of the time primarily because we didn't use Blackboard or any other type of forum.** *[Little collaboration w/peers and lack of collaboration tool use overall--sense of community presence was lost]*	✕		✕	✕
Having a good team to work with is essential to getting the most out of the process. I think this is where most online collaboration efforts break down. **Any collaboration technology can work, but if you do not have a team that is fully engaged in the process, then it does not matter how great the technology is.** Unfortunately, you cannot predict how well people are going to work together or how much effort each individual will put into the collaboration effort. If you gave me a team of four people that were all fully engaged, we could use walkie-talkies where we could only talk one-at-a-time and we could make that work for the project. If you gave me a team of four people and two or three don't care about the project or how well they do, then you could give everyone telepresence cameras and high-def displays and it would not help them be successful. They would just look better failing.		✕		
One thing about the Phase 3 video that I am not sure about is this - allowing students to use different methods or media types to fulfill an assignment. This can work in some classes, or it can work for some assignments, but I think it is difficult to do for every assignment. For example, if I assign a research assignment and one student writes a 10 page, annotated paper on the topic and another student makes a 5 minute video, how do I compare those two? How do I evaluate them fairly? I did this once and **it was challenging as an instructor to be fair to everyone. From an assessment standpoint, it becomes a challenge to create a rubric that properly evaluates the outcomes**. I have no idea how		✕		

Phase THREE/Week 14 Raw Journal Data *[Researcher's notes are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
Dr. Baaki does it for the ID Project in this class, but I would be curious to see that. :)				
I really like Google Docs for collaboration. The ability to comment is really useful in providing feedback on each other's assignments, and I especially like that you can responded to the comment and create mini-threads about each issue as it arises. During o**ur group project it was also really helpful to have the "chat" function available when all of us were online, so that we could collaborate without necessarily having everything recorded into the doc.** It was nice though to collaborate asynchronously using comments are varying colors, though.			✗	✗
Being a first time user of Google docs and Google drive means i thought the world was going to end on me I honestly had never heard of the technology. The phase 1 video helped a lot , if I had to do something and things did not work right I went there for instruction on navigation. The discussion board features are clear and easy to understand good instructional design. Th**e Phase 2, I became motivated and found that when I went it alone I made it ,I did what I wanted to do and it was not that difficult to navigate and use the Google design sometimes I had to keep repeating a little but then it happened I found my way.** Collaboration helped significantly, it served sometimes as a guide from your peers fantastic tool to use, the sharing of information is a very positive feature and it also helps you with your learning, you could follow your peers lead when in doubt. It was a nice way to communicate period! you were in touch. On**e time I was on my Google doc and one of my peers were typing feedback on my page at the same time. Google has designed, a very good product I am very excited about being introduced to it.**	✗			
My ability to collaborate with my peers **was neither strengthened nor weakened.** I've used Blackboard Discussion Boards for quite some time as a student. I've used Google Hangout in my groups for communication along with email. I like Google Hangout, not for the visual feature, but the verbal aspect of it, because when using email, the written word alone can often be misinterpreted. On the topic of the phase 3 video (challenge of collaborative learning engagement in an online environment) the statement "by using a combination of technologies we create a spectrum of media richness" ….When I look at the digital dependency today where devices appear to be glued to individuals (it's always in their hand, they pick it up every minute, without it they can't function,..) I believe each generation will have a higher demand for everything mobile.....meaning that to reach them in any capacity be it academically, socially, politically, or professionally, information will have to be tailored to fit the device they are attached to. Digital devices are the mini repositories or storehouses of information or every media type possible. In a peer-to-peer learning situation, participants				

Phase THREE/Week 14 Raw Journal Data *[Researcher's notes are bracketed in italics]*	RQ1	RQ2	RQ3	RQ4
can have real-time dialog and share electronic information instantly. <mark>Having this sense of presence or connection engages the learner in an online learning environment and can curtail the feeling of isolation. As it relates to instructional design, it is necessary to adapt the model of "plug and play" for collaboration or learning modules. With interoperability, regardless of what device is being used, communication nor the dissemination of any form of multimedia content is thwarted due to incompatibility.</mark>				
Most of my IT classes have used the constructivism approach, which encourages participants to communicate with each other and the instructor. This allows the instructor to act as more of a guide and equal partner in the learning process, while encouraging open communication. Since online classes lack the traditional face-to-face interaction, <mark>collaboration is key to student engagement, which can also affect retention and learning outcomes</mark>. For our final project in this class, my group used Google Hangouts. Although the group function was set up for us via Bb, **we found Google to be a much better resolution to our needs. By seeing my group members, it mimicked being with them face-to-face. I felt more comfortable working with them this way and felt like I got to know them much better. Although this is not the only way to collaborate, I definitely agree that some social aspect of classes is beneficial to making participants feel engaged in the learning process and committed to the class.**			✕	✕
While I understand the concept of research, and the importance of its data, the interaction aspect of communication **in terms of using Bb, especially to collaborate, or to enhance communication has not had any major impact, even after looking at the presentation,** I've viewed 75% or more in its entirety. <mark>Curiosity may have increased, knowing that some functions that are available on Bb haven't been tapped into, but not much action placed behind it.</mark> Looking at the tool box in the thread or reply area of Bb can be so overwhelming for me to look at, that I use the most minimal and basic aspects. **I feel much more comfortable, as a learner, and subscriber, using communication forms such as Google chat. It incorporates "real time" face-to-face communication, which has the functions of I-messaging, color, imagery, etc. all things mentioned to enhance collaboration.** Being that my peers *and I, and other students alike, use black board for academic reasons, the stigma I see that makes it less appealing, regardless of its awesome functionality is the ability to be more appealing, meaning, making it feel less academic and more social*. Understand, that I am well aware the Bb serves academic purposes, but so does Google chat, and other counterparts. I do hope this is an insightful response to your research.	✕	✕		

APPENDIX O

Axial and Selective Codes Derived from Open Codes

Open codes	Axial codes	Selective codes or categories
• New awareness of functions • No use for functions • Not academic to use multimedia functions in DB • Noted potential benefit, but had no use for tools	New knowledge acquired, no recognized application of new info Little tool use, but will use as course progresses	MINDSET Efficacy Strong Perceived Usefulness No culture of online collaboration generated
• Too much work to use • Not academic to use multimedia functions in DB Low skill/confidence to attempt use • Desire for REAL-TIME collaboration tools	Overwhelmed by course requirements, No recognized value to investing time required to apply new knowledge Still little use tools	
	Desire more tools yet overwhelmed by present suite of functions/features Lack of skill in classmates and selves identified as constraint to behavior & mindset shifts	

• insufficient time to change mindset identified in Phase Two • Interventions generally appreciated but not enough to sustain behavior change • Collaborative -tool preference	Limitations and challenges are clear: time, motivation, value No significant change in tools use	

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ABSTRACT

A DESIGN-BASED RESEARCH STUDY EXAMINING THE IMPACT OF COLLABORATION TECHNOLOGY TOOLS IN MEDIATING COLLABORATION

by

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December 2015

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Major: Instructional Technology

Degree: Doctor of Philosophy

Interactive collaboration technologies have expanded users' capabilities to collaborate and have driven pedagogical paradigm shifts toward more learner-centered and interactive teaching and learning. Online learners may be not sufficiently prepared for the level of collaboration fluency expected by a globally competitive digital distributed knowledge economy. This is largely due in part by how collaboration technologies is used towards impacting learning goals and outcomes in practice by online learners themselves or by deliberate instructional design of the online environment. The purpose of this design-based research study was three-fold: (1) examine collaboration by exploring the perceptions of adult online learners regarding collaboration technology use and of a series instructional intervention videos that supported tool use; (2) track the iterative design, development, implementation, and evaluation of instructional screencasts designed to demonstrate and support the use of dynamic text editor functions and multimedia features for authentic collaboration learning tasks and learner-driven discussion board communication in two online discussion forum platforms: Blackboard Learn (BB) and Google Groups (GG); and (3) determine the impact of the instructional intervention on our educational problem identified as a behavior: organic learner-driven online discussion board

collaboration. Participants were purposive sample of online learners enrolled in five graduate-level instructional technology online courses. Quantitative survey and qualitative reflective journal data was gathered in a three phased feedback loop. Findings indicated that collaboration was first a mindset supported not only by collaboration technology tools or learner technological self-efficacy, but by deliberate instructional design mediated by the cultural environment and the social context of the activity system.

AUTOBIOGRAPHICAL STATEMENT

COBOL... PASCAL... BASIC... the year was 1982. As a high school student of the personal computer era, I imagined the potential of technology for increased productivity for all users; and, I passionately wanted into the field. I am thrilled to have lived long enough to have found my place in the astounding growth and development of now ubiquitous technology for productivity, education, communication, collaboration, creativity, social networking, shopping, entertainment, and play. Now, I love to provide specialized instruction, advice, and guidance to anyone interested in integrating technology personally, professionally, or creatively just for fun. My first "clients" have been myself, my students, my friends, and my family members.

My creativity and determination are inherited from the DNA of my parents, and from the cultural capital they invested in me. My dad is a relentless creative handy-man, very comfortable with working his hands by the sweat of his brow. He is meticulous, and strives to become a master of his craft through experiential knowledge construction. I too approach a problem, obstacle, or challenge with supreme confidence of success through a commitment to use everything I have got empowered by my unwavering belief in God that grounds me (Philippians 4:13). My mom is the quintessential professional with a deferred creative side having taken the traditional education trajectory through life that I have patterned after her to a great extent. I matriculated through the same high school and universities that she had: Cass Tech, Wayne State University, and University of Detroit Mercy-- where she earned her Master's degree.

Today, I am an Instructional Design professional and Instructional Technology researcher with experiential and theoretical knowledge that grounds my technology integration decisions for teaching, learning, and research. All my life experiences to date have converged beautifully to allow expression of my strongest character traits: creativity, productivity, education and service.