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Assessing Behavioral Intention to Use Low Social Presence ICTs for Interpersonal Task Completion Among College Students: With Special Consideration Toward Short Message Service (SMS) Text-Messaging

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by

Jeffrey Scott Linney

A dissertation report submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in
Information Systems

Graduate School of Computer and Information Sciences
Nova Southeastern University

2013

We hereby certify that this dissertation, submitted by Jeffrey S. Linney, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation requirements for the degree of Doctor of Philosophy.

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An Abstract of a Dissertation Submitted to Nova Southeastern University
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July 2013

This study sought to investigate whether the popularity of Information Communication Technologies (ICTs) would impact the behavioral intention (BI) to use of these technologies to aid in interpersonal task completion. Out of the ICTs available today, the most popular is text-messaging, especially among a sizable percentage of the college population. Approximately 600 students at a small, private junior college in eastern North Carolina were invited to participate in this study with a target of 248 responses needed to comprise an adequate sample. A total of 259 usable surveys (n = 259) were received and analyzed.

Qualitative data collection instruments consisted of an open-ended questionnaire and other open-ended responses that were solicited throughout the data collection phase. Quantitative data collection instruments consisted of a 22-item Likert-scale survey and a forced-choice ordinal scale instrument that measured computer user self-efficacy (CUSE) and experience using technology (EUT). Situated in the context of academic help-seeking (AHS), vignettes were developed, validated and administered to offer AHS scenarios where a problem was presented and the participants were then asked to reveal which type of ICT he or she would utilize to seek academic help (AH) in that particular situation.

Upon analyzing the data derived from three AHS vignettes, the findings revealed that face-to-face (FTF) was the most popular ICT as the consistent top pick for AHS among the college students surveyed. Although text-messaging was extremely popular across all groups, it did not rank as high as expected as a potential AHS tool. Conclusions drawn from the findings suggest that for purposes of AH, college students will tend to seek formal help instead of informal help as formal help will generally lead them to the appropriate help-giver. High social presence ICTs will tend to be chosen instead of low social presence ICTs as a high social presence ICT will guarantee that the help-giver will be less likely to ignore the help-seeker's request for help. Additionally, short messaging service (SMS) text-messaging was found to be impractical for the interpersonal task of AHS due to the fact that it was deemed undesirable and improper for formal interactions generally associated with a help-seeking request.

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I want to now go back into time and thank Mrs. Carolyn J. Blue, an engineer turned teacher, whom I studied with as a Master's Degree student back in 1999-2001 at the University of North Carolina Wilmington. My pc skills were severely lacking during this period and Carolyn held me by the hand, so-to-speak, and really helped me strengthen my computing skills in a very short time so I could be more self-sufficient in our technology-based graduate program. Moving forward a few years later, I met a fellow doctoral student at Nova Southeastern University by the name of Marion A. Brown. We became fast friends and we both worked through coursework together. Upon attaining "ABD" status we then toiled and labored painfully together for several years during the idea paper process. Just like Mrs. Blue, Marion was a peer, mentor, support system, and he was also an engineer. He often helped me make sense of complex concepts so it stands to reason that his engineering background served us both well. Although we didn't finish this journey together Marion, you were with me most of the way, when it mattered most, and it would have been a very dark and lonely journey without you. You are one of the most intelligent and impressive people that I have ever met in my life, most of it spent in academia at that. I will humbly admit that I couldn't have accomplished this without you my friend.

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Chapter 1

Introduction

Statement of the Problem

According to Westerman, Van Der Heide, Klein, and Walther (2008), although information communication technologies (ICTs) may be useful in completing organizational tasks, their usefulness in accomplishing interpersonal tasks requires further study. Senyucel (2008) concurred revealing that there is an absence of mutual understanding toward the role of ICTs as users deploy them based on different purposes and different meanings. Stephens (2007) defines ICTs as "technologies that handle information and enable communication among human actors" (p. 488). More specifically, ICTs include a broad spectrum of participatory communication technologies to also include electronic information media such as e-mail, the Internet, mobile phones, instant messaging and short messaging service (SMS) text messaging (Idowu, Ogunbodede, & Idowu, 2003). Likewise, Stephens (2007) also considers face-to-face (FtF) communication to be an ICT because this live method of interaction facilitates communication among human actors.

Damian, Lanubile, and Mallardo (2008) indicated that social presence is an important consideration in ICT usage. Summarizing their discussion, Damian et al. (2008) informed that synchronous communication media such as FtF, telephone, live chat, and instant messaging (IM) are routine examples of high social presence ICTs where one participant is obviously aware of the presence of the other participant in the discussion. Furthermore, Damian et al. (2008) asserted that discussions occurring within high social presence ICTs will not generally be ignored; while on the other hand, asynchronous communication media such as e-mail and text-

messaging are routine examples of low social presence ICTs where the sender must compete with distractions encountered by the receiver. These distractions may result in the sender's message being completely ignored or disrupt the intended communication. Because chat and IM may both display synchronous and asynchronous characteristics, they also display the characteristics of both low and high social presence ICTs (Handel & Herbsleb, 2002). As such, Handel and Herbsleb maintained that in settings such as the workplace, the ability to display both synchronous and asynchronous characteristics is a very important feature of ICTs due to the high social presence aspect.

With low social presence ICTs the receiver can voluntarily choose not to respond to a message much like screening phone numbers with caller ID before choosing to answer a call (Turner & Reinsch, 2010). In the same way, with low social presence ICTs the receiver can ignore an email or text-message simply by deleting it without reading it, or by blocking certain participants from the discussion, or by concealing his or her status in chat and IM forums. Blocking or concealing one's status in this instance gives participants the false perception that a specific person is not available for communicating when in actuality this is not necessarily the case. Turner and Reinsch (2010) referred to this as compartmentalization that deals with the availability of visual, verbal, and non-verbal cues when an actor cannot be seen or heard. Turner and Reinsch further stated that the characteristics necessary for an ICT to provide rich information would consist of its ability to convey verbal, non-verbal, and visual cues with immediate feedback.

These verbal, non-verbal, and visual cues are most noticeable in high social presence ICTs such as FtF and telephone communication where the facial expressions of the participants may be seen, or the voice of the participants may be heard (Stephens, 2007). In comparison,

these cues are noticeably absent in low social presence ICTs such as text-messaging and email. Also, low social presence ICTs contend with limitations of the written language such as character limitations and unique jargon or slang that can be an inhibitive factor.

Within the realm of ICTs, one particular technology that warrants further research is short messaging service (SMS) text-messaging. SMS text-messaging is an extremely popular low social presence ICT among American college students (Quan-Haase, 2008). Quan-Haase proposed that text-messaging as a mobile ICT is poised to potentially replace IM based on its exponential growth over time. Text-messaging allows users to communicate in an on-screen, text-based format utilizing combinations of alphanumerical characters (Soriano, Raikundalia, & Szajman, 2005). Soriano et al. (2005) iterated that text-messaging offers a means for increased social interaction in addition to an accurate, efficient, and distinct means of communication. Perry, O'Hara, Sellen, Brown, and Harper (2001) acknowledged that research on mobile ICTs has emerged as an important field of study within itself.

Lee, Watson-Manheim, and Ramaprasad (2007) discussed perception of risk and risk of action with regard to the use of ICTs. Perception of risk measures "beliefs of uncertainty regarding possible negative consequences of using a product or service" (p. 131). A component of perception of risk is risk of action which deals with whether the receiver implements the intended action by the sender during communication. The receiver could display what Lee et al. (2007) referred to as inaction, where he or she simply ignores a message conveyed to a low social presence ICT. Asynchronous communications media such as e-mail, text-messaging, and in some instances chat or IM are routine examples of low social presence ICTs where the sender's message may be completely ignored due to specific features and characteristic of these

technologies. According to Lee et al. (2007), more research is needed on risk of action with regard to ICTs.

Research Goal

The primary goal of this proposed study was to investigate college students' behavioral intention (BI) to use ICTs for interpersonal tasks in the context of academic help-seeking (AHS). The essence of AHS as interpreted from definitions in the scholarly literature suggests that AHS is a set of skills that involves asking for assistance and advice from available help sources (Fallon & Bowles, 1999; Gould, Udry, Bridges, & Beck, 1997). The need for this study is supported by Westerman et al. (2008). Westerman et al. theoretically explored how people seek information from each other by applying ICT succession theory in an interpersonal information seeking context. According to Stephens (2007), successive theory predicts how one may utilize numerous or multiple follow-up ICTs for task completion. The conclusion reached from Westerman et al. indicated that low social presence ICTs promote anonymity that is preferable when seeking information about the uncertainty of others, particularly unknown others.

The BI to use component of the proposed study was aimed specifically at college students and is supported by the work of Chang and Tung (2008), Park (2009), and Alshare, Freeze, and Kwun (2009). Chang and Tung (2008) introduced a new hybrid Technology Acceptance Model (TAM) in order to assess college students' BI to use ICTs by promoting the appropriate technology for the appropriate type of student. Park (2009) later supported Chang and Tung by explaining the adoption process of college students with regard to their BI to use ICTs.

Alshare et al. (2009) made their contribution to the study of BI to use by extending the TAM upon their addition of two new constructs of perceived reliability (PR) and perceived

quality (PQ). Accordingly, an analysis of the results confirmed the applicability and usefulness of the TAM in its ability to predict the BI to use of end-users with regard to information systems (IS). This study examined BI to use ICTs among college students with a specific interest in text-messaging for the completion of interpersonal tasks within the context of AHS. Three research questions were investigated to achieve the primary research goal.

RQ1. How does the availability of ICTs impact intention toward completing interpersonal tasks among college students?

The first research question sought to measure behavioral intention (BI) to use ICTs among college students to complete tasks in an AHS context.

RQ2. Out of the available selection of ICTs, how was text-messaging viewed as a medium for interpersonal task completion, specifically with regard to AHS?

The second research question sought to reveal how the college student participants specifically viewed text-messaging and its usefulness towards completing AHS tasks. Text-messaging was compared to FtF communication, email, and instant messaging (IM). As justification for the second research question it is argued that despite its immense popularity, no studies have been found in the scholarly literature to date that explored text-messaging as an ICT exclusively for college students to use for completing interpersonal tasks such as AHS. Additionally, previous BI to use IS studies have focused on media selection and choice regarding a variety of ICTs, but no studies were found to date that included text-messaging as an option.

RQ3. What are the characteristics of college students who prefer ICTs to complete interpersonal tasks?

The third research question sought to identify the characteristics of users who may actually utilize ICTs for engaging in interpersonal AHS tasks. The third research question is

important as user attitudes, gender, experience with the technology, and competency, expressed as user characteristics, are useful in the human-technology matching component of media selection.

Relevance and Significance

ICTs are noticeably reshaping many aspects of business and social life to especially include the way people communicate with each other (Arendt, 2008). Ciborra (2002) agreed that ICTs shape the way individuals work and redefine their identities. However, Arendt (2008) further stipulated that organizations, families, and individuals are adopting ICTs at different rates. Saccol and Reinhard (2006) deemed ICTs as new technologies and noted that their significance stems from how they mesh with changing social networks. Lee et al. (2007) points out that prior use of ICTs was periodically found to threaten the effectiveness of communication that sometimes leads to unwanted consequences such as poor reception during phone calls, difficulty in keeping track of participants during audio conferences, and confusion or misunderstanding in the interpretation of lengthy voice messages. Ramírez (2007) also suggested that evidence exists of the unpredictability of ICTs in communication.

There is consistent agreement in the literature that there is a digital divide in societies arising from the presence of ICTs, along with an opposing viewpoint that ICTs may also bridge this digital divide (Sreekumar, 2007; Billon, Marco, & Lera-Lopez, 2009; Wiredu & Sørensen, 2006; Lim & Nekmat, 2008; Arendt, 2008). Arendt (2008) defined the term digital divide, also referred to as digital exclusion, as broadening discrepancies in the utilization of ICTs and e-Business between micro and small enterprises (SMEs) and large companies. The Organization for Economic Co-Operation and Development (OECD 2001) more precisely defined digital divide as the gap between business, geographical areas, households, and individuals at different

socio-economic levels, with consideration for their opportunities to access ICTs and the internet for various activities. However, Arendt (2008) summarized the term digital divide more succinctly, based on the old adage of the "information have and have-nots".

For the purpose of bridging the so-called digital divide, van Dijk (2005) informed of four barriers that inhibit access and intention to use ICTs. The first barrier is lack of experience due to computer anxiety and a lack of interest in a new technology. The second barrier is a lack of material access, or in other words, not personally possessing ICTs or network connectivity. The third barrier is a lack of digital skills caused by poorly designed user interfaces resulting in non user-friendly experiences with ICTs. The fourth and final barrier is a lack of routine opportunities to access these technologies.

A user may not immediately know what to expect when interacting with a new technology and will therefore have to endure a process of trial and error for purposes of adoption and acceptance (Saccol & Reinhard, 2006). Saccol and Reinhard also discussed the concepts of appropriation and circumspection with appropriation stipulating the way a new technology or ICT is integrated into the everyday life of organizations and individuals. Similarly, circumspection relates to the use and implementation of a new technology. More specifically, circumspection demonstrates how a new technology or ICT becomes involved and utilized in practical applications of everyday activities such as task completion. In support of the current problem under investigation, it was suggested that the use of text-messaging as an asynchronous, low social presence ICT, and as a new and novel technology, deserves further study with regard to appropriation and circumspection as defined by Saccol and Reinhard (2006).

Grinter and Eldridge (2003) reported that in many countries teenagers lead the way in using cell phones with their text-messaging capabilities. Leung (2007) asserted that text-

messaging is in essence an asynchronous social environment that has become extremely popular as an ICT among college students. Although it has been offered that text-messaging is an example of a low social presence ICT, students indicate that text-message communications represent deeper, richer and more intense meaning to users than other communication methods, even direct personal contact in some instances (Hancock & Dunham, 2001). Reid and Reid (2004) offered support for this claim from their own findings that revealed heavy text users prefer texting to talking on the cell phone. The reason for this preference is because texting helps heavy text users develop deeper and new relationships with their text mates while altering their expressiveness toward each other.

One benefit of low social presence ICTs is that they permit the receiver to take their time and think before engaging in the conversation, making decisions, and completing tasks (Damian et al. 2008). Damian et al. further stipulated that low social presence ICTs provide better ability to process information than high social presence ICTs where the receiver could experience information overload, especially in complex or highly stressful situations. The end-result could be unwanted delays or personal bias in decision making and task completion. Rouibah and Hamdy (2009) revealed that if social presence arises from the use of an ICT, there is a greater likelihood that the ICT will be adopted and used. Rouibah and Hamdy (2009) also mandated that in this same vein, an ICT that is deemed incompatible with the life practice of a user stands a greater likelihood of being rejected and not used.

One important justification for the current problem first stemmed from the fact that scientific study is currently lacking that could possibly reveal how ICTs can benefit college students in completing interpersonal tasks such as AHS (Kitsantas & Chow, 2007). Second, as enhancements in ICTs become more prevalent, further study into their social impact, as

influenced by technology trends, becomes even more crucial (Lee, 2007). Third, it should be noted that research involving text-messaging is still relatively new (Soriano, Raikundalia, & Szajman, 2005) which could explain why few if any studies have been done to address its potential as a useful mobile ICT for interpersonal task completion. One fairly recent study was conducted where text-messaging was introduced as a means to complete a help-seeking task that was reportedly unsuccessful (Robinson, Perkins, Bauer, Hammond, Treasure, & Schmidt, 2006).

Robinson et al. (2006) conducted a pilot study to examine the usefulness, acceptance, and efficacy of an SMS text-messaging protocol as a post-operative help-seeking method for Bulimia Nervosa patients who had just received outpatient psychotherapy. Robinson et al. reported that the feedback from a post questionnaire indicated that there was only moderate acceptance of the SMS text-based system by the participants. A significant number of the participants were displeased with the lack of personal communication while others reported that the program was too technical and too formal. Also, with only 21 patients participating in a six month trial period, the relatively small sample size was said to preclude descriptions of patient characteristics that might be related to acceptance. Finally, due to the small sample size, there was no comparison group to allow the researchers to draw conclusions pertaining to the efficacy of the program.

The current study compared low and high social presence ICTs and the BI to use of these technologies among college students for the completion of interpersonal tasks within the context of AHS. The contribution that this study made to the scholarly community is a more in-depth understanding of ICTs and their usefulness for completing interpersonal tasks in the absence of verbal cues typically present and desirable in human communication. Additionally, this research attempted to identify which, if any, out of a selection of specific ICTs college students would prefer to utilize to complete the interpersonal task of AHS. Different views, opinions, and

perspectives relating to ICTs, specifically text-messaging, was discussed in the upcoming review of literature.

Barriers and Issues

There were several barriers that contributed to the difficulty of solving the current problem under investigation. One of the main barriers of this study was that the qualitative component offered a notable challenge as the data was difficult to measure. Regmi, Naidoo, and Pilkington (2010) suggested that good qualitative research is not an easy task due to a required knowledge of different research techniques and approaches on part of the investigator. Another issue, on a more general scale, was a long standing history of dissention among the scholarly community regarding the assurance of excellence in qualitative studies, including how to effectively categorize and catalog the various types of qualitative research (Freeman, deMarrais, Preissle, Roulston, & St. Pierre, 2007). There was also a quantitative element to this proposed research and extra care had to be taken to avoid any exposure to long, detailed questionnaires or surveys by the respondents. Another issue related to sampling the population as college students are not totally representative of the entire U.S. population as a whole. Therefore, surveying a representative sample that would produce reliable results was another barrier of the current study. Missing data resulting from incomplete surveys was another concern as participation by the respondents was totally voluntary and many students were not motivated or inclined to complete in its entirety, what they perceived to be a tedious, lengthy survey with no real incentive for completing it.

Participation in the current study was voluntary and many student participants were perceived to be reluctant to complete, or truthfully complete questionnaires or surveys (Molnar,

Kletke, & Chongwatpol, 2008). Further compounding the difficulty of the current study was a periodic overlap of qualitative and quantitative research methods which made the data analysis more difficult as supported by Shank (2006). Drisko (2005) further maintained that the interpretive process in qualitative reporting can be very lengthy, however necessary to illustrate to the reader the content of the raw data and how the coding and analysis was completed.

Maintaining the proper scope was also an important issue in the current study as well. This is because of the various forms of help-seeking that appear in the scholarly literature and therefore, addressing the specific form of help, in order to maintain a narrow focus became paramount. Although instruments already exist that have been validated and used in prior studies to measure behavioral intention to use, additional instruments were also modified and tested for reliability and validity in order to asses BI from a qualitative perspective.

Assumptions, Limitations and Delimitations

Assumptions

There were several assumptions to be discussed for the current study. First it was assumed that the previously developed instruments that this study incorporated from prior studies were adequately tested for validity and reliability. Based on this assumption, these instruments were utilized with a high degree of confidence. It was also assumed that the participants in the current study would answer the survey questions honestly which should aid in reducing response set errors. Finally, it was also an assumption that the student body of the target institution where the population and sample were derived from is representative of an accurate subset of college freshmen and sophomores generally.

Limitations

One significant limitation was the small size of the target institution which correlated to a small sample size. Based on this fact, it was desirable to solicit the entire population for participation in order to ensure an adequate sample size. There was also a very high 65:35 male to female ratio and a 70% majority ratio of African American students compared to a population further comprised of 28% Caucasian, 1% Latino, and 1% Asian (B.C. Gano, personal communication, December 30, 2011). Although the total population of the target institution is small, the required sample size of 248 participants was not small enough to result in diminishing the reliability of this study. Because the participants were not inclined to voluntarily participate in the current study, response rate was a concern. A convenience sample was the chosen sampling method for the current study. Although it was anticipated that the sample accurately portrayed the larger freshman and sophomore college population, it was not necessarily representative of a larger general population.

Delimitations

As far as delimitations for the current study, the scope of the investigation was limited to interpersonal task completion, specifically academic help-seeking (AHS). Another delimitation to be addressed was that the current study only examined freshmen and sophomores in a junior college setting. As such, there was no comparison data for upper classmen (juniors and seniors) as this segment of the college population was not available. There was also a disproportionate racial demographic at the target institution. As a result, attitudes toward help-seeking and even the availability of ICTs may have been different for some minorities which would become evident when analyzing the data, if the respondents answered the survey questions honestly.

Definition of Terms

Academic Help-Seeking - A set of skills that involves asking for assistance and advice from available help sources (Fallon & Bowles, 1999; Gould, Udry, Bridges, & Beck, 1997).

Behavioral Intention to Use - A construct for measuring a user's acceptance of technology (Fagan, Neill, & Wooldridge, 2008).

Compartmentalization - Dealing with the availability of visual, verbal, and non-verbal cues during the communication process (Turner & Reinsch, 2010).

Digital Divide (Also referred to as Digital Exclusion) - The gap between businesses, geographical areas, households and individuals at different socio-economic levels with consideration for their opportunities to access ICTs and the internet for various activities (OECD, 2001).

High Social Presence – When a participant is obviously aware of the other participant in a discussion that is not generally ignored (Damian, Lanubile, & Mallardo, 2008).

Information Communication Technologies (ICT) - "Technologies that handle information and enable communication among human actors" (p. 488). More specifically, ICTs include a broad spectrum of participatory communication technologies to also include electronic information media such as e-mail, the Internet, mobile phones, instant messaging and short messaging service (SMS) text messaging (Idowu, Ogunbodede, & Idowu, 2003).

Low Social Presence - When a sender must compete with other distractions encountered by the receiver which may result in the sender's message being completely ignored or disrupt the communication (Damian, Lanubile, & Mallardo, 2008).

Short Messaging Service (SMS) - A protocol for short message transmission up to 160 characters over a mobile network, or a text-messaging cell phone technology (Leung, 2007).

Successive Theory - Predicts how one may utilize numerous or multiple follow-up ICTs for task completion (Stephens, 2007).

Technology Acceptance Model (TAM) - A classic information systems model that is the basis for understanding the impact of variables on a user's intentions and actual behavior (Davis, 1989).

Text-Messaging - A messaging feature that allows users to communicate in an on-screen, text-based format utilizing combinations of alphanumerical characters (Soriano, Raikundalia, & Szajman, 2005).

Summary

Chapter one served as an introduction to this research study by presenting the problem that was addressed, research goals, and support from the scholarly literature indicating that the current problem was worthy of further study. The research studies reviewed for this study strongly suggested the need to examine the use of ICTs in different contexts. Prior research was presented providing the foundational basis for this study. The theoretical foundation supported the intended further study of the construct of behavioral intention to use technology. Academic help-seeking provided the contextual basis of interpersonal task completion that in turn, shaped the construct to be studied.

Chapter Two

Review of Literature

Information Systems (IS) is a highly interdisciplinary field of study (Webster & Watson, 2002). The proposed problem to be addressed spans across the fields of IS, education, psychology, and even allied health. The literature that will be reviewed for this proposed study is representative of all these fields. Although this study is highly multidisciplinary in scope, it specifically aims to add to the scientific body of knowledge (BoK) within the field of IS.

The first section of this review of literature will inform on ICT usage and diffusion as discussed in the scholarly literature. The second section of this review of literature will offer discussion on SMS technology that will address how it has been used and the types of problems previous SMS research has examined, along with results and conclusions for each problem addressed. The third section of this review of literature will explore unanswered questions regarding SMS text-messaging to include suggested implications and future work that the scholarly community recommend with regard to continuing research. The fourth section addresses behavioral intention (BI) to use with regard to text-messaging among college students. BI to use is an IS construct that overshadows the research goal in the proposed study. The use of text-messaging, in the proposed context, is a new and novel approach. According to Jackson, Chow, and Leitch (1997), by examining BI to use of an IS technology, designers and developers can then increase prospective users' intention to use new systems, or traditional systems in different ways. The final section discusses help-seeking to include academic help-seeking (AHS) and the interaction of technology with AHS.

Information Communication Technologies (ICTs)

Modes of Media and Selection

According to Stephens et al. (2008), scholarly interest in ICTs was said to evolve from early uses and gratifications research with a focus on radio and television. Uses and gratifications research is said to offer a reliable set of reasons why people typically utilize media (Stephens et al., 2008). Flanagin and Metzger (2001) conducted a uses and gratifications study that explored media selection among the World Wide Web, FtF communication, and computer-mediated ICTs within the workplace. Using factor analysis, Flanagin and Metzger developed ten clusters of uses for ICTs, based on a 21-item questionnaire that was administered to 684 participants. Their findings revealed that most ICTs fulfilled the most important organizational need being information seeking; however, the authors did not explore the reasons for any simultaneous or sequential ICT use.

A great deal of the literature surrounding ICT use is grounded around the concept of media selection (Satofuka, Kantola, & Kono, 2009; Damian, Lanubile, & Mallardo, 2008; Turner & Reinsch Jr, 2010). Satofuka et al. (2009) asserted that choice, when it comes to technology selection, is not always for the purpose of easing tasks. They also promoted that prior media studies typically focused on content flow and broadcast messages. Satofuka et al. conducted a literature review that culminated with a pilot survey of Japanese and Finnish students and their preferences of media in various communication situations. The findings revealed that the mobile phone was an integral component of communication among Japanese youth as it allowed them to be contacted anywhere and anytime, in addition to allowing them to express their individuality. In Finland it was found that nearly 100% of the households had experienced connectivity for several decades with twin copper wiring telephone networks. However, this copper network was

later found to be insufficient as a carrier for faster and more reliable broad band networks. This led to many Finnish students being forced to remain stuck with text-based browsing techniques which made maintaining communication with the mainstream public difficult.

A pilot study was also conducted by Satofuka et al. (2009) on modes and media of personal communication with 99 Japanese graduate students and 42 Finnish graduate students. The students were asked to express their view on an agreement of the relevance of eight types of media with the findings indicating few similarities between the two samples. Japanese students identified wired-phone communication as a useful method higher than the Finnish students. Japanese students also wrote more letters with traditional pen, pencil, and paper than the Finnish students. Finnish students demonstrated the tendency to utilize e-mail and text-messaging in some instances more often than Japanese students. FtF communication was found to be equally important between both groups. It was concluded that the type of communication chosen was dependant on the reason for the communication. For instance, Finnish students found text-messaging useful for expressing condolences while the Japanese students used it more as a social tool. Additionally, Finnish students utilized mobile phones to deal with a variety of instances while Japanese students utilized them primarily in business situations.

Media selection theories are highly influenced by the media richness theory (MRT) proposed by Daft and Lengel (1984) that matches the appropriate media with specific tasks. MRT stipulates that task completion and performance is contingent upon a suitable match between the characteristics of a given type of media and the requirements of a corresponding task. According to a qualitative study by Damian, Lanubile, and Mallardo (2008), media can be assigned a rank based on richness. The authors explained that rich media, such as FtF interaction, which is the richest media, aids in better group performance for vague communication. On the

other hand, lean media, such as email and text-messaging, is best equipped to deal with uncertainty in communication.

Damien et al. (2008) explored the need for mixed media, in the form of asynchronous and synchronous communications, in distributed software requirements negotiations. The findings of Damian et al. revealed that group-conducted asynchronous discussions were more effective in achieving agreement with regard to software requirements prior to a meeting using synchronous delivery methods. Conclusions drawn revealed that asynchronous communications were helpful in dealing with issues pertaining to uncertainty in requirements which permitted synchronous communications to focus more on improving clarity in the requirements.

Successive ICTs and Multicommunicating

Lee, Watson-Manheim, and Ramaprasad (2007) proposed a communication portfolio centralized on a single ICT, or a specific combination of ICTs used to manage perceived risk of communication. Communication risk is a realistic concept that presents itself within organizations. Lee et al. (2007) involved several factors affecting risk of communication upon the utilization of multiple ICTs. Secondary data was used from numerous public sources available stemming from a case study involving the high-profile NASA Space Shuttle Challenger Explosion. The findings yielded from the secondary data allowed Lee et al. to propose three distinct risk factors with ICTs in the communication process identified as perceived risk of reception, perceived risk of understanding, and perceived risk of action. Perceived risk of reception is defined as communication problems related to incorrect reception or absence of reception of the message component. Perceived risk of understanding was defined as the risk associated with understanding the information included in the message while perceived risk of action was defined as risk associated with attempting or completing the intended action or

implementation of the communication. Conclusions drawn suggested a research gap in the understanding of ICT usage in the context of perceived risk during the communication process.

Stephens (2007) surveyed the literature on ICTs and focused on successive ICT use. Stephen's discussion was based on her ICT Succession Theory which revealed that one user may employ multiple ICTs to perform simultaneous tasks based on auditory, visual, and textual feedback or cues. Stephens (2007) also suggested that research is lacking that explains how and why people use ICTs in succession to communicate and efficiently complete tasks. Four types of tasks were highlighted in Stephens that were classified in clusters, identified as persuasion, status, information, and problem-solving. The persuasion cluster concerned the use of ICTs for persuading, negotiating, bargaining, or getting someone to do something. The status cluster dealt with using ICTs in order to impress or feel important. The information cluster involved using an ICT to simply obtain information, while the problem-solving cluster dealt with using an ICT for solving problems, making decisions, and making a contribution to a body of information. It was found that complementary or follow-up ICTs were most helpful in completing the four tasks which also led to the conclusion that a successive ICT strategy should increase the likelihood of more effective communications.

Similarly, Turner and Reinsch (2010) investigated what they termed as multicommunicating, engaging in several conversations at one time, and the media that was paired or mixed together to engage in the multicommunication process. Two hundred and one MBA students were surveyed to examine successful and unsuccessful incidents of multicommunication from the participants' perspectives. With regard to media choice Turner and Reinsch (2010) stipulated that users match a richer medium with a more equivocal message and a leaner medium with a less equivocal message in support of earlier reported findings by Damien

et al. (2008) with regard to rank order and media richness of a selected information technology. The findings of Turner and Reinsch revealed frequent pairing of the telephone with electronic text. The participants also indicated what in their minds constituted an unsuccessful multicommunication episode stating that it occurred when a communicating partner could no longer juggle multiple conversations as evidenced by communication errors. Turner and Reinsch concluded that multicommunicating, as a practice, now has a significant presence in organizational settings providing a very useful and necessary area of continuing IS research.

Men and women were found to communicate differently in their use of ICTs (Gefen, Geri, & Paravastu, 2007). Gefen et al. (2007) conducted a cross-cultural study in which they stipulated that men generally communicate with the intention of establishing and safeguarding their social status while women attempt to establish rapport and social inclusion. In male only virtual communities men joined to share information, however, with respect to mixed gender communities, men joined the community for emotional support. In comparison, the authors noted that women joined mixed gender virtual communities for information exchange, but when they wanted emotional support they deferred to female only virtual communities. It was also noted by Gefen et al. that within what should have been emotion and gender-neutral ICT environments, women perceived a stronger sense of social presence with e-commerce Web sites and email, typically deemed as low social presence ICTs. The adoption process with regard to ICTs is also of interest to the scholarly community (Saccol & Reinhard, 2006; Corrocher & Fontano, 2008).

ICTs within Organizations

Barnes (2012) employed the survey method that drew upon findings from a case study that examined the implementation of ICTs within a hi-tech organization in the UK, specifically the use of ICTs in the workplace and their impact on work-related tasks. Upon the review of a

prior nine-month case study in a large IT organization, various data collection techniques of participant and non-participant observations, in-depth face-to-face interviews, and surveys, three observations took place among three work sites that were visited once a week for 12 weeks. Findings revealed that when ICTs were implemented in the organization, they allowed an individual or group to manage work, improve on sharing information, and improve communications among colleagues. Individual capability was found not to be linked to individual technological capability. Conversely, ICTs were found to be accepted and adopted differently and as such, some individuals felt isolation, alienation, and dehumanisation of work as organizations adopted ICTs.

Barnes (2012) formed the conclusions that although informal and unstructured interaction and communication can contribute to the creation of cohesive and productive working and learning environments, ICTs within organizations do not fully support this form of interaction. Email, as an ICT, was favored for informal interaction within the organization, but the social network created by email within the organization was underdeveloped. Conferencing technologies supported the interaction and work of team members and also resulted in faster transactions, but conferencing ICTs were found not to be able to replicate the same richness of face-to-face interaction. According to Barnes, face-to-face is still a desirable and necessary interaction and communication method in the work place.

Hafeez-Baig and Gururajan (2012) surmised "Does information and communication technology facilitate knowledge management activities in the 21st century? This case study, based on an extensive review of literature, reviewed, identified, constructs for the implementation of knowledge management (KM) systems in order to study the effect of ICTs on the implementation of KM in a business environment. A mixed methodology was employed by

way of a 5-point Likert scale survey instrument that was developed through interviews. A total of 400 usable surveys were attained from 80 organizations. Nine constructs that were relevant to ICTs and KM collaboration were analyzed that consisted of collaboration, mutual trust, learning, leadership, incentives, and rewards, non-centralisation, and T-shaped skills.

The following hypotheses were developed: ICTs have the potential to support mutual trust to facilitate KM in the business environment; Incentives and rewards will have positive effect on the role of ICTs in the transformation of KM in the business environment; ICTs have the potential to support non formalisation to facilitate KM in the business environment; ICTs have the potential to support collaborations to facilitate KM in the business environment; ICTs have the potential to support learning to facilitate KM in the business environment; ICTs have the potential to support leadership to facilitate KM in the business environment; ICTs have the potential to support non centralisation to facilitate KM in the business environment; ICTs have the potential to support T-shaped skills to facilitate KM in the business environment. Findings from Hafeez-Baig and Gururajan (2012) revealed that with the exception of non centralisation, all other variations of collaboration, mutual trust, learning, leadership, incentives and rewards, and T-shaped skills are directly related to variation in ICTs. Mutual trust and incentive and rewards are negatively loaded while leadership formulations, T-shaped skills, collaboration, and learning are positively related to ICTs. Conclusions lead to the inference that ICTs and ICT infrastructure can play a critical role in the creation, development, management and sharing of knowledge existing in a business environment. All variables stated in the hypotheses can play significant roles in the lifecycle of the creation, management and sharing of organizational knowledge in the business environment.

ICTs and Learning

ICTs and flexible learning is a globally spreading phenomenon and is poised as a solution for how colleges and universities can streamline the teaching process, especially with online teaching (Stigmar, Körnefors, and Pagden (2012). The aim of the study by Stigmar, Körnefors, and Pagden (2012) was to arouse discussion about the changes and challenges related to the modified teacher role at universities.   Hypotheses generated for this study proposed that ICT usage causes teacher de-professionalization focusing on delivery rather than content; Teachers in ICT-supported flexible learning have to focus on various media as delivery form at the expense of content renewal and pedagogical innovations; ICT usage causes teachers to rely on working technology; and ICT usage causes teachers to be insecure about the quality of student learning.

The methodology employed consisted of interviews with colleagues and a survey of the literature. In addition to a comprehensive search of the scholarly literature, eleven participants from a variety of academic disciplines were interviewed consisting of teachers that were identified who possessed several years of experience using ICTs in flexible learning environments. The findings from Stigmar, Körnefors, and Pagden (2012) indicated that teachers faced many obstacles and challenges when using ICTs in educational settings to support flexible learning. It was further noted that to improve ICT usage, an analysis of what obstacles needed to be overcome was paramount. It was concluded that teachers in flexible learning environments require substantial competence in course development. Additionally, it was suggested that teachers need to increase their competence in the use of ICTs in educational settings.

A study by Najafabadi, Poorsadegh, and Mirdamadi (2013) was conducted to identify challenges of the application of information communication technologies in technical and vocational education training. A methodological approach of descriptive and quantitative

research was taken with the administration of a 5-point Likert scale questionnaire that was developed based on previous literature and the research objectives. An expert panel assisted in validating the instrument. Utilizing stratified sampling, the Cochran sampling formula, and the results of a pilot test, a total of 120 instructors and 189 students at a foreign agricultural college were surveyed. Factor analysis classified five factors from the instructors' perception consisting of technical, economical, educational, cultural, and legal as the challenges that were identified for the purpose of this study. Three additional factors of services, support, and educational planning were classified from the students' perception.

The findings indicated that the challenges identified from the factor analysis are not inevitable and can be overcome with careful design. Technical challenges were found to be the most important due to the popularity of multimedia. Conclusions suggested recommending that educational institutions should contemplate selecting technical methods that do not require increased bandwidth such as asynchronous methods and combining centers that make the ICT decisions. Summarily, upper-level administrators should protect instructors who are active in the use of ICTs both financially and intellectually.

ICTs and Cognition

Zhang (2013) asserted that "affect" is a critical factor in human decisions and behaviors within many contexts. Zhang also alluded that a growing body of scholarly literature is curious about the affective dimension of human interaction with ICTs. This theory and review paper recommends and details a theoretical framework and response model identified as the affective response model (ARM) to examine any identifiable relationships between affect and ICTs. Because attitude is an affective state, the findings from Zhang (2013) revealed several potential affective contributors that may influence attitudes such as affective antecedents, particular

affective evaluations, induced states, and learned affective evaluations or dispositions. Zhang concluded from these findings that there is an association between affect, cognition and behavior when necessary. Zhang also noted that some affective concepts can be the result of cognitive processing; however the content being processed is affective.

Adoption Theories

Saccol and Reinhard (2006) conducted a literature review based on prior research by Ciborra (1996) on the subject of the Hospitality Metaphor. Ciborra's research analyzed the corporate adoption of a Groupware system supported by the Hospitality Metaphor which involves the appropriation, sense making, and rejection by users of a new, albeit strange technology implemented within an organization. Saccol and Reinhard (2006) used this same Hospitality Metaphor as a basis for understanding the ICT adoption process and actually applied it in a case study of mobile ICT adoption. The findings from the mobile ICT adoption case study revealed that there was a feeling of resentment and inconvenience with the anytime anywhere feature of an ICT. The ability to be available 24 hours a day was seen as an invasion of personal and family time expressed by subjects interviewed in the case study. Saccol and Reinhard concluded from the findings that adoption of the mobile ICT was an incremental process. An overall conclusion was that the Hospitality Metaphor helps in understanding the drifting process of new technology, as well as offering an alternative view to traditional and hugely publicized models of technology adoption and acceptance.

ICT adoption from the manager's perspective was the focus of Corrocher and Fontano (2008). This study focused on a sample of information technology managers in small-medium enterprises (SMEs) to investigate the factors that drive their push for ICT adoption. The results of Corrocher and Fontano (2008) were based on three factors of perceptions of objectives,

perceptions of obstacles, and perceptions of drivers toward ICT adoption. The findings with respect to objectives toward ICT adoption within SMEs revealed management concerns with increasing bandwidth, minimizing cost of capital upgrades, and maximizing the life of existing capital stock. The findings with respect to obstacles toward ICT adoption revealed three types of obstacles identified as lack of compatibility with the existing network, lack of standard technology, and lack of performance. The findings with respect to perceptions of drivers toward ICT adoption revealed management concerns with addressing current needs, addressing future needs, and maintaining an early lead with respect to competitors. The conclusion suggested that these drivers manipulate the influence of technological and organizational resources, and the features of the competitive environment within SMEs.

A cross-cultural element was also present in ITC adoption within same cultures (Gefen et al. (2007). A key finding of previously referenced Gefen et al. (2007) revealed that although cultural and gender differences are not of the highest importance with regard to adoption and user preference, gender-based patterns still emerge with ICT usage. The conclusion of Gefen et al. suggested that they were able to determine the gender of an ICT user in a gender-neutral context based on the claim that men and women communicate with different underlying social objectives resulting in different communication patterns. Researchers have also examined ICT acceptance and adoption in developing societies, also discussing the concept of a "digital divide" with regard to both the implementation and lack of ICTs in rural geographical areas (Sreekumar & Rivera-Sánchez, 2008; Rouibah & Hamdy, 2009; Ramirez, 2007).

The Digital Divide

According to Arendt (2008), a digital divide exists between small and large organizations, as well as developed and rural societies. In rural societies, ICTs tend to perpetuate

the social divide and in some cases, create new divides (Sreekumar, 2007). Arendt (2008)

conducted a descriptive study in which FtF interviews were conducted with owner-managers and

employees from foreign countries and the United States that focused on barriers to adoption of

ICTs. The findings revealed a lack of proper knowledge, education, and skills that were deemed

as barriers to ICT adoption. Arendt addressed concerns on how to bridge a digital divide in ICT

use and adoption with the main conclusion derived from the findings being that actions aimed at

bridging this divide should focus on overcoming the barriers of knowledge, education and lack

of skills.

There are social, organizational, individual, and technical aspects of ICT utilization, thus

promoting Wiredu and Sørensen (2006) to suggest the need for further investigation into the

divide primarily between the technical and social aspects of ICTs. Upon exploring the literature,

Billon, Marco, and Lera-Lopez (2009) conducted a cross-cultural study on the determinants of

ICT diffusion to study the so-called digital divide. Billon et al. (2009) stated that ICTs have been

identified as significant factors for social development and cohesion as their entanglement within

society paves the way to sharing knowledge. However, Billon et al. continued by suggesting that

there is also evidence of an uneven distribution, or digital divide, of ICTs between developed and

rural societies. Their findings revealed that some countries register a higher level of ICT

adoption than others due to their development levels. Additionally, in developed countries, urban

populations along with the age of the population were linked with ICT adoption. The conclusion

lead the way to suggest the ability to distinguish between different patterns of ICT adoption that

can be correlated with variables associated with country development levels.

Arguing for the affirmative view, Lim and Nekmat (2008) offered the notion that

injecting ICTs into society and allowing public access has helped to narrow the digital divide.

The authors noted examples of the implementation for public ICT access in developing countries such as the Grameen Communications' Village Internet Program and the National Institute of Information Technology's Internet Kiosks for village children in Cambodia. Lim and Nekmat cite the two aforementioned examples out of many efforts to integrate ICTs into rural societies for increased information sharing and knowledge. Whelan (2007) added that ICTs have been suggested as efficient tools to support knowledge management systems (KMS), actually acting as enablers for these knowledge sharing (KS) systems.

New Directions with ICTs

Information Communication Technologies and Development (ICTD) was said to originate as a result of a disciplinary approach to understanding the various impacts of ICT diffusion, resistance and acceptance in developing societies. Sreekumar and Rivera-Sánchez (2008) conducted a review of literature to explore this new adaptation on ICTs in rural parts of Asia. The authors also referred to and described Information Communication Technologies for Development (ICT4D) as a loosely defined interdisciplinary field of study assuming that a unidirectional relationship exists between ICTs and development. With its own base within the IS scholarly literature, Sreekumar and Rivera-Sánchez (2008) revealed that ICT4D research barely addresses the demand side of ICT implementation, but rather leans more heavily toward the supply side of ICT implementation. Their findings suggested that ICT4D was a strategic part of ICT expansion, as well as a form of digital capitalism. The conclusions lead Sreekumar and Rivera-Sánchez to suggest that this new technology is the gateway to hope as ICT deployment in rural Asian societies encompasses opportunities, ironies, promises, and complexities. While Sreekumar and Rivera-Sánchez suggested that ICTs are underrepresented in some areas of Asia, Rouibah and Hamdy (2009) offer the same viewpoint in the Arab world.

Rouibah and Hamdy (2009) conducted a study that centered on a theoretical model based on three other models consisting of curiosity from the model of flow, compatibility from the innovation diffusion theory, and the constructs of perceived usefulness (PU) and perceived ease of use (PEOU) from the technology acceptance model (TAM). Rouibah and Hamdy's model focused on two external variables of compatibility and prior similar experience and five independent variables consisting of PU, PEOU, curiosity, usage, and user satisfaction. The model was conceived to reveal factors affecting the usage and acceptance of an ICT in Kuwait. There were 609 Kuwaiti student participants who completed a survey to aid in testing the model.

The findings from Rouibah and Hamdy (2009) indicated that compatibility had a direct effect on PEOU and prior similar experience (PSE) also had the strongest direct effect on PEOU. There was also a direct effect between compatibility and curiosity and PEOU and curiosity; however, PSE had a direct and negative effect on curiosity. There was also a direct effect between compatibility and PU, as well as PEOU and PU, but PSE did not affect PU. Compatibility had no direct effect but exerted an indirect and total effect on user dissatisfaction; however, PSE exerted a negative direct effect and positive indirect effect on user dissatisfaction. The conclusion reached from these findings was that the structural model yielded sufficient strength to accurately explain the observed data and also allowed for accurate predictions with regard to user acceptance of ICTs in the Arab world. Furthermore, the model also highlighted the impact of social effect on curiosity that was found to be a new mediating variable of technology adoption and satisfaction.

Evidence was suggested that the contribution of ICTs to rural social, cultural, and economic well-being is becoming more and more difficult to realize beyond short-term measurable indicators (Ramírez, 2007). Ramírez (2007) conducted a review of literature that

emphasized the instrumental side of technology and challenged conventional policy development. The research gathered stemmed from industrialized settings in rural and remote communities. The results revealed an increasing digital divide between evaluation and conventional planning approaches for rural broadband ICTs due to their unpredictability which was subsequently supported by Arendt (2008) and Billion et al. (2009) who thereafter also acknowledged a technological digital divide in rural societies.

Ramírez (2007) looked at technology-based assumptions about innovation, stakeholder engagement, policy approaches, theory of change in the form of contribution, and unpredictability. Ramírez suggested an alternative paradigm based on the aforementioned variables. The conclusion reached was that by engaging multiple stakeholders in planning and tracking change of ICTs in rural areas, the processes of negotiation and appreciation of worthiness will be achieved instead of evaluation.

Senyucel (2008) explored the importance of the relationships between ICT suppliers and ICT user service departments during a process of modernization. Senyucel reviewed literature and also utilized the results of surveys administered in 22 local United Kingdom authorities while also conducting five complex case studies. The findings demonstrated that ICTs changed the way employees of the public sector worked during the modernization process. The conclusions of the findings allowed Senyucel to acknowledge that the use of ICTs changes the duties of user and provider groups as well as affecting their sanctioning behavior, workplace barriers, and use of available resources.

SMS Text-Messaging Technology

Seminal Research

"SMS is a text-messaging cell phone technology" (Leung, 2007, p. 115) which within the parameters of this proposed study would be classified as an ICT. Previous research on text-messaging does not reflect a sufficient breadth of knowledge with the majority of this research focusing on design, adoption, and social factors. Communication choice, as well as the behavior of the users, has been heavily addressed in prior IS studies (Colbert, 2005). Perry, O'Hara, Sellen, Brown, and Harper (2001) suggested that previous research has also examined mobility dealing with issues concerning varying channel coding, portability, risk of data loss, location discovery, limited battery life, volatile access points and unreliable network connections.

Perry et al. (2001) further stressed that collaborative mobility has become an emerging field of study in IS research. Collaborative mobility involves how mobile applications, or technology on-the-go, aids humans in the workplace, school, and the performance of daily tasks. With mobility there are no physical constraints of an office, classroom or residence. Perry et al. stressed that findings from these studies can help in our understanding about anytime, anywhere access that will also allow researchers to continue to contribute to the scholarly BoK on text-messaging technology. Colbert (2005) further added that students, from a mobility standpoint, will be more likely to use a cell phone or send a text-message, and be less likely to use email for interpersonal communication.

As a majority of the earlier research on SMS text-messaging technology occurred in Europe and Asia, it is still emerging as a relatively new research area here in the United States (Soriano, Raikundalia, & Szajman, 2005). According to Grinter and Eldridge (2003), initial research involving SMS usage came from Scandinavia. These studies primarily examined

adoption and usage among young boys and girls. In Grinter and Eldridge (2003) text-messages sent and received by 10 participants comprised of five girls and five boys aged 15-16 were examined to report on texting patterns.

More specifically, the language used within the conversations of the texters was of primary concern. The results of this study, derived from examining the conversations of the texters, revealed that teenage text users did not engage in an abundance of simultaneous or multiple conversations and they routinely switched to other communication mediums to conclude their discussions upon ending their texting sessions. Another finding was that girls and boys were equally likely to send and receive text messages. The conclusion drawn from these results suggested that the participants basically engaged in chat conversations among themselves while also coordinating and planning activities.

Continuing qualitative studies have investigated the specific behaviors of text messaging such as how and why text messages are exchanged and with whom. An extensive review of the literature on SMS text-messaging reveals a seemingly abrupt absence of literature prior to the year 2001 with perhaps only a few sporadic articles appearing before that year. This is possibly due to the fact that SMS was officially introduced to the mainstream public in 1992 (Prieto & Stadler, 2009). One of the earlier SMS studies was conducted by Lin (1997) on Point-to-Point Gateway Short Message (GSM) service, a wireless network architecture providing a connectionless transfer of messages with low-capacity and low-time performance.

In Lin (1997) a tutorial was presented on point-to-point SMS which provided the ability to send short text messages to specific users in the form of an enhanced two-way paging service. Lin (1997) suggested that text-messaging, as it is known today, was still in its infancy stages of development during this period. According to Grinter and Eldridge (2003), even though SMS

text-messaging was implemented with the initial GSM networks, it was the introduction of "pay-as-you-go" mobile plans that ignited text-messaging usage in Scandinavia. Reiterating that literature on text-messaging was almost non-existent prior to 2001, after the year 2001 however, the scholarly body of research on SMS text-messaging began to increase, not necessarily in scope, but quantity.

Adoption and Design Factors

Adolescent use of socially interactive technologies (SITs) and their relationship to offline social networks was the focus of a study by Bryant, Sanders-Jackson, and Smallwood (2006). Bryant et al. (2006) reported that previous research on youth and SITs typically focused on who uses this technology and why with the results derived from small ethnographic samples. Bryant et al. defined SITs as technology-mediated communications tools, such as instant messaging and text-messaging, that is redefining the social networks of today's youth. The study participants were seventh graders from a Midwestern US middle school. The results revealed that the participants were not necessarily text-messaging their friends as they sometimes listed someone as a close friend, but only occasionally contacted them through a SIT. Moreover, the results revealed the possibility of the participants even using different or specific SITs to contact different or specific people. Another finding revealed that text-messaging was not as popular as instant messaging among the participants. The results lead to the conclusion that SITs were not necessarily creating strong ties among the participants in online (instant messaging, text messaging) networks, nor were they creating weak ties in offline (person-to-person) networks.

Age adoption is another area of interest in text-messaging research. A growing segment of middle-aged individuals are beginning to adopt non-verbal methods of communication such as text-messaging (Soriano, Raikundalia, & Szajman, 2005). The use of text-messaging services by

middle-aged users was the focus Soriano et al. (2005). More precisely, the authors were concerned with ease of use (EU) and other difficulties experienced by older users, 35-60 years old, who engaged in text-messaging. Twenty participants engaged in text-messaging activities utilizing two different mobile handsets. Usability goals of learnability, efficiency, memorability, errors and user satisfaction were evaluated. Upon an analysis of the findings, keyboard layout of the handsets was a concern among the older participants. The size and spacing between the keys became an issue with the male participants.

Consequently, the males were forced to use the tips of their index fingers and thumbs to input data to avoid pressing more than one key at a time. The middle-aged participants also expressed a valid concern about the efficiency at which they could send text-messages. As such, the substandard usability, which affected their efficiency, led middle-aged participants to believe that the actual level of utility employed by text-messaging is minimal. Soriano et al. (2005) concluded that middle-aged participants experienced difficulties utilizing text-messaging due to the low level of usability of the handsets utilized in their study. Keypad design played a crucial role in the poor usability factor.

In line with Soriano et al. (2005), Massimi, Becker, and Wu (2007) also investigated design factors of mobile phones with text-messaging capability for older adults, hereafter referred to as seniors. The authors suggested that although mobile phones can be a useful tool for seniors, they are typically designed for younger people. Creating a "senior-friendly" phone first relies on decreased sensor-motor skills and a reduction in complexity by incorporating less functionality in its design. Massimi et al. (2007) prototyped a redesigned mobile phone and ran numerous participatory activities that allowed the senior participants to critique the mobile phone, including vital applications.

A very small sample of only five participants was recruited for this study ranging in ages from 55-86. Upon evaluating the prototype handset, the seniors actually desired multiple application domains, but usability problems were encountered due to hardware and operating system designs that affected functionality. Massimi et al. concluded that critical-mass adoption, a lack of technical support or fears of radiation contamination may have been a contributing factor among the senior participants with regard to EU and perceived functionality.

A very recent study was conducted by Battestini, Setlur, and Sohn (2010) who examined text-messaging use on a large scale. Battestini et al. (2010) consisted of 70,000 students in the United States and nearly 60,000 text-messages grouped into 8,500 distinct conversations that were collected over a four month period. Texting habits of the participants and the content of their messages were examined to note how this extremely popular communication method among college students has changed over the past decade. The findings revealed that students communicate with a large number of contacts for long periods of time while also engaging in simultaneous conversations with as many as nine contacts.

Battestini et al. also found that text-messaging was a useful method for switching the mode of communication among the student participants in line with ICT succession Theory proposed by Stephens (2007). The findings also indicated that text-messaging has evolved in numerous ways over the past decade leading to a couple of future design implications that Battestini et al. (2010) proposed with the first being the support of simultaneous communications. The second design implication was interoperability between other communications mediums such as social networking Websites, chat, and email. While Battestini et al. looked at change with regard to text-messaging, Lenarcic and Richardson (2010) examined

its innovative aspects from a reflective point of view by surveying the literature and reporting on the results of a pilot university study centered on a SMS system.

Lenarcic and Richardson (2010) proposed a quasi-intuitive theoretical framework that served as a catalyst for the generation of ideas in the business development process. A project based methodology was used in support of a mobile SMS text-messaging prototype that was launched in the higher education environment. Students and faculty used the text-messaging system to provide opinions regarding the effectiveness and usefulness of the SMS tool. Focus groups collected qualitative data from academic course coordinators who were also part of the pilot study. Lenarcic and Richardson (2010) concluded that the impact of mobile text-messaging is now considered to be an emergent technology that has accidentally been vital in the design and development of new social networks on a global scale. In educational settings text-messaging has received attention in the literature as both an instructional aid and learning tool (Ismail & Idrus, 2009, Scornavacca, 2009, Day & Kumar, 2010).

SMS Text-Messaging in Academic Environments

Ismail and Idrus (2009) conducted a pilot study utilizing text-messaging for a Physics course for distance learners. An attempt was made to promote mobile learning (m-Learning) as "convenience Education" (CE). Thirteen students in a second year Physics course responded to a questionnaire and also received text-messages during the course. The responses from the questionnaire strongly favoured the distance education based aspect of the course that was enhanced with mobile phone text-messaging. Furthermore, the course manager was overwhelmed with e-mail messages from students in the pilot course requesting the continuation of the text-messages through the end of the course. Ismail and Idrus concluded that mobile phones, capable of text-messaging, have the potential to greatly and positively affect a distance-

based Physics course. Scornavacca (2009) also utilized text-messaging in the classroom stating that the immense popularity of cell phones among university students offers a unique opportunity to explore text-messaging as a classroom interaction system. Scornavacca presented a longitudinal study of the impact of a text-based classroom interaction system referred to as TXT-2-LRN.

In Scornavacca (2009) a survey was administered to 1,179 college student participants over a two-year period. The results suggested that instructors and students perceive a number of benefits from the addition of text-messaging in the classroom. The results of the data from the second year of the study validated the results from the first year of the study. It was concluded that although there were definite positive factors toward the use of mobile phones in the classroom, negative factors were reinforced as well such as their propensity to be distracting, thus pulling students off task in the classroom. Day and Kumar (2010) agreed as they asserted that getting 150 to 300 students in an auditorium style classroom to participate in discussions and in-class exercises is challenging and also difficult to oversee.

Day and Kumar (2010) utilized a new version of the beer game to promote large classroom discussion by allowing students to submit orders by way of text-message. To accomplish this, a pilot information system integrating several software, hardware, and service components was assembled. The findings from this two-year longitudinal study indicated that in the first year a pilot class of 24 students provided 100% positive feedback on the use of the text-messaging system. During the second year, 32 students were split evenly into experimental and control groups with one group receiving feedback text-messages. The findings from the second year class revealed that the group receiving the feedback text-messages made only one error during a calculations task while participants in the remaining groups who did not receive text-

messages made a total of 33 errors. Day and Kumar concluded that cell phones are useful in the classroom. They further stipulated that cell phones can eliminate the need for computer labs and also provide real-time information allowing for automated performance analysis, thus aiding in simulation learning objectives. Awodele, Akinwale, Adagunodo, Idowu, and Agbaje (2009) conducted a literature review examining the use of text-messaging to deliver examination results in educational settings that was referred to as a result checking system.

Awodele et al. (2009) evaluated several existing SMS systems that were Web-based, voice activated and asynchronous used by university students to view exam results. These evaluations led Awodele et al. (2009) to propose their own SMS-based system to review exam results. The system proposed by Awodele et al. automatically generated a password for the user and placed high emphasis on trust in order to encourage the user to utilize a phone number for access. Text-messaging has also shown promise as a tool for completing practical tasks (Shi & Wang, 2009; Riquelme & Rios, 2009; Bose, Nahid, Islam, & Saha, 2010).

Texting and Literacy Impact

Frequency of text-messaging and the use of textese and literacy skills was the focus of a study conducted by Drouin (2011). Drouin made the claim that text-messaging trends are just beginning to be examined in the United States which is consistent with the relatively few text-messaging studies within scholarly literature. This study particularly examined frequency of text-messaging and textese, the written language of "texters" comprised of an abbreviated vocabulary that includes initialisms, letter and number homophones, contractions, emoticons, and the omission of unnecessary words, vowels, punctuation, and capitalization. A total of 152 college students who were enrolled in an introductory psychology class served as participants. There were 99 women and 53 men with an average age of 21.20 and an average grade point average of

3.15 on a 4.0 scale. Instruments used in this study were the Woodcock Johnson III Letter-Word Identification and Reading Fluency achievement test, the Woodcock Johnson III Spelling sub-test, and a 6-point Likert scale survey instrument that measured their frequency using text-messaging. The ultimate objective of the study was to see how the frequent utilization of textese affected college students' reading, writing, and spelling ability over time.

The findings from Drouin (2011) indicated that students admitted to texting and using textese often and their frequency of textese use varied across contexts. A correlational analysis revealed that significant positive relationships between text-messaging frequency and literacy skills with regard to spelling and reading fluency. There were significant negative relationships between textese usage in certain contexts, such as when on social networking sites and emails, with regard to literacy or reading accuracy. The findings from this study were found to conflict with studies of college students in Britain, Australia, and the United States. The conclusions drawn offered that text-messaging and textese have separate, significantly different relationships with literacy and spelling. Heavy texters were found to be skilled readers, but the heavy use of textese did have negative effects on reading accuracy.

Applicability of SMS for Interpersonal Task Completion

Emergency response workers dealing with incidents such as natural disasters could benefit from text-messaging, according to Shi and Wang (2009). In their theoretical framework, Shi and Wang applied the concept of Database Management System (DBMS) to implement a fast, easy-to-use SMS text-messaging system to send informational messages, warnings, and to call up emergency rapid response teams during an earthquake. Shi and Wang (2009) found that although databases, such as the one they deployed for the earthquake response, are widely used as an IS, the ability to combine them with messaging systems is still limited. Shi and Wang

concluded that the Earthquake Response SMS system using a DBMS can lower the time greatly than rescuers use to enter and station in their disaster relief post. An empirical examination of user perceptions of text-messaging was of interest to Cocosila, Archer, and Yuan (2009).

According to Cocosila et al. (2009), applying text-messaging as a means to improve adherence is a new application of ecommerce that yields many unforeseeable consequences. A qualitative experiment was conducted to gain user perceptions about receiving encouraging text-messages in a health context, particularly for participants to follow a healthy regimen. A total of 51 participants took part in the one-month study and all were cell phone users. The results disclosed that user perceptions are the primary factor in determining the use of mobile technology for adherence. Of user perceptions, usefulness was found to be the most important. Cocosila et al. (2009) stipulated that these findings are in line with other technology adoption studies. It was concluded that opportunities for utilizing text-messaging to improve adherence resides in its perceived usefulness along with the advantages of mobile technology.

Riquelme and Rios (2009) conducted a study investigating the credibility and attitudes toward text-messaging as a tool to aid the political agenda in Kuwait. The particular point of interest was how persuasive political text-messages were in comparison to traditional media. A questionnaire was emailed to 210 subjects of whom only 98 responded. Additionally, the questionnaire was placed on a Web site where 140 participants completed it out of 186 who attempted the questionnaire. The results indicated that respondents generally had a negative attitude toward political text-messages and less than one third deemed the text-messages as credible with an even smaller percentage considering them persuasive. Riquelme and Rios (2009) concluded that in actuality, it was text-messaging as a medium that the Kuwaiti participants found to be non-credible, however, during actual political campaigns, political text-

messages were said to be useful, especially at election time. In similar fashion, Bose, Nahid, Islam, and Saha (2010) investigated the effectiveness of text-messaging as a useful medium to promote consumer advertising in Bangladesh.

Bose et al. (2010) stated that text-messaging as a medium to promote advertising with consumers has now piqued the interest of the research community and the aim of their study was to examine the potential of text-messaging as an effective advertising medium in Bangladesh. A mixed methods approach was utilized to include field interviews with prospective customers of different businesses along with 160 stakeholders who completed a survey. Findings suggested preliminary evidence that text-messaging was received positively as a way for consumers to receive advertisements for products in Bangladesh through their cell phones. The findings were starkly different in Riquelme and Rios (2009). Riquelme and Rios was a fairly similar study that was conducted in a political context where the participants expressed negative satisfaction with SMS text-messaging to promote public opinion in voting in Kuwait. However, Bose et al. concluded that thinking patterns and perceptions of people have changed with individuals now demonstrating receptiveness toward new mediums for advertising, such as SMS text-messaging, including a promising and sizeable segment of the population in Bangladesh.

Khiyal, Khan, and Shehzadi (2009) focused on utilizing a SMS based wireless home appliance control system (HACS) for automating appliances and security. HACS is based on global system communications for mobile (GSM) network technology. GSM allows for the transmission of text-messages from a sender to a receiver and allows for covert access of appliances and detectable control at home. Two subsystems comprised of appliances and securities were targeted for testing of the HCAS. During testing the HACS allowed for the provision of security and sent a breach alert when a simulated intrusion was detected. The remote

control component allowed the user to turn a simulated appliance on and off through an incoming text-message, and the system automatically conducted tests and diagnostics for continued SMS sending and receiving capability and made any necessary configuration adjustments. Khiyal et al. (2009) concluded that their design approach was novel and it was further determined that the required goals and objectives of the HACS were achieved.Text-messaging has been used in medical facilities where it was utilized to manage pre and post operative patient care (Leung, 2007). In fact, the medical sector seems to be embracing text-messaging at an increasing rate. Text-messaging was said to be a preferable method of communication for surgeons who cite many advantages in using it (Sherry, Colloridi, & Warnke, 2002). The surgeons reporting in Sherry et al. (2002) stated that text-messaging is instantaneous that permits reaching the recipient within seconds and thus, allows for a quick reply back. Its cost effectiveness was also a positive factor and it is highly accessible as 80% of the surgeons surveyed reportedly carried a cellular phone.

The anytime, anywhere accessibility of text-messaging was also noted negating the need for online access or a pc. Sherry et al. (2002) also suggested that text-messaging is considered to be non-intrusive and surgeons could even utilize it inside the operating room by placing their cell phone inside a sterile bag. A final consideration in favor of text-messaging is the brevity of its messaging, which surgeons need and prefer to help them in making rapid decisions.

Text-messaging was also investigated to rate its effectiveness on diabetic patients in a six-month experimental study (Kim & Jeong, 2007). Fifty-one patients participated in the experiment to assist in the evaluation of a telemedicine management system to help type-2 diabetes patients in maintaining their appropriate blood glucose levels. The researchers, who were registered nurses, divided the participants into a control group and an intervention group.

The patients in the intervention group used cellular phones to send daily text-messages to the researchers to report their glucose levels and their diet and exercise regimens. In turn, the researchers would send text replies back to the intervention group with feedback or recommendations to help them manage their blood glucose levels. The results revealed decreases in patient blood glucose levels at the three month mark of the study continuing on through the end of the six-month study. The researchers concluded from the results that the cellular text-messaging intervention improved the levels of the diabetic patients who participated in the study.

From January 2005 to December 2006, Cheng et al. (2008) studied the effect of text-messaging on the anxiety levels of pregnant women who were awaiting the reports of their prenatal biochemical screening for Down Syndrome. There were two reporting groups, one where each of the participants utilized cellular phones to receive fast reports and the second group who received reports without text-messaging. The aim of the study was to improve health informative services as well as to shorten the waiting time of prenatal reports. There were 2,782 pregnant women targeted to participate in this study who were screened for potential Down Syndrome, some with a negative result and some with a positive result.

According to Cheng et al. (2008) significantly increased anxiety levels were associated with women who received a positive result on their Down syndrome screening, compared to those with a negative result. The researchers investigated whether faster reporting by text-message would reduce the anxiety levels in women waiting for a prenatal biochemical screening report for Down syndrome who received a negative result. The findings revealed that screen-negative women showed no significant change in anxiety level before prenatal screen testing up to three days after the appointed clinic. However, state-anxiety scores on the fast reporting group utilizing text-messaging declined significantly on the second occasion of measurement. Cheng et

al. concluded that the addition of text-messaging, as a routine reporting system, yielded some increased benefits in reducing anxiety among women with a screen-negative result. Research on text-messaging seems to lean heavily toward socio-cultural adoption among teenagers. However, there has recently been some higher-level research issues addressed in the scholarly literature concerning SMS text-messaging.

Hard Problems in SMS Research

People seem to prefer text-messaging for information exchange as well as messaging (Saleem & Doh, 2009). Saleem and Doh (2009) proposed a model for an extendable generic application that could be used to provide a variety of services by incorporating text-messaging. Saleem and Doh did not test the model in this article, but rather proposed it and concluded by suggesting that it was a cheaper way of providing useful information to users in areas without an Internet presence. They also concluded that this system should be extendable to allow for information exchange and SMS-based transactions. Prieto and Stadler (2009) presented a prototype design for performance management of text-messaging systems and evaluated the prototype through case studies based on simulations with different scenarios. Prieto and Stadler (2009) found that the design proved effective in achieving the performance objectives of the administrator at an efficient computational cost. The conclusions reached were that the design adapted to changes in networking conditions while continuously meeting performance objectives, consequently demonstrating the feasibility of the design.

Lin, Silva, Santos, and Neto (2010) proposed an architecture that allowed Web providers to market their services through text-messaging by reaching low-end mobile phone users. Their architecture referred to as SMBots was conceived to allow for the management of dynamic services based on text-messaging, making them available to mobile phone users on the go.

Although the architecture looked promising, security concerns regarding the service code were presented such as protection from malicious routines that could make critical files vulnerable. In addition to malicious viruses and worms, a future work consideration of Lin et al. (2010) was to understand the maximum load of submitted services that could be supported and the number of SMS requests that could be computed without affecting service quality. In support of IS security concerns addressed by Lin et al. (2010), authentication is the most important line of defense prompting Shu, Tan, and Wang (2009) to propose a novel mobile authentication scheme using SMS text-messaging. In the model proposed by Shu et al. (2010), public key technology provided bidirectional authentication and non-repudiation that both provide high security.

Previously referenced studies by Bose et al. (2005) examined the implications of text-messaging with regard to advertising, while Saleem and Doh (2009) examined an extendable generic SMS application for performance management and Lin et al. (2010) focused on an architecture for marketing services with text-messaging. Hong-yun (2010) made a similar contribution by proposing the possibility of mobile commerce by combining text-messaging with an enterprise commerce application. According to Hong-yun (2010), effective mobile business applications must meet the conditions of being flexible, reliable, efficient, and accurate. Findings' supporting the claim that text-messaging is fast, cheap, and reliable led Hong-yun to conclude that SMS text-messaging has clear cut advantages for the achievement of mobile applications.

Gleerup, Larsen, Leth-Petersen, and Togeby (2010) reported promising results with consumer feedback from text-messaging. Gleerup et al. (2010) conducted an experiment with three experimental groups and two control groups within 1,452 households to monitor the effect that feedback text-messages would have on household electric energy consumption. Findings

suggested that text-messaging and email messaging that provided the consumer participants with warnings of high energy consumption periods resulted in a three percent reduction in the use of electricity, thus conserving energy. Gleerup et al. summarized that implementing the text-messaging feedback technology for the proposed notification system, from a cost perspective, was minimal.

Perea, Acha, and Carreiras (2009) examined the pattern of eye movements of skilled texters during their reading of text-message sentences in relation to sentences written normally. Twenty-six students participated in an experiment where 72 experimental sentences were read across four experimental conditions. Findings revealed that although SMS sentences are much shorter than normal sentences, reading times were notably longer for SMS sentences than for normally written sentences. SMS words were also found to be more difficult to read and less skipped than normally written words. Perea et al. (2009) concluded that due to a significant effect in time and gaze duration in the eyes while reading SMS sentences, there is a phonological reading cost at both local and global levels for individuals who are classified as experts in SMS communication.

According to Yang and Wang (2010), there is a growing problem of interruption in communication with text-messaging; however, current text-messaging systems cannot alert users in a manner to manage these interruptions. Yang and Wang (2010) developed an intelligent text-messaging system that provides notification to a user at a suitable time if someone has attempted to contact them, thus avoiding unwanted interruptions during task completion. The systems work on a decision module, also referred to as a decision tree, with a total of 382 messages contained within it. Five student participants evaluated the notification system over a two to four week period. The findings indicated that the participants were more concerned with accuracy in the

notifications during their busy activities as incorrect notifications affected their performance and productivity. However, during non-active times, a greater tolerance was accepted with inaccurate notifications. Yang and Wang (2010) concluded that the results of this developmental study supported the primary goal of reducing unwanted interruptions for mobile users during task completion.

Unanswered Questions and Future Research

With text-messaging being such a relatively new research area, particularly in the United States, there are issues that researchers so far acknowledge that warrant future inquiry. Sarker and Wells (2003) cited important factors that seem to influence use of technology such as demographics, experience with technology, general comfort-level (self-efficacy) with technology, and culture. Therefore, adoption seems to still be a valid area of consideration as, according to Sarker and Wells, there is an undisputed need to understand why and how individuals adopt mobile devices. Bryant, Sanders-Jackson, and Smallwood (2006) argued that continuing research is important toward our preliminary understanding of a new technology's usage. Bryant et al. (2006) offered a couple of interesting research questions that deserve further exploration. First, what group dynamics influence youth to adopt particular technologies or to use them in a particular manner? How does using these technologies actually affect how children and adolescents communicate with one another? Bryant et al. also revealed that another area of literally unexplored research deals with the effects of SITs on teen and preteens.

There are more unanswered questions relating to text-messaging as well. Text-messaging is a freely open, typically discrete method of communication among tight knit groups that is rarely, if ever, formally moderated by a single entity. Hence, it is noted that scarce research has been conducted on text-messaging regarding its impact on interpersonal mediated-

communications (Leung, 2007), particularly when it concerns college students and teenagers. Leung also offered that hardly any research has been conducted on gratifications of text-messaging use as a lot of what we know regarding motives for the use of text-messaging has been drawn from the experience of teenagers. Leung (2007) further claimed that "The general theoretical conclusion of current and past use and gratifications studies is that the gratifications sought motivate the use of a particular technology. One weakness of SMS text-messaging is its limitation of only 160 characters per message (Soriano, Raikundalia, & Szajman, 2005, Leung, 2007). However, Leung also added that although SMS text-messaging has its definite advantages, ironically, the 160 character limitation has in fact contributed to its immense popularity with the younger generation.

With all the technological modes of communication available at the present time, Murnan (2006) posed the question, what is the best communication tool to get the message out today and consequently in the future with the utilization of cell phones and text-messaging, email, instant messaging, and the World Wide Web. From her adoption perspective, Murnan explored usage and age adoption of communications technology among four different age groups. First she looked at the most receptive age group comprised of 18-23 year olds who reported high use of cell phones and text-messaging. Next she looked at 30-40 year olds who used cell phones and text-messaging heavily, but email was their preferred communication method of choice.

The 40-50 year olds used email and cell phones primarily, but did not engage in text-messaging and reported minimal use of instant messaging. The age group comprised of 50-60 year olds demonstrated the greatest variance. Some used email extensively while others used it to a lesser degree. This group did use the Web, but otherwise, they tended to resort to using older

traditional communications methods such as US Postal mail and wired land-line phones. The members of this age group did not report the use of text-messaging.

According to Colbert (2005), another promising direction for future study regarding text-messaging deals with the concept of context. In other words, in what new ways could cell phones and text-messaging be applied? In the case of the proposed study, we choose to examine text-messaging in a new way to address interpersonal task completion in an AHS context among college students. In lieu of Colbert's suggestion of examining context, Leung (2007) further contributed by discussing standardization. Leung continued by stating that miniature communications devices will require more technical support which will create a new and increased focus on standards. Leung concluded with the opinion that researchers will ultimately have to be concerned with the implications involved for supporting these devices within their miniaturized environments.

Behavioral Intention to Use among College Students

Technology Acceptance Model

Intention to use has been examined extensively as a construct for measuring a user's acceptance of technology (Fagan, Neill, & Wooldridge, 2008). Intention to use is a by-product of the Technology Acceptance Model (TAM) by Davis (1989). According to Davis, the TAM suggests that one's behavioral intention to use technology is based on two human motivators, the first of which is classified as intrinsic. Intrinsic motivation refers to the extent in which a user might enjoy the experience of using a particular technology, measured as perceived usefulness (PU). The second motivator is classified as extrinsic motivation where the user considers the difficulty of interacting with the technology itself, expressed as perceived ease of use (PEOU). Both PU and PEOU are classified as mediators that influence a user's behavioral intention to use

a particular technology. Alshare, Freeze, and Kwun (2009) described behavioral intention as the certainty or strength of one's intention to use a system.

The TAM itself is based on the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) which implies that a user's acceptance of a technology is dependent upon the behavioral intention of the user. Conversely, the TRA is a validated model useful in predicting and explaining human behavior in a variety of domains (Wu and Wang, 2005). In essence, the TRA inspired the TAM in order to explore why users will choose to either reject or accept technology. Davis (1989) later improved upon the original TAM with the conception of his TAM2. While the original version of the TAM explored causal links between beliefs, user attitudes, intentions and computer adoption behavior, the revised TAM2 has two versions that separately address pre and post-adoption beliefs and behavior regarding the ease of use and usefulness of technology to more easily and effectively measure intention to use.

Due to the increasing introduction of new technologies, and the growing trend of implementing current technologies in new and novel ways, ongoing research into BI to use technology is an important issue (Park, 2009). Park specifically indicated that little research has been done to examine how university students adopt and use technology. In a study involving 628 subjects, Park examined the TAM in relation to college students' BI to use e-learning technology. Findings from Park (2009) indicated BI to use was affected by self-efficacy and subjective norms. Furthermore, it was found that the TAM constructs influenced BI to use on part of the college student participants, as well as their attitudes toward the technology. These findings led to the conclusion that the TAM was confirmed as a useful theoretical model in helping to explain and understand college students' BI to use technology. These findings also

supported the work of Chang and Tung (2008) who examined constructs that influenced BI to use based on a modification of the TAM.

Chang and Tung (2008) examined BI to use by proposing a new hybrid TAM that specifically targets college students' BI to use e-learning technology. To study BI to use, a combination of the TAM and innovation diffusion theory (IDT) was utilized, along with the addition of two variables comprised of perceived system quality (PSQ) and computer self-efficacy (CSE). In defining these constructs, PSQ looks at the response rates of interactive systems, consistency of the user interface, and programming code issues, while CSE is an individual's perceptions of his or her ability to use technology to accomplish a task (Chang and Tung, 2008). Chang and Tung continue by promoting that IDT is centered on unique characteristics that explain user adoption and decision-making. Consequently, by adding the two additional variables of PSQ and CSE, the research model was thus deemed more complete.

Chang and Tung (2008) examined the results from 212 surveys. The respondents were comprised of 40% male college students and 60% female college students with 60% of the total respondents in the 18-20 year old age range. Findings revealed that compatibility has a great positive and direct influence on BI to use. Chang and Tung (2008) also discovered that the TAM constructs of PU and PEOU have a great positive and direct influence on BI to use. PSQ was also found to have a positive direct influence on BI to use and PEOU was found to increase BI to use. Conclusions drawn from Chang and Tung indicate that the hybrid TAM can assist in revealing how college students will respond to technology, as well as accurately measuring the acceptance of technology among college students.

Measures Associated with Intention to Use

Expert systems (ES) are defined as a special type of artificial intelligence, in the form of a computing system, which offers the decision-making support of a human expert (Giarratano & Riley, 2005). In academic settings, ES offers unique features that allow college students to seek AH without always consulting a teacher (Alshare, Freeze, & Kwun, 2009). Alshare et al. (2009) defined BI as the certainty or strength of the individual's intention to use ES and other technologies. In Alshare et al. (2009), a survey questionnaire was administered to a convenience sample of 500 students from a Midwestern university. The results corroborate those of Chang and Tung (2008) and Park (2009) attesting that PU and PEOU were highly accurate in predicting user attitude toward ES. Attitude was classified as the individual's positive or negative feelings toward ES. Additionally, perceived reliability (PR) of ES highly influenced the predictability of perceived quality (PQ).

PR and PQ are constructs that when combined, resemble that of PSQ by Park (2009). PR refers to the ability to ensure the continuous and smooth operation of a system, whereas, PQ stipulates that the user expects the technology to perform correctly and provide accurate information (Alshare et al., 2009). Conversely, Alshare et al. discovered that the pathway between reliability and quality was stronger than the pathway between attitude and intention. Alshare et al. (2009) concluded from their findings that the main constructs of the TAM were important in predicting BI to use ES among college students. Alshare et al. summarized that upon determining the important factors that influence BI to use ES, developers can then better target prospective users.

Organizational Applicability – Case Studies

Fagan, Neill, and Wooldridge (2008) studied BI to use computers among 172 first-line supervisors in a mid-sized manufacturing plant over a one-month period utilizing the Integrated Model of Technology Acceptance (IMTA). There were several findings in Fagan et al. (2008) to include that a positive relationship existed between extrinsic motivation and BI to use computers. A positive relationship also existed between PEOU and BI to use computers and a positive relationship between intrinsic motivation and extrinsic motivation was found to exist. PEOU and extrinsic motivation was found to have a positive relationship and finally, a positive relationship was found to exist between intrinsic motivation and PEOU. Fagan et al. concluded that extrinsic motivation and PEOU are important influencers toward BI to use computers.

He **a**nd Mykytyn (2007) conducted a field survey examining the decision factors relating to BI to use an online customer payment system. Surveys and questionnaires were utilized as 148 participants rated their intention to use an online-based payment system. The results found that the majority of the participants' user perceptions of the online payment system greatly affected their adoption likelihood. For instance, users who felt subject to financial risk exhibited greater risk tolerance in utilizing this payment method. In any event, the overall conclusion drawn from the results of He and Mykytyn (2007) suggested that the majority of the participants favored the online payment system.

Sauter (2008) conducted a single site case study to investigate the actual use of information technology within an organization to support its adoption over time. An undisclosed number of volunteer subjects within the organization were the focus of the research, as their behavior during the normal performance of their duties was observed. Access logs were utilized as the primary data collection method over the course of pre-intervention, intervention, and post-

intervention time periods. The participants also completed a post evaluation of an Ultimate Bulletin Board (UBB) online discussion tool at their site which was used to support their organizational decision-making. The results from Sauter confirmed that early acceptance of the tool was evident in the early pre-intervention stage of the study; however it did not significantly impact decision-making during this period. Post-intervention results were mixed as voluntary usage of the UBB experienced a substantial drop in participation during this period. Sauter (2008) concluded that with regard to the BI precursors of PEOU and PU, both have a definite impact on technology usage; however, PEOU in itself was not found to be highly influential on the use of technology. From a theoretical perspective, Sauter achieved the main research goal of revealing a gap between what people may intend to do and what they actually do in terms of BI to use and the adoption of technology.

Jackson, Chow, and Leitch (1997) conducted a study offering a framework that encouraged more informed decision-making with regard to organizational investment in information systems also considering BI to use. By extending the TAM, several constructs were examined to enhance understanding of system usage. A diverse sample of development projects was utilized and a large accounting firm selected organizations they were supervising in the development of IS projects to assess the model. Only 111 out of 585 instruments distributed were usable in the data collection and analysis phases. The results confirmed that the hypothesized model sufficiently predicted the outcome of the observed data prompting Jackson et al. (1997) to conclude that BI to use the system was sufficiently explained by the model.

Wang, Lin, and Laurn (2006) stated that research on m-commerce suggested that consumers might not adopt m-services even though they are readily available. Wing et al. (2006) collected data from 258 users in Taiwan that was tested against their mobile banking acceptance

model for predicting to use technology for m-commerce. The results revealed that TAM constructs of PU, EU, credibility, self-efficacy, and financial resources positively influenced behavioral intentions. Perceived credibility and perceived financial resources had a stronger effect on behavioral intention than the traditional TAM variable of PEOU. Finally, it was discovered that many consumers in Taiwan believed that using wireless m-services was considerably more expensive than wire-based m-services while security and privacy were issues with potential consumers as well. Wang et al. (2006) concluded that their model was an effective and valid system for predicting consumer BI to use m-service upon adding new constructs of perceived credibility, self-efficacy, and perceived financial resources.

Chung and Kwon (2009) also had a similar research goal of that of Wang et al. (2006) by examining BI to use mobile banking. Specifically Chung and Kwon (2009) looked into the phenomenon of technology while identifying possible factors that influenced positive intentions toward mobile banking usage while also explaining how different variables affect BI to use. The study sample consisted of 156 participants who completed an online survey. Findings indicated that experience with mobile devices and technical support strengthened the relationship between technological characteristics and consumer BI to use mobile technology. With regard to variables affecting BI, PU and PEOU significantly influenced BI to use which was consistent with prior BI to use studies. Chung and Kwon concluded that both technological support and experience with mobile technology are vital factors in examining and understanding continuous BI to use mobile banking services.

Yang, Chen, Wi, and Chao (2010) suggested that a consumer's BI to use Web-based Self Services (WBSS) is a key to determining if a WBSS would be successful. Yang et al. (2010) adopted the TAM as their research framework. College student participants completed a

questionnaire upon which 70 out of 90 students who participated actually completed the experiment. The results showed that customized control characteristics directly affected consumers' BI to use WBSS. Again, the TAM construct of PEOU was found to directly influence PU which in turn affected BI to Use WBSS. Yang et al. (2010) concluded that companies should improve the flexibility of WBSS during the service delivery process in order to increase BI to use WBSS among consumers.

Social Factors of BI to Use

BI to use for improving the understanding of the effect that social influence exerts on bloggers' usage intention was the focus of study by Wang and Lin (2011). A Web survey was utilized to reach 613 blog participants. Based on a conceptual framework incorporating quality, and social influence as key determinants of usage intention, the results demonstrated that information quality, system quality, and blog function quality had a positive influence on bloggers' BI to use. Social influence was found to significantly affect bloggers' BI to use directly and indirectly through blog platform standards. Conclusions drawn from Wang and Lin (2011) affirmed that the goals and hypotheses of the study were all supported with the findings that perceived blog platform standards and social influence greatly affected BI to use.

Robinson (2006) provided an empirical look at a modified conceptualization of the Unified Theory of Acceptance and Use of Technology. The aim of this study was to investigate the causes of BI to use technology by students. There were 102 junior and senior college students who were sample respondents from a small-sized 5,000 to 10,000 total enrollment university who completed a questionnaire. The findings indicated that attitude toward using technology is positively linked to BI to use technology and BI was deemed to be significant. Although Venkatesh, Viswanath and Davis (2000) reported inconclusive findings in their research, the

results from Robinson (2006) were consistent with findings in other previous BI to use studies. Robinson concluded that students would develop a positive BI to use technology as they form a more positive attitude toward technology in general.

Lin (2009) conducted a study extending the TAM to explore the influences of cognitive absorption on user beliefs and BI in a virtual community. Lin (2009) defined cognitive absorption as a state of deep involvement with the virtual community. A survey was administered to 172 respondents in the community. Findings revealed that cognitive absorption greatly affected BI through PU and PEOU of the virtual community. Lin concluded that the study positively supported the extended TAM for predicting BI to use in the virtual community.

Academic Help-Seeking

Overview of Help-Seeking

One definition of help-seeking states it as a set of skills that involves asking for assistance and advice from available help sources (Fallon & Bowles, 1999; Gould, Udry, Bridges, & Beck, 1997). There are other definitions of help-seeking that place it more firmly in the academic or learning arena. According to Karabenick (1998), help seeking is viewed as a self-regulating and proactive strategy that prepares learners for independent success. Nelson-Le Gall and Resnick (1998), identified help-seeking as a critical school readiness skill that is facilitated by mastery-oriented classroom achievement and social goals, by inspiring teachers and inquisitive students. Additionally, Ryan and Pintrich (1998) defined help-seeking as the ability to utilize others as a resource to cope with ambiguity and difficulty in the learning process.

Help-seeking research was conducted fairly extensively by psychology and educational researchers at the start of the 1980's. DePaulo contributed greatly to the body of knowledge in the area of help-seeking during this period (DePaulo & Fisher, 1980; DePaulo & Fisher, 1981;

DePaulo, Dull, Greenberg, & Swain, 1989). According to DePaulo and Fisher (1980) the consideration of two different types of psychological cost creates a state of constant conflict among potential help-seekers. To explain, a help-seeker will weigh the risk of perceived incompetence against the need to seek help for matters that he or she should already be able to competently handle or address. In addition, the help-seeker will also weigh the perceived inconvenience experienced by the person providing this help against his or her individual need for assistance. Sixty-four undergraduate women who were recruited for this interpersonal communications study completed two 30-item tasks with access to a bogus expert helper. During the study the participants sought help to complete the tasks less frequently when they thought it was inconvenient or costly to the helper, or when it was embarrassing or costly to them to consult the helper, or if the task was perceivably easy.

The findings of this study suggested that potential help-seekers take into consideration the psychological costs of seeking assistance. In essence, DePaulo and Fisher (1980) suggested that if a potential help-seeker would risk embarrassment due to a perceived incompetence by asking for help, he or she would feel less comfortable about seeking help. DePaulo and Fisher looked specifically at female college students in their study and found that the female participants were reluctant to seek help. Taking into consideration that DePaulo and Fisher conducted their study over 30 years ago, current literature shifts this reluctance to seek help to collegiate males with females now reportedly being more receptive to formal help seeking (Tsan & Day, 2007; Vogel, Wester, & Larson, 2007; McKenna, Green, & Gleason, 2002).

DePaulo and Fisher (1981) continued their research into help-seeking with another study that examined nonverbal cues in help-seeking. Unlike the previous study where the investigators examined the psychological costs of receiving aid or assistance, this study examined help-

seeking by suggesting that help-seekers are aware or conscious of help-givers who are willing and open to providing help-based assistance. DePaulo and Fisher (1981) surmised that this awareness experienced by help-seekers is attributed to readable body language exerted by potential help-givers indicating a willingness toward providing help referred to as overt cues. This was compared with help-givers whose body language indicated a less-willingness or annoyance toward providing help referred to as covert cues. Overt cues displayed by help-givers are openly interpreted as politeness, willingness, and compliance toward providing help. However, covert cues are not openly displayed as help-givers will make an attempt to conceal or hide feelings of inconvenience and annoyance toward providing help. Although the goal of this study was different, the methodology utilized in this 1981 study mirrored the previous study (DePaulo & Fisher, 1980) with the presence of the same bogus female helper. Sixty-two undergraduate women participants were recruited and paid to take part in an interpersonal sensitivity study. The participants examined a total of 30 photographs of individuals displaying various facial expressions and body positions and then rated each. They also indicated whether they would be willing to seek help from an individual or not based on their facial expression or body language. DePaulo and Fisher found that the participants were more sensitive and receptive toward help-givers displaying overt nonverbal cues as opposed to help-givers displaying covert nonverbal cues. This finding may be correlated with the psychological cost of help-seeking that was highlighted in the previous study and offers the conclusion that covert facial cues and body gestures may indicate a psychological cost of rendering assistance by the help-giver.

Fisher, Nadler, and Whitcher-Alagna (1982) built upon DePaulo's research while conducting their own extensive review of the research related to how recipients react to receiving help. The

goal of their research was to conceptualize a systematic review of existing data that would allow them to suggest an organizing framework for past and future research on reactions to help. Fisher et al. (1982) informed that no attempt had been made to provide a broad, detailed review of past theory and research on recipient help. The authors proposed the construct of threat to self-esteem as a principal measure for reactions to help. Consequently, a reliable model for the construct was presented. Supportive and non-supportive research articles were reviewed in order to allow the authors to draw general conclusions and provide a summative appraisal. The discussion on recipient reactions to receiving help was centered on four conceptual orientations: equity, attribution, reactance and threat to self-esteem.

Equity relates to reciprocity and indebtedness formulations for receiving aid. Equity theory is a social exchange concept suggesting that people aspire to maintain equity in their interpersonal relations. Furthermore, inequitable relations produce discomfort, thus inspiring individuals to attempt to reduce discomfort by restoring equity. Equity formulations as predictors place the issue of receiving aid in the larger context of exchange relations which is one of its primary advantages. However, equity was deemed inadequate for making predictions in certain contexts. Reactance theory is an important variable in determining reactions to help. It dictates that individuals desire to maintain their freedom of choice, and that any perceived reduction in freedom results in a negative psychological state, which then motivates them to restore their freedom. Reactance theory predicts that freedom restriction inherent in aid would be a major response determinant.

Attribution theory views the recipient as an active agent who attempts to make sense of the helping interaction. In essence, the recipient wants to understand the donors' willingness to help and their own recipient behavior along with understanding the reasons behind the willingness to

help. Attribution theory predicts that there is support for the proposition that when aid is constrained by the setting, the recipient is less likely to attribute the aid to a personality disposition. Unlike equity, reactance, and attribution theories, threat to self-esteem explicitly states that self-related consequences of aid are critical in determining the recipient's reactions. With regard to threat to self-esteem, the recipient believes that aid contains a combination of self-threatening and supportive elements. Threat to self-esteem predicts that situational conditions and recipient characteristics determine whether help is primarily threatening or supportive in a given setting. There is also the prediction that when help is experienced and perceived as predominantly threatening, reactions are negative/defensive (low acceptance of aid, high self-help), and when help is primarily supportive, reactions are positive/non-defensive (high acceptance of aid, low self-help).

Fisher et al. claimed that help-based research studies have been conducted utilizing traditional laboratory methods, survey techniques, correlation methods, and field studies. The strengths and weaknesses of each method were taken into consideration and caution was exercised when necessary in interpreting results in addition to any conflicting findings. Fisher et al. argued that a formalized threat-to-self-esteem model yields breadth in predicting across help-based contexts. The model is supported by two patterns consisting of negative/defensive and positive/non-defensive recipient responses where help is either predominately threatening or primarily supportive. Collectively, the two patterns corroborated underlying concepts of the threat-to-self-esteem model. When referencing DePaulo and Fisher's (1981) study on non-verbal cues in help-seeking, Fisher et al. suggested that receivers of help question not only why they should or should not ask for help, but also why they have been offered or given help. Consequently, this study reaffirmed the help-seeker's state of constant conflict of whether or not

to seek help that DePaulo and Fisher (1980) surmised two years earlier. Fisher et al. argued for a more comprehensive help model based on the threat to self-esteem, ignoring the body language cues related to help-seeking discussed earlier by DePaulo and Fisher (1981). The authors ascertained that emotions centered on failure, dependency, and inferiority may manifest as a negative consequence based on donor perceptions of the help-seeker, threats to the self-esteem of the help-seeker, and reciprocity. The contribution of Fisher et al. was useful insight toward predicting reactions to receiving help in pro social behavior research. Pro social behavior is a social psychology area of study dealing with how people help or assist one another (Eisenburg, Mussen, & Mussen, 1989).

Academic Help-seeking Among the College Population

According to Schworm and Gruber (2012), "giving prompts is an instructional means to support students to adequately apply academic help-seeking" (p. 272). An experimental study was conducted that investigated the effect of giving prompts on the quantity and quality of academic help-seeking. A total of 39 students took part in a blind study while enrolled in an undergraduate course on qualitative research methods. Twenty-eight students were female and 11 were male with a mean age of 23.90 years. They were randomly assigned to either an experimental group or a control group. The experimental group consisted of four males and 16 females with a mean age of 22.85 years. During the controlled condition there were seven males and 12 females with a mean age of 25.00 years. The student participants had to complete three learning tasks during the course and prompts were given about the relevance of academic help-seeking. A 6-point Likert scale questionnaire assessed students' self-reported help-seeking behaviour and their self-reported learning activities. Findings from Schworm and Gruber (2012) revealed that the groups did not significantly differ in their prior knowledge about qualitative

research methods at the beginning of the course, but differed significantly in their knowledge about qualitative research methods by the end of the course.

The experimental group outperformed the control group in Schworm and Gruber. The prompts on help-seeking activities were not significantly related with differences in perceived help threat and instrumental help-seeking. Conclusions derived from the findings suggest that help-seeking is regarded to be an important strategy of self-regulated learning. Even though the prompts did not have the intended effect to reduce perceived help-seeking threat, they did enhance help-seeking activities and fostered learning outcomes.

Karabenick and Knapp (1991) conducted three correlational studies that examined academic help-seeking (AHS) among college students as it pertained to its traditional characterization as a dependent behavior compared with its alternate characterization as a proactive academic achievement learning strategy. The dependent behavior categorization indicates the likelihood of engaging in help-based activities based upon the prospect of poor performance. The academic achievement learning strategy is defined as the influence of cognitive, metacognitive, global self-esteem, and resource management helping and learning strategies. Karabenick and Knapp identified two types of help-seeking termed as executive and instrumental. Executive help-seeking seeks out the assistance of others in order to decrease the costs of receiving help. Instrumental help-seeking involves attaining only the least amount of help necessary for the recipient to function independently to accomplish a task or goal. Instrumental help-seeking hinges on the learning strategy or methodology involved in reaching the desired solution by the recipient.

Karabenick and Knapp (1991) sought to discover the relationship between help-seeking and other instrumental learning strategies in a college setting. Study one, consisting of 612

participants, investigated the relationship between help-seeking and other behavior prone to occur in an academic environment upon a student recognizing a need to seek academic help (AH). The investigators were particularly interested in the relationship between help-seeking and relatively stable individual differences in global self-esteem. There were three findings noted in study one. The first finding revealed that given the notion of poor academic performance, help-seeking tendencies were directly related to their rated likelihood of engaging in instrumental achievement activities. The second finding revealed that help-seeking tendencies were directly related to persistent global self-esteem while the third finding, resulting from a correlation, revealed that help-seeking was inversely related to students' perceptions that seeking help is threatening to their self-esteem.

Conclusions of the first study suggested that in an academic setting, vulnerability, rather than consistency, had a more significant effect on the relationship between help-seeking and persistent global self-esteem. Also, in an academic setting and within an achievement context, students considered AHS an alternative route toward attaining their academic goals. The investigators further concluded that students who exert greater task-oriented effort do not refrain from seeking needed help.

Karabenick and Knapp's second study, consisting of 541 participants, was designed to observe behavior that is more directly connected to the methods college students use to seek AH. The investigators expected that students who use more learning strategies would be more inclined to seek help when it was needed. The findings of the second study supported this belief, indicating that AHS was directly related to the use of cognitive, metacognitive, and resource management learning strategies. Conclusions revealed that students who reported greater strategy use were more likely to seek help when it was needed. Need was highly associated with

reported help-seeking. However, patterns of relationships between reported help-seeking and strategy use reinforce the problem of behavioral observations of help-seeking that do not take need into account.

The third study contained 386 participants and utilized a mediating variable of threat to self-esteem. Karabenick and Knapp examined the relationship that may exist if students who are less likely to use learning strategies end up more threatened to seek help, due to the fact that in such cases, threats may be connected to AHS and chosen learning strategies. The effect of threat to self-esteem was monitored during the study as it impacted learning strategy and AHS behavior among the college student participants. This third and final study replicated the results of the second study, leading to an additional finding that students' help-seeking and learning strategies were unchanged when the study controlled the variable of threat of self-esteem. The conclusions drawn from this finding revealed that the implementation of various strategies is directly related to the tendency to seek help when needed. Strategy use is also more related to instrumental rather than executive help-seeking. Finally, based on the finding of the third study, the construct of threat was determined to have a very minor influence on the relationship between strategy use and help-seeking.

During a longitudinal survey by Butler and Shibaz (2008), the goal was to predict the AHS behavior of students based on the motivation of their teachers and prescribed achievement goals. The participants were comprised of 1,287 middle and junior high school students, 52% female and 48% male, along with 42 female and 8 male school teachers. Findings from Butler and Shibaz resemble those of Cheong, Pajares, and Oberman (2004) who previously found that achievement goals influenced both instrumental and executive AHS.

Butler and Shibaz (2008) examined achievement goals for teaching as predictors of help-seeking. They identified teacher mastery goals that allow for the striving to learn and develop professional competence as an achievement goal for teaching. Additionally, mastery goals were also suggested as a means for students to define and evaluate competence relative to prior outcomes or task demands, to prefer challenging tasks, to attribute outcomes to effort, and to construe difficulty as diagnostic of the need for further learning. In examining the differences between teacher mastery goals and mastery goals, teacher mastery goals allow teachers to witness the degree to which cognitive stimulation and autonomy has been provided which plays a vital role in aiding students' comprehensive learning (Retelsdorf, Butler, Streblow, & Schiefele, 2010).

Retelsdorf et al. (2010) further affirmed that mastery goals, which are student-centric, permit students to be tasked with challenging and meaningful assignments that yield critical thinking and learning for understanding, the offering of unorthodox ideas, and allowing for learning from student errors. In contrast, Butler and Shibaz previously found that teacher-mastery goals were positively correlated with perceived teacher support for AHS by their students while mastery goals were also positively correlated with increased student AHS behaviors. Conclusions drawn revealed that students demonstrated an increased likelihood of seeking AH when they perceived that the teacher favored their AHS behavior. However, students did not desire to seek AH when they perceived the teacher to be inhibiting or indifferent to their help-seeking behavior. Butler and Shibaz noted that these two behaviors among the student participants were deemed as contradictory or opposing strategies relating to student AHS. Butler and Shibaz (2008) informed that the current body of literature on help-seeking has been criticized in its failure to explore other avenues that students may utilize to be successful.

Nistor, Schworm, and Werner (2012) stated that little research has been done regarding help-seeking activities in communities of practice (CoP) and within in the context of workplace learning. They examined online help-seeking in communities of practice. Online help-seeking, was categorized as a learning strategy requiring interaction with computer-based learning environments such as online help systems. A research model was proposed that explained the acceptance of conceptual artifacts that included users' expectations toward the artifact, perceived social influence and users' roles in the CoP as predictors of artifact use intention and actual usage. A correlation study was conducted by collecting one-shot transversal data from an IT users CoP facility in Munich Germany. The CoP consisted of 4500 students and 500 faculty members, predominantly female. A 5-point Likert scale questionnaire was administered that measured Unified Theory of Acceptance and Use of Technology (UTAUT). Nistor, Schworm, and Werner (2012) found that help desk members differed from other participants only in their perceptions of the split-source format. They also found that performance and effort expectancies were generally high, and perceived social influence was low. Nestor, Schworm, and Werner concluded that from an organizational point of view, local IT manager responsibility had a stronger impact on active use intention than help desk affiliation. Active use behavior was influenced by active use intention and IT manager retention. Knowledge sharing and help-seeking in online CoPs may be fostered by CoP members' use of technology-based conceptual artifacts.

Help-seeking in Various Contexts

The second of a two-part longitudinal study conducted by Gurtner, Gulfi, Genoud, Trindade, and Schumacher (2012) dealt with the readiness of apprentices' to seek help within dual tracks of companies and schools. For purposes of their study, the dual tracks were stated as

different contexts. Gurtner et al., (2012) examined cross-sectional data from 160 apprentices over a four-year period in both work and school contexts where they develop their life-long skills. A 7-point Likert scale questionnaire was administered to the participants that measured motivation during each context. The findings from Gurtner et al. showed significant differences in apprentices' motivation, beliefs, and their readiness to seek help in different contexts during their year-long training. Conclusions drawn from the findings suggested the importance of delimitations of contexts with regard to learners' motivation and behaviours and willingness to seek help. Furthermore, these combined skills, knowledge, and help-seeking attitudes developed during these contexts depended on the apprentice him or herself.

Impact of Technology on Help-seeking

The impact of technology on help-seeking can first be evidenced by Elliott, Carey, and Bolles (2008) who utilized a computerized help-based intervention strategy for excessive alcoholic beverage consumption. The researchers' qualitative literature review of the emerging field of e-interventions compared the effectiveness of a variety of purely electronic-based risk reduction protocols geared toward college binge drinking. E-Health Interventions, or simply E-Interventions, deal with help-seeking issues relating to health and mental health problems that are to be addressed through technology (Atkinson & Gold, 2002; Elliott, Carey, and Bolles, 2008). Elliott et al. (2008) examined the previous results of 17 randomly selected experimental trials with college student participants that were conducted under controlled settings dating back to August 2007.

The findings, derived from the experimental trials reviewed, were mixed regarding the efficacy of e-interventions in comparison with purely educational interventions. It was further discovered that upon comparison, computer and paper-based interventions of similar content

were approximately equivalent. Additionally, when two e-interventions of different durations were compared to each other it was found that duration did not predict outcome. Elliott, Carey, and Bolles further claimed that e-interventions typically fail to produce results that surpass alternate alcohol risk reduction interventions.

However, under assessment-only conditions, Elliott et al. offered the opinion that e-interventions were typically an effective form of help-based assistance, ultimately better than no assistance at all. This opinion is based on the fact that e-interventions were found to be highly accurate for assessing college student drinking behaviors. Elliott et al's. motivation for conducting their study was attributed to their opinion that the growing popularity of the practice and research into e-interventions dictated that the body of literature on the subject needed to be updated and thus, a more timely literature review on the subject needed to be published.

In a 2007 case study, Kitsantas and Chow explored the implementation of several educational technology methods that collegiate faculty members could utilize to encourage help-seeking activities from their students. The aim of this study was to correlate help-seekers and their preference for a technology-based solution to satisfy their help-based needs. Four hundred and seventy-four college students were sampled and enrolled in classes among four separate learning environments: traditional, distributed, synchronous and asynchronous (distance-based). Kitsantas and Chow (2007) formulated two hypotheses to be tested in order to reveal how perceived threat, preference, tendencies, and self-efficacy affected the help-seeking behavior of students across the different learning environments. Hypothesis one sought to discover whether students enrolled in courses with an online computer component would report higher instances of help-seeking behavior from instructors (formal help). Hypothesis two sought to discover whether the student

participants would feel less threatened to seek help than students in traditional learning environments.

In this particular study, email and Web-based message boards were the help-based platforms utilized in the classrooms. According to Kitsantas and Chow (2007) the classroom setting is significant because of the goal based ideology that proposes a classroom setting has an impact on student help-seeking behavior. They promoted that achievement-focused classes such as labs and other practical, hands-on type courses will tend to focus on individual ability. As such, when any given student struggles or fails to meet the goals of a course of this type, his or her failures are more prone to public exposure and scrutiny among classmates which may lead to embarrassment or a sense of failure. On the other hand, Kitsantas and Chow suggested that task-focused classes seek mastery and understanding of course content and thus tend to promote help-seeking behavior.

The findings revealed that students in achievement-focused courses were typically more reluctant to seek help. Academic self efficacy was also found to be contributing factor as students with low self-efficacy either resisted the need to seek help or lacked the cognitive tools to realize that they should ask for help. It was also found that students enrolled in task-focused classes who displayed high self efficacy were able to interpret their need for help more frequently. Hence, these students were not as reluctant to avoid seeking help that would contribute to their academic success. Another finding revealed that students enrolled in distance-based course environments were less threatened toward seeking help by utilizing information technology, compared with students enrolled in traditional classroom environments.

Based upon these findings, Kitsantas and Chow concluded that the college students who engaged in distance learning were less likely to be intimidated or embarrassed to seek AH with

the utilization of electronic tools, compared with students in the conventional classroom setting.

In essence, the student participants preferred electronic delivery help-seeking modes in lieu of

formal assistance from a live person. Not only did the participants in this study prefer formal

help-seeking via electronic delivery, but they also preferred to seek help among their peers

(informal help-seeking) via electronic modes as well. The findings and conclusions drawn also

permitted Kitsantas and Chow to establish empirical evidence in favor of both hypotheses. They

also suggested that experimental studies still need to be conducted to observe help-seeking

phenomena, particularly with regard to information-based systems. Furthermore, their study

supported arguments and findings by Markett et al. (2006), McKenna, Green, and Gleason

(2002), and Yablon (2008) that help-seeking via electronic methods can be more favorable for

some individuals, especially males, who are susceptible to embarrassment. Kitsantas and Chow

provided much of the support in favor of a text-based information system used in the context of

help-seeking.

Summary

Chapter two has discussed ICTs, such as text-messaging, and issues associated with their

diffusion, selection, adoption, intention to use, and the digital divide. Also discussed was an

extensive review of SMS text-messaging including its roots in the scholarly literature, the

research problems investigated, unanswered questions regarding SMS text-messaging as an ICT,

and finally, a detailed overview of academic help seeking concluding with its relationship to

information technology. In conclusion, this extensive review of literature suggests that

researchers are now beginning to explore the potential implementation of ICTs in both

organizational group settings and social settings among individuals in new and novel ways for completing interpersonal tasks such as AHS.

Contribution of this Study

The expected contribution that this study will make to the scholarly community is a more in-depth understanding of low social presence ICTs and their usefulness for completing interpersonal tasks in the absence of verbal cues typically present and desirable in human communication. Additionally, this proposed research seeks out to reveal which, if any, out of a selection of specific ICTs that college students would prefer to utilize to complete interpersonal tasks such as AHS. Unlike previous studies centering on media choice among ICTs, text-messaging will be introduced as a relatively unexplored communications tool in the scholarly literature.

Therefore, text-messaging, as a low social presence ICT, offers a new research component contributing to the scholarly BoK within the field of IS. Research involving text-messaging is still in its infancy (Soriano, Raikundalia, & Szajman, 2005) and Bryant, Sanders-Jackson and Smallwood (2006) agreed noting that while email and IM have been researched extensively by scholars, hardly any research exists on text-messaging. Summarily, Colbert (2005) revealed a need for future research to determine how ICTs such as text-messaging can be applied in new and novel ways.

Chapter 3

Research Methodology

Introduction

       This study employed a descriptive approach to assess behavioral intention to use low and high social presence information communication technologies (ICTs) for interpersonal task completion among college students. The interpersonal task that was assessed was administered in an informational help-seeking context with the aid of a variety of academic help-seeking (AHS) vignettes. This study was conceived based upon previous research reviewed in the scholarly information systems (IS) literature (Hoar and Flint, 2008, Kitsantas and Chow, 2007, Markett, Sánchez, Weber, & Tangney, 2006). Institutional Review Board (IRB) approval was needed and acquired from both the participating institution, Louisburg College, where the human subjects that were used in the study are enrolled and the degree granting institution, Nova Southeastern University (See Appendices A and B).

       The participants in this study were first given a written overview of the ICTs to be assessed that included face-to-face (FtF), email, instant messaging (IM), text-messaging, and telephone (See Appendix C). As part of the overview session the participants were subsequently asked to complete an open-ended questionnaire where they answered a series of questions pertaining to their individual opinions with regard to ICTs (See Appendix D). The open-ended questions were analyzed using the process of content analysis to seek any common themes that were tallied to reveal the respondents viewpoints and preferences with regard to each specific ICT.

The participants then viewed a series of vignettes depicting hypothetical scenarios that ultimately suggested the need for some type of AHS assistance (See Appendix E). Based on the information contained in the vignettes, the participants were then asked to answer two rank-order questions and to provide a brief rationale for their top and bottom selections on both questions. The ordinal questions allowed the respondents to reveal their intentions to use any of the five selected ICTs to complete the interpersonal task of AHS (See Appendix E). A 6-point Likert-scale instrument was also administered to measure computer user self-efficacy (CUSE) as it influences behavioral intention (BI) to use (See Appendix F). The 6-point Likert-scale instrument will be described in more detail in the forthcoming passages of this extended research methodology. A CUSE ordinal scale instrument was administered to capture the participant's experience using technology (EUT) (See Appendix G). The participants concluded by completing a survey instrument recording demographic data (See Appendix H).

Descriptive Approach

This study involved descriptive research. Utilizing the survey method, the participants were administered surveys, questionnaires, and open-ended questions in order for the principal researcher to answer the three research questions posed. The observations (data) that were collected were then described in both textual and graphical form. What this study did not attempt to do was draw relationship-based conclusions from the data that was received. Qualitative and quantitative research methods were employed to report the findings.

Qualitative research deals almost exclusively with meanings, expressed either verbally or in writing, while quantitative research deals specifically with numerical distributions and frequencies when collecting and analyzing the data (Spratt, Walker, & Robinson, 2004). The

quantitative aspect of this study consisted of a 6-point Likert-scale survey instrument that was utilized to collect data pertaining to the participants' stated comfort and skill levels for each of the ICTs (Appendix F). The 6-point Likert-scale consisted of a range from "Disagree" to "Agree". The qualitative aspect of this study consisted of an open-ended questionnaire where the participants stated, in their own words, their likes and dislikes and frequency of use with regard to each of the ICTs that were the focus of this study. Consequently, the written statements from the participants assisted in explaining several items of interest such as if they would in fact utilize ICTs for interpersonal task completion, why specific ICTs were found more effective for interpersonal task completion than others, and why specific ICTs were found least effective for interpersonal task completion than others.

To reiterate, the descriptive aspect of this study asserts that the results and findings from the data analysis were interpreted in descriptive fashion with written summaries in combination with tables providing graphical representations of the statistical data. Research questions stated in descriptive studies typically begin with the words "What is" or "What are" and generally lend themselves to quantitative research (Onwuegbuzie & Leech, 2006), whereas "research questions stated in qualitative studies are non-directional, evolving, and open-ended" (Creswell, 1998, p. 99). Therefore, questions posed in qualitative research generally explore, discover, or seek processes or experiences and ultimately attempt to describe rather than interpret the effect on variables (Onwuegbuzie & Leech, 2006). From a quantitative perspective, the findings were also reported with percentages, averages, central tendency, and numerical tallies displayed in frequency distribution tables making the data more manageable and less complicated to interpret.

Utilizing descriptive research methods, this study sought to meet the research goal to examine BI to use low and high social presence ICTs allowing college students to engage in a

specific interpersonal task. The following sections of this chapter will describe in detail how each of the research questions for the proposed study was answered.

Research Question One

RQ1 asks: How does the availability of ICTs in general, impact behavioral intention toward completing interpersonal tasks among college students?

The independent variables that were measured in this study were ICTs in the form of FtF, email, text-messaging, IM, and telephone. The dependent variable that was measured is college students' behavioral intention to use low social presence ICTs for interpersonal task completion. Low social presence and high social presence were both present as moderating variables for the types of ICTs used to complete the interpersonal task of AHS.

Instrument Selection

An open-ended questionnaire was administered as part of an overview session after the participants read descriptive passages regarding the features, capabilities, similarities, and differences of each ICT (Appendix D). Forman (2009) utilized an open-ended questionnaire to elicit additional responses from the participants with regard to the construct of perceived consequences. This study used a slightly modified version of Foreman's instrument to allow the participants to state their individual likes and dislikes with regard to each ICT. This data was analyzed and categorized for a detailed qualitative summary of the findings. The open-ended questionnaire also revealed how the participants may or may not elect to use specific ICTs for interpersonal task completion in the context of AHS.

Data Analysis and Statistical Measures

The participants stated one advantage or like and one disadvantage or dislike of each ICT. Utilizing descriptive statistics, the responses were tallied and averaged, expressed as total percentages. The responses from the open-ended questionnaire were also calculated as total percentages and displayed as frequency counts in a distribution table. Part one of a validated survey instrument from Cassidy and Eachus (2002) assisted in measuring CUSE toward text-messaging in comparison with other ICTs for completing the task of AHS (Appendix G). This instrument asked the respondents to indicate the strength of their agreement or disagreement with select statements using a numerical rating scale between 1 and 6 that most closely represented how much they agreed or disagreed with each statement. The lower their number, the more they disagreed with the statement. The higher their number, the more they agreed with the statement. Frequency distribution tables were created with data from the 6-point Likert-scale to reveal the distribution of the five ICTs and compare how they were viewed by the respondents as a means to complete the interpersonal task of AHS.

Research Question Two

RQ2 asks: Out of the available selection of ICTs, how was text-messaging viewed as a medium for interpersonal task completion, specifically with regard to AHS?

Instrument Selection

Vignettes were utilized to provide the contextual hypothetical scenarios that allowed the participants to state their BI to use low and high social presence ICTs (Appendix E). Vignettes are popular clinical assessment methods that have led to many important findings in help-seeking research (Spendelow & Jose, 2010). There are several forms or formats of vignettes that can be used in scientific research, and it is important to use the appropriate format of vignette for the

research to be conducted (Barter & Renold, 2002). One example of the types of vignettes that can be used is the content specific vignette where the setting is introduced, the participants are described, the problem is explained, and the verbal exchange between the participants is documented within a major event (Veal, 2002).

Another type of vignette is referred to as an anchoring vignette that contains a short description of a hypothetical situation measuring a single concept (King, 2004). According to Spendelow and Jose (2010), vignettes can be written in second person reflecting the self or third person looking at a situation through the experience of another. The anchoring vignette approach was adopted for this study to provide AHS scenarios that the study participants reflected upon in an AHS context. A series of open-ended follow-up questions were devised that aligned with each vignette, thus providing the participants with the opportunity to indicate their ICT preference in each AHS scenario (Appendix E). The open-ended questions were developed based upon the previous work of Foreman (2009) who used a similar instrument in her investigation of perceived consequences with digital piracy.

Validation of Vignettes and Questionnaire

Vignettes were adopted from Spendelow and Jose (2010), Altschuller and Benbunan-Fich (2009), Gattiker and Kelley (1999), and Hoar and Flint (2008) to aid in revealing the participants preferred ICT usage and sources for AH. The vignettes and questionnaire that were utilized were subjected to a validation process for this study. The nominal group technique (NGT) was implemented for this purpose. According to Abdullah and Islam (2011), the NGT is designed to generate a large number of ideas related to an issue resulting in brainstorming and the equal presentation of ideas from within a structured group, while also preventing one single person from dominating the discussion. Furthermore, the NGT is a useful tool in problem identification

and its small group approach promotes shared solutions and the ranking of ideas (van der Waal & Uys, 2009). The end-result from the NGT discussions consisted of prioritized recommendations and solutions for successfully validating the vignettes. Potential NGT panel members were identified and selected from within the target institution based primarily on their current working titles and job descriptions. The goal was to identify professionals who routinely offer guidance, direct tutoring, and instruction to students, summarily providing academic help on a daily basis. Five employees of the target institution comprised of instructors and learning specialists were solicited to serve on the NGT panel.

The target institution where the proposed study was held, Louisburg College, has three distinct areas designed to provide academic help for students. These areas are identified as their Learning Partners program, the writing center, and the math lab. The staff and instructors assigned to these areas hold the appropriate academic credentials to serve students in a help-seeking capacity. Likewise, these specialized instructors and staff members have spent a considerable number of years providing academic help to students. Since the instructors and staff members assigned to Learning Partners, the writing center, and the math lab deal with students seeking academic help on a daily basis, they were contacted by the principal investigator and asked to participate on the NGT panel.

To address formally convening the NGT panel, the specific professionals who were solicited to serve on the panel were contacted asynchronously at the beginning of the spring 2012 semester. This initial contact sought their participation and asked for the following information:

- The field or discipline they are credentialed in.
- A description of how they provide academic help to students as a core responsibility of their position with the college.

- The years of experience they have providing academic help to students.

Once approval was attained to officially conduct this study, a second email was sent to the selected NGT panel members formally initiating the NGT validation process. This message also informed them that their participation was strictly voluntary. It was also explained to the NGT panel members that they may withdraw from serving on the panel at any time. The panel members were informed about how the information derived from the NGT sessions will be used. The facilitator agreed to safeguard any information presented and discussed that their respective identities were deemed confidential. No panel members were identified by name in the written discussions of this research. An explanation was given on how the information will be safeguarded. The written feedback received by the principal investigator during the NGT validation process was printed off and placed in a personal secure file that only the investigator has access to.

Four previously developed vignettes were presented to the NGT panel. To avoid confusion, throughout this discussion the term "scenarios" will be frequently used to also be interpreted as vignettes. The panel was asked to reply with any comments, suggestions, or recommendations in order to reconstruct each vignette for this study, taking into consideration content, clarity, validity, and applicability issues. The NGT panel members were encouraged to contact the principal investigator with any questions or concerns if necessary for clarification. The NGT panel was supplied with the vignettes by email near the close of the 2012 academic year. The actual timing of beginning the validation process made an actual "face-to-face" meeting inconvenient for the panel members due to teaching, tutoring, final exams, committee meetings and other job-related responsibilities.

As the selected NGT panel members are categorized as "nine-month" employees, they did not remain on campus at the conclusion of the academic year, in essence, the entire summer semester. Due to the summer hiatus, no feedback on the vignettes was actually received from the panel members until the early fall 2012 semester upon the beginning of a new academic year. The panel reconvened in September of 2012. For convenience of the panel members, email was utilized as the primary means of communication between the investigator and the NGT panel. Email was chosen because it allowed the investigator to collect feedback and critique from the panel members anonymously and it meshed better with their busy schedules as they began the new academic year.

It was the consenting opinion of all panel members that out of the four scenarios, the first of the four was mostly fine as written as it adequately portrayed a valid AHS situation that a college student typically encounters. However, one panel member did offer the following minor comment for scenario one: "Suggest moving the sentence "You are struggling…pass this upcoming exam" to be the second sentence of the paragraph right after "…at your next class meeting." This panel member added that "Knowing that I am (hypothetically) struggling will change the way I read and evaluate the rest of the paragraph". This suggested revision was made by the principal investigator.

One panel member indicated "Your scenarios reflect a deep understand on your part and a great deal of self-awareness on the part of your hypothetical student…It is extremely unlikely that a student in either of these situations would have that level of self-awareness and insight." This panel member completely revised scenarios two and three in order to be more open-ended so that a student might be able to insert themselves into the situations hypothetically based on

their own experiences. The revised scenarios two and three were presented to the NGT panel for their comments and further suggestions.

Other general comments included a suggestion of giving the reader an explanation of an ICT. This comment was ignored as ICTs was explained in a document that precedes the vignettes that the panel members did not know existed. The panel was also asked to critique and offer feedback regarding the follow-up rank order questions that aligned with each vignette. The following comments were offered:

For questions one and two aligning with scenario two, one panel member suggested substituting academic "assistance" for academic "advice" or "counseling". For scenario three, an inquiry was made as to whether that particular vignette pertained exclusively to athletes. This inquiry stemmed from the fact that this particular help-seeking scenario was originally geared toward a student athlete which was attributed to the fact that a majority of the target institution's student body is comprised of collegiate athletes. A rewording was implemented to substitute "teammate" with "roommate" to make the scenario more generalizable. A concern was raised that the respondents may circle more than one response on the follow-up questions due to potentially confusing instructions. This same panel member also raised concerns about the rank-order questions adding that a rewording for clarity may be necessary. It was suggested by another panel member to reverse the order of the two follow-up questions as the sequencing seemed illogical as presented. The two follow-up questions were reworded and transposed by the principal investigator prior to presenting them to the NGT panel for additional feedback.

A total of four scenarios were originally presented to the NGT panel. It was suggested that it be shortened to two or three scenarios to ease the burden of time consuming responses on part of the respondents, as well as the principal investigator for data analysis purposes. The final

product resulted in three scenarios with the omission of scenario number four. An inquiry was also made to the NGT panel as to whether a fifth ICT (Telephone) should be added. It was overwhelmingly agreed that the telephone should be added as an ICT for this study. It was finally suggested to shorten the lengthy vignettes which were subsequently condensed for brevity and conciseness by the principal investigator.

After collecting the written feedback from the NGT panel over the course of six to eight weeks, the revisions generated from the feedback were completed. The overall NGT validation process was not set to conclude until consensus was reached by the panel members on the construction of each vignette. Consensus is the end-result of agreement, or similar thinking, based on a group commitment to work (Singularity Group, 2002). Consensus arises after substantial questions are asked, answered, and then revisited for further discussion at a higher-level (Shwed & Bearman, 2010). Yang, Zong, and Zhang (2010) offered that consensus is reached when a team of agents reach an agreement on a common issue through negotiation with their neighbors. Upon reviewing the feedback of each NGT panel, each member's point of view regarding the vignettes was considered, compared, and revised accordingly. The revised scenarios were then emailed back to the panel members for further discussion, feedback, and suggestions. The vignettes were reconstructed as many times as necessary based upon the panel's recurring feedback. This process repeated approximately three times until a point was finally reached when all panel members were in agreement with the content, clarity, formatting, and validity of all three vignettes indicating consensus. This same validation process was repeated for the questionnaire portion of the vignettes instrument. The recommendations and findings of the NGT panel were compiled and documented to support the validation process for the developed instruments.

All panel members possess advanced degrees, typically master's degrees or doctorates in their respective fields as illustrated in Table 1. Louisburg College is a junior college with a majority of the faculty and staff possessing only master's degrees and only two of the potential NGT members possessing a PhD. Therefore, panel members were sought who possessed at minimum a master's degree and preferably a minimum ten years of experience working with college students in the roles of teaching, tutoring, and counseling. Additionally, the panel members possess degrees and hold job titles that require them to have direct interaction with college students on a frequent basis.

Table 1

NGT Panel Qualifications

ID	Title	Academic Degree	Years Providing Academic Help
Panel Member 1	Learning Specialist	Master of Arts in English	23 years
Panel Member 2	Director of Learning Partners	Masters in Clinical Psychology	10 years
Panel Member 3	Director of Math Lab	Master of Science in Mathematics	11 years
Panel Member 4	Learning Specialist	PhD in Reading Literacy	40 years
Panel Member 5	Writing Specialist	Master of Arts in English	10 years

With their combination of education and experience in providing academic help to college students, the panel members were deemed as experts. There was not one specific academic discipline that was required to classify a panel member as an expert. The NGT panel members used in this study have advanced degree in disciplines such as higher education,

English, writing, math, computing technology, and counseling as these academic disciplines typically provide demands for academic help among college students**.**

To further elaborate on the requirements of an expert, one of the panel members has a master's degree in mathematics and 11 years of teaching experience. He runs the math lab tutoring students with individualized math instruction by demonstrating concepts and giving as many examples as possible to aid in math comprehension. Another panel member has a master's degree in clinical psychology and ten years of higher education experience. She is the director of the Louisburg College Learning Partners program where she also reviews psychological and medical reports and determines eligibility for accommodations for any student with a diagnosed learning disability who seeks specialized learning assistance. Another panel member has a master's degree in English and 23 years of teaching experience. She is a learning specialist and an academic coach who also engages in program planning in the Learning Partners program. Another panel member has a PhD in Language and Literature with 40 years of experience in a variety of higher education roles. She is also a certified specialist in Reading Education. Her current assignment in Louisburg College's Learning Partners program requires her to provide counseling, guidance and direct tutoring to Louisburg College students with special needs. It is argued that based on the academic accomplishments and work experiences of the NGT panel members, they would meet the definition of an expert within the context of this study.

According to Bonnardel and Marmèche (2004), experts possess case-based reasoning at a high cognitive level. This would include important knowledge about specific needs, perspectives, or experiences directly related to their field of employment. Bonnardel and Marmèche (2004) further stipulated that experts can refer to those needs, perspectives, or experiences in order to engage in problem solving processes. It was anticipated that during the NGT brainstorming

sessions, the panel members would pull from their educational backgrounds and years of work experience in providing academic help to students. Therefore, the information that the panel members provided to the facilitator of the NGT panel was extremely valuable in the validation of the AHS vignettes for this study.

Data Analysis and Statistical Measures

The data analyzed and measured to answer RQ2 was collected with two data collection instruments. The first was an instrument containing a series of AHS vignettes (Appendix E). The vignettes were developed depicting subjects in a situation that would prompt the need for academic help. Written in second person narrative, the reader placed him or herself into the AHS scenario and then selected an ICT that they would use to seek academic help. Accompanying the vignettes was a series of corresponding questions that dictated brief written responses from the participants allowing them to first state the actual ICT they would utilize to seek academic help, and also allow for the rank ordering of the ICTs (Appendix E).

The second response allowed the participants to identify the specific help-giving source from whom they would choose to seek academic help in the scenario. If the participants chose a close friend, family member, or peer when indicating their help-giving source, their response was categorized as informal help. If the participants chose college administrator, professor, instructor, counselor, medical staff, coach or trainer when indicating their help-giving source, their response was categorized as formal help. The second data collection instrument utilized was an online 6-point Likert-scale survey instrument. This instrument was uploaded to the online survey site Survey Monkey.

The direct Web link to the survey instrument was emailed to the entire student body at the target institution. The online survey instrument was designed to allow all participants to

remain anonymous. No descriptive data other than race and gender were solicited from the participants. The Survey Monkey Website promotes a safe and secure site for protecting data. The site promotes its partnerships with several of the top online trust seals with regard to information privacy such as TRUSTe, McAfee, and Norton, formerly known as VeriSign. The principal investigator for this study is currently employed in an administrative capacity with the target institution. The target institution's corporate Survey Monkey account was accessed to develop, upload, and administer the online survey instrument due to the fact that this upgraded account offered additional statistical features for the data analysis. Only a handful of senior college officials have direct access to the online surveys underneath the target institution's corporate account, but again, the responses with regard to the aforementioned survey are anonymous to everyone concerned. The survey is currently locked meaning that the data cannot be accessed by anyone who does not possess the corporate login information.

Utilizing descriptive statistics, the responses were tallied and displayed as total percentages of those who chose informal help in each AHS scenario versus those who chose formal help. The statistical average or central tendency was computed by calculating the sum of all Likert scores for each question and variable divided by the number of total responses. The data that was collected relating to the participants' selection among each of the five ICTs was tallied and displayed in a frequency distribution table with the frequencies being converted into percentages.

Research Question Three

RQ3 asks: What are the characteristics of college students who prefer ICTs to complete interpersonal tasks?

Instrument Selection

This study captured and measured characteristics of the participants to include experience using technology (EUT), computer user self-efficacy (CUSE) and demographic data. CUSE was measured with a validated forced-choice instrument by Cassidy and Eachus (2002) measuring CUSE and EUT (See Appendices F and G). Demographic data of gender, race, and class rank was collected using a slightly modified version of an instrument validated and utilized by Wynn (2009) (Appendix H).

Wynn (2009) examined BI relating to the online shopping experience; however, categories from that instrument pertaining to age, salary range, employment status, marital status, and level of education were omitted in the modified instrument to be used in this study. Although important factors in Wynn's study, the omitted categories were not deemed applicable to a population of junior college students who comprised the target population for this study. Therefore, due to their inapplicability, the aforementioned categories were not included in the modified instrument for this study.

Data Analysis and Statistical Measures

A demographics survey instrument required the study participants to submit information using forced choice responses (Appendix H). For example, Gender (1 = male, 2 = female), Race (1 = White, 2 = African American, 3 = Hispanic/Latino, 4 = Asian, 5 = Native American, 6 = Other/Mixed Race), and Class (1 = Freshman, 2 = Sophomore). Categories pertaining to class and membership in special student populations were substituted for omitted categories deemed inapplicable to the proposed study. The demographic data was used to categorize college students who may consider ICTs to be useful aids for completing interpersonal tasks such as AHS. A content analysis was conducted where the data was cross-tabulated by gender, class

rank, special population, race and ethnicity compared with CUSE and EUT for each of the ICTs. The responses from the demographics instrument were displayed as frequency counts and percentages displayed in distribution tables. The data collected from the instrument by Cassidy and Eachus (2002) to measure EUT and CUSE was analyzed to reveal the following information:

- A description of the participants' actual hands-on experiences with ICTs.

- A description of the participants' perceived skill and comfort in the use of ICTs.

- A cross-sectional view of the participants' actual hands-on experiences and perceived skill and comfort in the use of ICTs.

Males were compared with females to measure the AHS equivalencies between both genders and the results were displayed graphically in a series of frequency tables. The same comparisons were made between freshmen and sophomores, as well as students in special populations. The ordinal data from the Cassidy and Eachus instrument measuring EUT and CUSE along with the data collected from the forced-choice demographics instrument collectively represent the user characteristics of college students to assist in answering RQ3.

Population and Sample

The sample was derived from the college student population at a small residential junior college in Northeastern North Carolina with a total enrollment of approximately 600 students. Approximately 43% of the study population is comprised of athletes (C.B. Sloan, personal communication, January 03, 2012). The entire population was sampled in an attempt to reach the highest validity possible. However, the minimum sample size required from a population of 600 is 248 participants based on a 95% confidence level with a margin of error of 5%.

There are benefits of studying college students, particularly with regard to BI to use technology (Alshare, Freeze, & Kwun, 2009) and this point has been substantiated in the scholarly literature (Srite, Thatcher, & Galy, 2008). Srite et al. (2008) maintained that college students have the relevant experiences and beliefs regarding IS that are desirable to facilitate such studies. Srite et al. also provided that college students identify well with the values and beliefs of individuals in different occupations.

The data collection instruments were uploaded to the Website Zoomerang©. All students who currently attend Louisburg College were sent a series of emails encouraging their voluntary participation in this survey. A direct link to the survey on Zoomerang.com was included in the emails that were sent. The teaching faculty were also contacted and asked to promote the survey in their classes. Support from a handful of instructors was excellent. Despite the recurring emails and faculty support, the data collection process was very slow as driving student traffic to the Website without an attractive incentive proved to be very time consuming. At the conclusion of the data collection period over the course of approximately six months, a total of 313 students had completed the survey with 259 completing the survey in its entirety without skipping any questions. A total of 54 incomplete surveys were omitted from the study altogether.

Validity and Reliability

The previously validated survey instruments from Wynn (2009) and Foreman (2009) served to aid this study in examining the characteristics of individuals who may utilize technology and BI to use technology in order to complete interpersonal tasks. Vignettes were developed in this study to answer RQ2 that was subjected to an expert NGT panel to undergo the process of establishing validity and reliability. According to Straub (1989), reliability evaluates a

measure for its accuracy. Validity ensures that the process, technique or instrument that aided in measuring an intended concept does in fact measure that intended concept (Sekaran, 2003). Additionally, Sekaran offered that external validity indicates the generalizability of the results of a study to other people, settings, or events. This generalizability within a study increases upon using relevant variables examined in previous research and then upon excluding any non-relevant variables (Hair, Anderson, Tatham, & Black, 1998).

Two methods of generalization can be utilized in scientific research with the first being generalization to a target population in order to ascertain if the research goals specifying the population have been met, and the second being generalization across populations to reveal how outwardly extending the results may be (Cook & Campbell, 1979). This study utilized college students and the literature suggests that the results of studies utilizing college students are typically found to be highly generalizable (Hinduja, 2003). Sekaran (2003) added that validity and generalizability both correlate with each other.

Cassidy and Eachus (2002) developed and validated a CUSE scale for measuring EUT. Cassidy and Eachus determined that their scale displayed high levels of internal and external reliability and construct validity. The CUSE scale indicated positive correlations between familiarity with computer software, computer experience, and CSE. The CUSE scale also identified students who struggled within learning environments that relied primarily on computing technology. This instrument was used in the current study to measure EUT among the participants.

Pre-Analysis Data Cleaning

Pre-analysis data cleaning involves detecting any irregularities in order to preserve accuracy during the data analysis phase. Data needs to be cleaned prior to analysis to detect and cope with response-set, missing data, outliers or extreme cases, and preserving the accuracy of the data (Levy, 2006). According to Hair et al. (2006), response-set occurs when there is a "series of systematic responses by a participant that reflects a bias or consistent pattern" (p. 558).

An incomplete survey that has been returned with missing data is common when a participant does not complete a survey once attempting it. Levy (2006) also asserted that the accuracy of the data is highly important with regard to the results, missing or incomplete data, and response-set revealing a tendency to impose a noticeable pattern when answering survey questions, regardless of the questions being asked. Levy further stipulated that these issues are important reasons to justify pre-analysis data cleaning.

There was a series of steps that was taken to complete the pre-analysis data cleaning stage of this study. Beginning with the accuracy of the data, the fact that the participants in the current study had limited responses to choose from upon answering the survey questions should have resulted in either eliminating or reducing the possibility of invalid responses impacting accuracy of the data. However, there were some responses found to be inapplicable and unusable from the respondents when answering some of the questions within the survey instruments. For example, the abbreviation "idk" (I don't know) appeared numerous times by some of the respondents. "No" or "none" appeared at inappropriate times in the responses for some of the questions, as well as what appeared to be other unrecognizable abbreviations instead of an appropriate response. These unusable responses were separately tallied and reported as uncategorized responses. Response-sets occur when the participants' responses may not reflect

their true intentions, beliefs, opinions, or when the participants only use a portion of the rating scale. Kerlinger and Lee (2000) suggested analyzing the data for possible response-sets and to consider eliminating them from the study. As suggested by Kerlinger and Lee (2000), care was taken to detect instances of response-set when the respondents choose the same answer for every question, indicating a lack of care or opinion, on the respondents' part with regard to answering the survey questions. Upon instances of what was deemed to be valid issues of response-set, the suspect questions were invalidated and disqualified in the data analysis phase. Mertler and Vannatta (2005) also suggested that missing data, or incomplete surveys, should be addressed in similar fashion. The Website Zoomerang indicated the number of respondents that skipped a question. These skipped responses were noted in the findings within the distribution tables.

Resources

Permission was granted from the Vice President of Academic Life at Louisburg College to survey the resident student population. This study also required survey instruments that were used with the permission of the copyright holders. A minimum of 248 student participants was required to represent an adequate sample. A personal computer was needed to develop and digitize the survey instruments and assist in analyzing the data.

Zoomerang allows for the creation and exportation of charts that the Website generates from the survey data. These charts were exported into this dissertation document. Microsoft© Excel was also utilized to aid in the statistical computations during the data analysis phase for final interpretation of the results. Cooperation from faculty members at Louisburg College and IRB approval from Nova Southeastern University and Louisburg College was required and attained.

Summary

Chapter Three gave a detailed explanation of the research methodology for the current study. This chapter informed that the current study incorporated a descriptive approach in order to answer the research questions to achieve the primary research goal. This approach offers methodological flexibility while promoting grounded results. When quantitative and qualitative approaches are combined it provides a better understanding of research problems than when either approach is implemented alone, as was attempted with this study. In the following sections the process for answering each research question was discussed to include instrument selection, validity and reliability, and concluding with data analysis and statistical measures.

Vignettes adopted from Spendelow and Jose (2010), Altschuller and Benbunan-Fich (2009), Gattiker and Kelley (1999), and Hoar and Flint (2008) were developed to measure the participants' BI to use various ICTs that were utilized in this study. The vignettes and a corresponding questionnaire were used for contextual purposes with regard to examining AHS behavior. An expert panel was solicited and convened to examine and provide feedback with regard to developing the vignettes and questionnaire for validity and reliability. Other pre-existing validated instruments from the scholarly literature were utilized to measure EUT, CUSE and demographic data.

Population and sample were also discussed with an explanation of the process that was utilized to justify the sample size based upon the scholarly literature. This section also validated the benefits of utilizing college students as study participants with regard to generalizability. The sample was obtained from the student population of Louisburg College, a small, private, residential junior college in the Piedmont area of North Carolina. To increase reliability and

validity, this study sampled the entire population of approximately 600 students as study participants.

The concluding sections of chapter three dealt with pre-analysis data cleaning and resources used to conduct this study. Pre-analysis data cleaning stipulates that data needs to be cleaned prior to analysis to guard against response-sets, missing data, outliers, and the preservation of data. The steps that were taken to reduce or circumvent issues surrounding pre-analysis data cleaning were discussed.

Resources needed that were participant access to personal computers and the World Wide Web, approval and voluntary participation of the NGT panel members, as well as the Louisburg College teaching faculty in assisting with student encouragement and direction toward the Web hosting site Zoomerang that contained the data collection instruments. Institutional review board approval from both institutions was also required. Chapter four will reveal the results of the data analysis derived from the instruments or measures that will be administered to the participants in the proposed study.

Chapter 4

Results

This chapter reports the results for the current study. The first section reports results related to Research Question One using content analysis, frequency counts, and mean scores. The data for Research Question One were obtained from an open-ended survey instrument and a 6-point Likert-scale instrument consisting of a range from "Disagree" to "Agree". The results for Research Question Two were reported using frequency counts and percentages that were obtained from academic help-seeking (AHS) scenarios and a 6-point Likert scale instrument consisting of a range from "Disagree" to "Agree". The respondents used the scenarios as a guide to responding to each item in the respective section. An accompanying ordinal-scale questionnaire allowed the respondents to make selections that were based on individuals and technologies they would seek in order to obtain AHS assistance. Finally, the results obtained from Research Question Three were reported using frequency counts and percentages from a forced choice instrument in an effort to understand the demographics of the students using ICTs, how often ICTs are used, and the preferred type of ICT usage in order to seek academic help (AH). Cross-Tabulations were used to disaggregate the data for this question.

Results for Research Question 1: How does the availability of ICTs in general, impact behavioral intention toward completing interpersonal tasks among college students?

With regard to Research Question One, the respondents completed an open-ended survey where they were asked to "list one advantage or thing that they like about each communication method" (Email, Instant Messaging (IM), Text Messaging, Face-to-Face (FtF), or Telephone).

A variety of themes became evident from the content analysis, as can be noted in Table 2. When responding to the communication method "Email", more respondents considered this form to be "easy (n = 73) and "fast" (n = 61), or 51%. More themes resonated from the "email" selection than any of the other ICTs respondents considered implying that this is a behavioral intention many students may use to complete interpersonal tasks.

Resonating IM themes ranged from "fast" and "easy" to "do not use". Though seeking advantages to the aforementioned communication methods, approximately 30% (n = 73) of the respondents noted that they did not use IM. Approximately 35% of the respondents (n = 89) noted that IM was "fast". It was tied with FtF for the least amount of themes which resonated from an ICT.

Of the communication methods that received the most "advantages", 45% (n = 117) considered text-messaging to be "fast" and another 16% (n = 43) considered it to be "easy". None of the other ICTs received as many "fast" responses as did text-messaging, implying that this ICT may be the behavioral intention most likely to be used to complete interpersonal tasks.

The advantages of "FtF" as an ICT ranged from "clarity" (28%) to "allows for non-verbal communication" (31%). Also, more respondents (26%) considered this category to be more personal than any of the other ICTs.

In reference to the "Telephone" ICT, the themes were more evenly distributed and coincidentally, more respondents (14%) noted that they "do not like" the telephone as an option to communicate. Many of the uncategorized responses noted about the telephone were that "it is out of date" or "most people of our generation do not use the telephone", or that "there are few advantages to using a telephone for students".

Table 2

Advantages of Select Communication Methods

Email Themes	Instant Message Themes	Text Message Themes	FtF Themes	Telephone Themes
Easy (73)	Fast (89)	Fast (117)	Clarity (73)	Hear Clarity (19)
Receive a lot of Information (23)	Easy (58)	Not Formal (22)	Allows for Non-Verbal Communication (81)	Fast (35)
Network w/Teachers/Friends (31)	Do Not Use (73)	Easy (43)	More Personal (68)	Do Not Like (42)
Security (10)	Uncategorized (39)	Private (37)	Uncategorized (38)	Professional (18)
Email Themes	Instant Message Themes	Text Message Themes	FtF Themes	Telephone Themes
A Record (42)		Alternate to Talking on Phone (10)		Personal (24)
Fast (61)		Personal (19)		Allows for real-time conversation (39)
Professional (10)		Uncategorized (11)		Uncategorized (33)
Uncategorized (9)				

When the respondents were asked to select the "disadvantages" of the aforementioned ICTs, the themes varied, and sometimes, conflicted, with the advantages noted in the previous section. With "email" themes, as noted in Table 3, the largest disadvantage noted by respondents was that "it took too much time between responses" 35% (n = 91). The respondents also noted that emails are often "sent to the wrong location" (n = 27) or 10%, it allows for "SPAM" (n = 36)

or 14%, and it provides for "misrepresentation of the message sent (n = 18) or 7%.

Uncategorized responses numbered (n = 35) or 13% and the respondents noted disadvantages

such as, "I just do not like it", "it changes too much", and "the system is outdated for the kind of

communication I like to do".

More themes (7) considered as "Disadvantages" resonated with the IM ICT. The themes

ranged from "too much time between responses" (n = 61) to "do not use" (n = 71). It should also

be noted that when seeking "advantages", n = 73 respondents still noted that they "do not use"

this form of ICT as a communication method.

In reference to text messaging, the largest disadvantage listed was "no service/signal" (n

= 91) or 35%. Also illustrated in Table 3 for disadvantages to text message themes are "wait

time" (n = 62) or 24%, "misinterpretations" (n = 56) or 21%, and "impersonal" (n = 27) or 10%.

Uncategorized responses totaled n = 23 or 8% of the disadvantages of using text messaging as a

behavioral intention toward completing interpersonal tasks.

Disadvantages of the FtF selection as an ICT ranged from "potential for conflict and

arguments" (n = 81) or 31% to "misinterpretation of body language" (n = 68) or 26%. Another

disadvantage listed as a major reference included "time management" with n = 73 or 28% of the

respondents.

Finally, when asked about the disadvantages of using a telephone as an ICT, the

respondents noted that "dropped calls and a "poor connection" were the major problems

(combined 50% of responses fell into these two categories). There were a variety of

uncategorized responses (n = 44) or 17%.

Table 3

Disadvantages of Select Communication Methods

Email Themes	Instant Message Themes	Text Message Themes	FtF Themes	Telephone Themes
Can be Hacked (32)	Intrusions (21)	No Service/No Signal (91)	Potential for Conflicts/Frustrations/Argument (81)	Dropped Calls (69)
Send to Wrong Location (27)	Person Can Ignore You (42)	Misinterpretations (56)	Time Management (73)	Cost/Purchase Minutes (36)
Email Themes	**Instant Message Themes**	**Text Message Themes**	**FtF Themes**	**Telephone Themes**
Too Much Time Between Responses91)	Take too Much Time between Responses (61)	Wait Time (62)	Misinterpret Body Language (68)	Can't See Person or Facial Expressions (49)
Advertisements/ SPAM (36)	Distracting (36)	Impersonal (27)	Scheduling (19)	Poor Connection (61)
Misrepresentation of Message (18)	Do Not Use (71)	Uncategorized (23)	Uncategorized (18)	Uncategorized (44)
Uncategorized (35)	Might Not Be On-line (17)			
	Uncategorized (11)			

       To better assess ICT usage and to what extent college students use them to complete interpersonal tasks, the survey asked respondents to indicate the strength of their agreement or disagreement with select statements using a rating scale with numbers between 1 and 6 that most closely represented how much they agree or disagree with a statement. The lower their number, the more they disagreed with the statement. The higher their number, the more they agreed with the statement. All responses are reported in Table 4.

Table 4

Computer User Self-Efficiency Responses

Question	Disagree (1)	(2)	(3)	(4)	(5)	Agree (6)	Rating Average	Response Count
1. I find working with email very easy (Q1)	4	7	21	26	34	169	5.25	261
2. I am very unsure of my abilities to use instant messaging (Q2)	123	38	29	32	14	25	2.43	261
3. Instant Messaging frightens me (Q3)	181	34	25	8	6	7	1.64	261
4. I enjoy FtF communication when completing tasks (Q4)	2	6	15	42	50	146	5.18	261
5. FtF communication makes me much more productive (Q5)	2	7	21	39	52	140	5.11	261
6. I often have difficulties when trying to learn how to use a new e-mail platform (Q6)	122	54	32	25	20	8	2.20	261
7. Most of the e-mail platforms I have had experience with have been easy to use (Q7)	4	10	29	26	53	139	5.03	261

Table 4 (continued)

Computer User Self-Efficiency Responses

Question	Disagree (1)	(2)	(3)	(4)	(5)	Agree (6)	Rating Average	Response Count
8. I am very confident in my abilities to make use of FtF communication (Q8)	2	7	19	35	54	144	5.16	261
9. I find it difficult to get computers to do what I want them to (Q9)	124	58	24	31	15	9	2.16	261
10. At times I find working with text-messaging very confusing (Q10)	189	27	14	17	9	5	1.64	261
11. I seem to waste a lot of time struggling with IM (Q11)	173	37	23	11	9	8	1.74	261
12. FtF communication makes learning more interesting (Q 12)	0	7	9	35	50	150	5.21	261
13. I always seem to have problems trying to communicate FtF (Q13)	143	45	20	33	11	9	2.05	261
14. IM is too complicated for me (Q14)	174	34	27	12	5	9	1.72	261

(continued)

Table 4 (continued)

Computer User Self-Efficiency Responses

Question	Disagree (1)	(2)	(3)	(4)	(5)	Agree (6)	Rating Average	Response Count
15. Using e-mail is something I rarely enjoy (Q15)	61	49	53	47	31	20	2.99	261
16. Text-messages are good learning aids (Q16)	29	46	44	54	33	55	3.69	261
17. Sometimes, when using text-messaging, things seem to happen and I don't know why (Q17)	99	45	31	42	18	26	2.67	261
18. As far as IM, I don't consider myself to be very competent (Q18)	100	48	52	27	13	21	2.49	261
19. Text-messaging helps me to save a lot of time (Q19)	8	10	22	36	36	149	5.03	261
20. I find working with text-messaging very frustrating (Q20)	170	32	19	21	7	12	1.85	261
21. I consider myself to be a skilled e-mail user (Q21)	10	9	25	51	61	105	4.76	261

Table 4 (continued)

Computer User Self-Efficiency Responses

22. When using a computer I worry that I might press the wrong button and damage it (Q22)	163	32	16	29	10	11	1.94	261

In Table 4, a rating average of 5.25 illustrates that the majority of respondents indicated working with email to be very easy (Q1). Less than 35 respondents selected 3 or less as an option for the question. At least 52 respondents skipped this question. In reviewing Questions 6 and 7, most respondents noted that they have little difficulty when learning how to use a new email platform. The respondents also affirmed an ease of use with most email platforms they have utilized in the past. Questions 15 and 21 addressed statements related to email enjoyment and proficiency as an ICT. Based on a rating average of 2.99 (Q15), this is an indication that approximately half of the respondents enjoy using email and that half would disagree with the statement. As observed in Question 21, the respondents also noted that they while they consider themselves skilled in the area of using email as an ICT (4.76 rating average), this does not correlate with the number who enjoy the communication method.

When asked about their abilities to use IM (Q2), a majority of the respondents disagreed that they were unsure about how to use IM. A rating average of 2.43 indicates that a majority of the respondents are familiar and comfortable with the use of IM. Respondents also do not seem to be afraid of IM as an ICT option as the majority of them disagreed that the technology frightens them (Q3). A rating average of 1.64 is an indication of major disagreement with the statement in Question 10. When reviewing Question 11 and comparing and contrasting it with

Question 3, the respondents are clear that they do not spend time struggling with IM and it does not seem to "frighten" them. A rating average of 1.74 is an indication of the large number of respondents who disagree with the statement in Question 11. In a review of Question 14 and Question 17, the respondents noted that they disagree with the idea that IM is too complicated for them, as noted by a rating average of 1.72. In general, the respondents also considered themselves to be very competent with IM. A rating average of 2.49 verifies this point (Q18).

Responses to Question 4 illustrate a rating average of 5.18 was an indication that the majority of respondents do enjoy the idea of FtF communication when completing tasks. Of those who responded, only 23 indicated that FtF communication was not a favorable ICT for them. This information is further validated in responses to Question 5 as a majority of respondents also indicated that FtF communication makes them much more productive. Responses to Question 8 are congruent with the responses in Question 12 as related to FtF communication. A rating average of 5.16 is an indication that the respondents were very confident in their abilities to make use of FtF communication and by default and would be likely to use this method as an ICT to complete interpersonal tasks (Q8). Additionally, as observed in Question 12, the respondents also support the idea that FtF communication makes learning more interesting, as noted by a rating average of 5.21. Further confirmed in Table 4 by the respondents is that less than 20% of them have any problems with the FtF communication (Q13).

A further examination of ICTs related to computer usage and text-messaging (Q9 & Q10) find that the respondents do not find it difficult to get computers to do what they want them to do. Stronger support for clarity of using text-messaging was illustrated with a rating average of 1.64, which meant that the respondents disagreed with the idea that text-messaging, was confusing (Q10). The respondents were split on the idea of using text-messaging as an aid to

learning, as noted by the rating average of 3.69 of Question 16. Also, as observed in Question 17 (rating average of 2.67), approximately half of the respondents believe that technological things happen when using text-messaging (and they do not know why). Overall, as referenced in Question 20, with a rating average of 1.85, the respondents do not find issues related to text-messaging to be frustrating to them.

Results for Research Question 2: Out of the available selections of ICTs, how was text-messaging viewed as a medium for interpersonal task completion, specifically with regard to AHS?

Anchoring vignettes provided contextual hypothetical scenarios that allowed the respondents to state their preferred source of AH and the type of ICT they would use, expressed as their BI to use low and high social presence ICTs, for purposes of this study. Three vignettes were developed for this study. The first vignette depicted a student who is struggling in a Biology class and summarily needs AH. The second vignette depicted a student with personal family issues that were beginning to affect the student's grades. The third vignette depicted a student with a problematic roommate whose antics were creating an environment where the student cannot study, thus resulting in a drop in the student's grades. The respondents were also asked to rank the ICTs for each vignette in the order that they would use them to seek AH based upon the scenario given. FtF was the consistent and unanimous first choice of the respondents in all three scenarios.

Scenario 1

"Your Biology Professor has announced a final exam worth 75% of your grade that will be given at your next class meeting. You are struggling with the course and desperately need to pass this upcoming exam. Your professor has given you several options if you need help preparing for the

exam. First, the professor recommends reporting to the Biology lab for FtF peer learning and tutoring with other Biology students outside of class. The professor also will be available for a one-hour virtual review session of the material covered in class where you can contact him/her by instant messaging (IM). You also are given the option to send the professor an e-mail where you can ask questions and seek additional study tips. Your professor also provided a cell phone number where you can call or send a text-message with any questions prior to the exam. You also have friends who are serious Biology students that you could solicit for help."

In scenario one, the majority of respondents (n = 151) (55.1%) revealed that they would seek formal help from their professor or instructor revealing that formal help was preferred over informal help for this scenario. A negligible number (n = 4) (1.5%) indicated they would seek formal help from a coach, trainer, counselor, or medical staff. The overall total of informal help responses was (n = 108) (39.5%). The full distribution of preferred source for seeking academic help (formal versus informal) for scenario one is illustrated in Table 5.

In scenario one, the majority of the respondents (n = 200) (73.0%) indicated that they would utilize FtF help as their preferred ICT to seek AH. Email was found to be a very popular ICT based on the respondents' data that was received previously from the open-ended questionnaire. Thus, email was selected second highest for AHS among the respondents (n = 34) (12.4%). Only a small number of the respondents (n = 3) (1.2%) indicated that they would not use any of these ICTs for AHS and only one respondent (0.8%) stated he or she would not seek AH at all in scenario one. Table 6 summarizes the full distribution of preferred ICTs for scenario one.

Table 5

Preferred Source for Seeking Academic Help (Scenario 1)

In this scenario I would seek as my first choice for academic help:		
Answer Options	**Response Percent**	**Response Count**
Close Friend	10.6%	29
Family Member	6.6%	18
Peer (Fellow student/Teammate)	22.3%	61
Administrator	2.2%	6
Professor/Instructor	55.1%	151
Counselor/Medical Staff	0.4%	1
Coach/Trainer	1.1%	3
None of these	1.8%	5
answered question		**274**
skipped question		**39**

Table 6

Preferred ICT for Seeking Academic Help (Scenario 1)

In this scenario I would utilize as my first choice to seek academic help:		
Answer Options	**Response Percent**	**Response Count**
Email	12.4%	34
IM	1.1%	3
FtF (Live Person)	73.0%	200
Text-messaging	5.5%	15
Telephone	6.2%	17
I would not use any of these particular help-seeking methods	1.1%	3
I would not seek any help at all	0.7%	2
answered question		**274**
skipped question		**39**

Scenario 2:

"Due to personal issues involving your family, your grades have suffered since you have not been spending enough time on your studies. You could e-mail the school counselor and speak with her about these issues that are affecting your grades, or you could visit her in person to seek help. You could text or instant message (IM) your friends to seek help or advice. You have friends in your classes that you could study with in person so you can get caught up and improve your grades. There are others you may be able to call on the phone who would be willing to help you during this difficult period as well."

In scenario two, the majority of respondents (n = 74) (27.8%) again revealed that they would seek formal help from their professor or instructor. Because this scenario also suggested the option to get help for personal family issues, the respondents chose a counselor or medical staff as the second highest source of help (n = 53) (19.9%). Table 7 summarizes the respondents' responses of preferred source for seeking academic help.

In scenario two, out of 266 respondents surveyed, the majority of the respondents (n = 160) (60.2%) again indicated that they would utilize FtF help as their preferred ICT to seek AH. While the open-ended questionnaire revealed that email was a very popular ICT, it also revealed that the respondents felt that IM was an antiquated ICT that was no longer used by their peers. As with scenario one, IM was the lowest ranking ICT for scenario two (n = 6) (2.3%). Table 8 illustrates the full distribution of the preferred ICTs for scenario two.

Table 7

Preferred Source for Seeking Academic Help (Scenario 2)

In this scenario I would seek as my first choice for academic help:		
Answer Options	**Response Percent**	**Response Count**
Close Friend	18.0%	48
Family Member	11.3%	30
Peer (Fellow student/Teammate)	9.8%	26
Administrator	7.5%	20
Professor/Instructor	27.8%	74
Counselor/Medical Staff	19.9%	53
Coach/Trainer	1.9%	5
None of these	3.8%	10
answered question		**266**
skipped question		**47**

Table 8

Preferred ICT for Seeking Academic Help (Scenario 2)

In this scenario I would utilize as my first choice to seek academic help:		
Answer Options	**Response Percent**	**Response Count**
Email	13.5%	36
IM	2.3%	6
FtF (Live Person)	60.2%	160
Text-messaging	9.0%	24
Telephone	7.7%	20
I would not use any of these particular help-seeking methods	4.1%	11
I would not seek any help at all	3.0%	8
answered question		**266**
skipped question		**47**

Scenario 3:

"Your roommate seems to repeatedly make irresponsible decisions and then calls on you to bail him/her out of these situations. You frequently lose sleep and are fatigued as a result of being a nursemaid to your roommate, thus causing your grades to slip. You are on a full academic scholarship and you must maintain a certain grade point average to maintain your eligibility. You need to speak with someone to get advice on how to deal with your roommate and preserve your academic scholarship. You could seek online help from a college official by e-mail, contact your residence community coordinator (RCC) by IM, visit the school counselor in person, call a parent by phone, or text a friend for advice."

The results of the data from scenario three revealed that out of the 262 respondents surveyed, the majority of the respondents again preferred formal help, in this instance from an administrator (n = 51) (19.5%). With regard to preferred ICT, FtF (n = 148) (56.5%) was for the third time, the top choice for the majority of the respondents while IM (n = 9) (3.4%) ranked as the least preferred ICT in all three scenarios. Text-messaging ranked no higher than third in two out of three scenarios presented to the respondents. Telephone was selected by (n = 34) (13.0%) of the respondents as their second choice and text-messaging was selected by (n = 24) (9.2%) of the respondents as their third choice. Email was selected by (n = 22) (8.4%) of the respondents as their fourth choice. Tables 9 and 10 below illustrate the data for scenario three.

Table 9

Preferred Source for Seeking Academic Help (Scenario 3)

In this scenario I would seek as my first choice for academic help a:		
Answer Options	**Response Percent**	**Response Count**
Close Friend	16.8%	44
Family Member	14.1%	37
Peer (Fellow student/Teammate)	12.2%	32
Administrator	19.5%	51
Professor/Instructor	6.1%	16
Counselor/Medical Staff	18.7%	49
Coach/Trainer	3.4%	9
None of these	9.2%	24
answered question		**262**
skipped question		**51**

Table 10

Preferred ICT for Seeking Academic Help (Scenario 3)

In this scenario I would utilize as my first choice to seek academic help:		
Answer Options	**Response Percent**	**Response Count**
Email	8.4%	22
IM	3.4%	9
FtF (Live Person)	56.5%	148
Text-Messaging	9.2%	24
Telephone	13.0%	34
I would not use any of these particular help-seeking methods	3.4%	9
I would not seek any help at all	6.1%	16

Research Question 3: What are the characteristics of college students who prefer ICTs to complete interpersonal tasks?

Gender and Technology

Results observed when examining the various demographic groups and which preferred

ICTs to complete interpersonal tasks were revealed using cross-tabulation. The sample consisted

of a nearly equal distribution of females (n = 133) 50.7% and males (n = 126) (48.0%)

respectively. With regard to gender and technology, females respondents indicated more

experience using technology overall than the male respondents. However, the levels of

competence varied by gender depending on the ICT in question. For instance, in an examination

of email usage, female respondents (n = 35) (13.5%) noted that they have more "extensive"

experience using this ICT than male respondents (n = 22) (8.5%).

Conversely, with regard to text-messaging and telephone, both males and females were

very close to equal in their level of experience, specifically as males reported "Quite a lot" of

experience with text-messaging (n = 26) (10%) and females (n = 27) (10.4%) while "Quite a lot"

of experience with telephone was indicated nearly the same for males (n = 42) (16.2%) and

females (n = 45) (17.3%). Text-messaging yielded the highest response rate among respondents

(70%) compared against any of the other ICTs when seeking to assess experience. This high

response rate supports the item of cell phone ownership as the respondents reported that more

than 98% of them owned cell phones. See Table 11 in Appendix I

Race/Ethnicity and Technology

Results observed when examining the demographic "race/ethnicity" when cross-tabulated

with the aforementioned ICTs, yielded interesting observations. Cumulatively, each of the

racial/ethnic groups responded at a rate of 80% or more that they had "quite a lot" or "extensive"

experience using email, text-messaging, FtF, and telephone as ICT options. The only exception

to this finding was IM, where approximately only 31% of all racial/ethnic groups noted they had

"quite a lot" or "extensive" experience using this particular ICT option. The cross-tabulated data for race/ethnicity and technology appears in Table 12 (See Appendix J).

<u>Class Rank and Technology</u>

In a review of cross-tabulations related to class rank and the aforementioned ICTs, Table 13 (See Appendix K) reveals that more sophomore respondents (n = 37) (14.2%) noted that they had more "extensive" experience with email than their freshmen peers (n = 20) (7.7%). The statistic with the widest range between class rank respondents was the selection of "none" by 39 (15.0%) freshmen and 18 (6.9%) sophomores when solicited for their experience in the area.

<u>Special Populations and Technology</u>

In reference to email, student athletes had the highest rate of respondents (n = 33) (12.7%) who had little to no experience with email as an ICT. An examination of text-messaging yielded a high response via all special categories and the belief that they have a great deal of experience using this ICT (94%). Similar statistics were observed with FtF (95%) and telephone (90%) across special populations. As was the case with previous demographic groups, differences were noted with IM where an even distribution was observed across special populations and their expertise with this ICT. Another significant number of the respondents (n = 40) (15.4%) indicated that they were not a member of a special population, who also stated their belief that they have quite a lot of experience with email as an ICT. An examination of cross-tabulations by special populations and ICTs are illustrated in Table 14 (See Appendix L).

Summary

Chapter four provided the results of the data analysis for the current study utilizing descriptive statistics and qualitative reporting. Three AHS scenarios were presented to the participants to allow them to state their BI to use with regard to ICTs and preferred help-giver.

Although text-messaging was popular, it was not selected as a primary help-seeking tool. Email, was also popular, but lacked the real-time capabilities that were favored by the respondents. Face-to-face was the most popular and was the consistent top ICT selection for AHS among the college student participants. This results chapter also illustrated the advantages and disadvantages of select ICTs. Text-messaging and telephone were considered to be fast as their advantages, while face-to-face allowed the help-seeker to actually see and speak with the help-giver. Disadvantages were email was considered to be slow and the telephone was considered an antiquated technology. Instant Messaging was an unpopular ICT that the respondents' reported is not utilized by them anymore. The results also illustrated participant breakdown related to college demographics and student experiences with select technology.

Text-messaging was extremely popular across all groups; however, it was not the most popular ICT as reported by the respondents. IM was deemed to be out-of-date and seldom used across all groups. Females were found to use ICTs more than males and were therefore deemed more likely to utilize ICTs to seek AH more than males. Freshmen reported in larger numbers than sophomores, but their reported experience and the user self-efficacy between both groups was fairly close as far as distribution. Chapter five will offer conclusions, implications, recommendations for future work and a summary of this dissertation.

Chapter 5

Conclusions, Implications, Recommendations, and Summary

Conclusions

Chapter five begins by discussing the conclusions derived from the results of data. Each

research question is stated with conclusions being drawn from the findings for each question. A

discussion of the implications of this study, more precisely, the contribution it makes to the

scholarly literature is also presented and then study limitations are identified and briefly

addressed. Recommendations for future work in order to extend the body of knowledge (BoK)

follows next and then this chapter concludes with a summary of this dissertation research.

The first question addressed was: *How does the availability of ICTs impact intention*

toward completing interpersonal tasks among college students? Damian, Lanubile, and

Mallardo (2008) informed that synchronous communication media such as face-to-face (FtF),

telephone, and in some instances instant messaging (IM) are routine examples of high social

presence ICTs where a participant is obviously aware of the presence of the other participant in

the discussion. Damian et al. asserted that discussions occurring within high social presence

ICTs will not generally be ignored.

On the other hand, asynchronous communication media such as e-mail and text-

messaging are routine examples of low social presence ICTs where the sender must compete

with other distractions encountered by the receiver which may result in the sender's message

being completely ignored or disrupt the communication. IM may actually be classified as a

hybrid technology as it displays synchronous and asynchronous characteristics. Therefore, IM could be classified as either a low social presence or high social presence ICT depending on how the receiver uses it

At the onset of the current study, the participants first had to state one advantage and one disadvantage of each ICT that was utilized. Resonating themes resulting from a content analysis revealed that ease of use, speed, and clarity were important factors when the respondents stated their advantages of each ICT. The dominant stated advantage of text-messaging, as a low social presence ICT, was that it is fast providing the capability to send and receive messages quickly. The same held true for Instant Messaging (IM). The opinions related to email, as a low social presence ICT, revealed that more respondents found it to be easy to use, while the respondents indicated that the most important element of the telephone and face-to-face (FtF), as high social presence ICTs, was their ability to permit the user to clearly understand the intended message as supported by Turner and Reinsch (2010). Although text-messaging was stated to be fast by a majority of the respondents, email generated the most resonating themes indicating that a large percentage of the respondents would actually prefer it over text-messaging as the ICT of choice to complete interpersonal tasks.

As far as stated disadvantages, overarching themes developed from the content analysis revealed that text-messaging and the telephone were linked with the similar disadvantages of "no service", "no signal", and "dropped calls". It is important to note that based on the responses received from this generation of young adults, a sizable percentage of the respondents equated the telephone ICT to the cell phone instead of the traditional land-line telephone, considering the latter to be outdated and seldom used anymore in favor of text-messaging or modernized cell phones.

Email, as a low social presence ICT, and IM, as a high social presence ICT shared disadvantages of the capability of being "hacked" and "intrusions". IM was also viewed in similar fashion as the traditional telephone by the respondents, as a large percentage of them considered it to be an outdated ICT that they do not use in favor of text-messaging. Dominant themes that arose from FtF, as a high social presence ICT, indicated the potential for "conflicts", "frustration", and "arguments". Email was also deemed to be too slow as a disadvantage, while the telephone and FtF were not favorable due to the fact that both involved actually interacting with a human actor, which serious texters are reluctant to do (Reid & Reid, 2004; Hancock & Dunham, 2001).

Pertaining to CUSE and EUT, this generation of young adults is extremely comfortable with technology. This is evident from the data obtained from the 6-point Likert-scale instrument and the forced-choice ordinal scale instrument by Cassidy and Eachus (2002) for measuring CUSE and EUT. The mean scores of questions 1-22 of the 6-point Likert-scale instrument for measuring CUSE indicated that the majority of the respondents described themselves as skilled, competent, and comfortable with all of the ICTs utilized in this study, regardless of whether they used them frequently or not. The respondents stated their strength of agreement with 22 statements using a 6-point rating scale from the lowest extreme, disagree, to the highest extreme, agree, with a 1 representing strongly disagree up to a 6 which represents strongly agree. The respondents had previously listed one advantage and one disadvantage of each ICT prior to this point in the study, but any disadvantages stated did not necessarily preclude them from seeing the benefit of some of the ICTs for the completion of interpersonal tasks.

Research question one inevitably addressed how familiar the respondents were with each of the ICTs utilized in this study. Specifically, RQ1 examined the respondents' beliefs,

perceptions, competency, and skill-level in order to make an assumption as to if, when, why, and how college students may or may not utilize low and high social presence ICTs for interpersonal task completion. The following conclusions are based on the data received from the open-ended questionnaire and 6-point Likert-scale instrument. Some of the primary inhibitors that would seem to dissuade college students from using ICTs for interpersonal task completion are the perception of its relevance, or how "dated" the ICT is perceived to be, speed, miscommunication, and how well the ICT allows for a genuine connection with another person. For instance, the traditional telephone and IM, although deemed useful for interpersonal task completion to some degree, were both deemed to be outdated or no longer in use by a large percentage of the respondents.

FtF was deemed highly useful, but to a large percentage of the respondents, it can lead to conflicts, frustrations, and arguments, due in part to the potential misinterpretation of body language during the personal encounter. Email was also deemed highly useful, but it was also considered to be too slow for a generation where speed is highly desirable in this technological age of communication. Text-messaging, although extremely popular as a social networking ICT was believed to allow for misinterpretation in communication and it was also identified as an impersonal method of communication for more serious and formal encounters.

The second question addressed was: *Out of the available selections of ICTs, how was text-messaging viewed as a medium for interpersonal task completion, specifically with regard to AHS?*

Three scenarios (vignettes) were administered to the respondents that ultimately prompted a need to seek AH. Upon viewing each vignette the respondents were then asked to provide two responses. The first response was to identify the individual from whom they would

seek AH from, categorized as either formal or informal help. Informal help is attained when an individual chooses a close friend, family member, or peer as their help-giver. Formal help is attained when an individual chooses a college administrator, law enforcement officer, professor, instructor, counselor, medical staff, coach or trainer as their help-giver (Avanzo, Barbato, Erzegovesi, Lampertico, Rapisarda, Valsecchi, 2012). The second response that the respondents were asked to give was to identify which specific ICT they would utilize to seek AH in the given scenario.

Scenario One

Vignette one dealt with a student on the verge of failing a difficult course. Because this AHS scenario revolved around passing a difficult academic subject area, informal help from peers didn't seem to be as appealing as formal help as the respondents indicated that they would prefer the one-on-one personalized attention given from the professor or instructor in this particular instance. The high social presence ICT of FtF guaranteed that their presence would not be ignored and their request for AH would be addressed in "real time". As this study has a particular interest in SMS text-messaging as an ICT due to its immense world-wide popularity, only 5.5% of the respondents selected it as an AHS option in scenario one. The participants' rank-ordered text-messaging as their preferred ICT fourth out of the five ICTs available in scenario one. Text-messaging, as a low social presence ICT, was believed to be too informal and impersonal by the respondents to be an effective AHS choice while IM was ranked last as a potential AHS ICT in scenario one.

Scenario Two

Upon viewing vignette two, the majority of the respondents again chose their professor or instructor indicating a preference for formal help. A total of 18% of the respondents represented

the highest percentage that chose informal help with 48 of them choosing a close friend. The majority of the respondents selected FtF as their preferred ICT representing 60.2% of the sample. Scenario two dealt with another student who was struggling to maintain his/her grades, but there was an additional underlying root cause of personal family problems that attributed to the student's academic peril. It is possible that the additional personal family problems element prompted a number of the respondents to favor text-messaging more highly in this situation than in the previous scenario.

If informal contact with friends or family would be the preferred means to seek help in this instance, text-messaging would be a sensible choice. Text-messaging fared better in scenario two finishing third behind FtF and email, while also outranking the telephone and IM. Due to the fact that vignettes one and two are somewhat similar in situational context, it is understandable why the respondents chose the same preferred help-giver and ICT as their first choice in both scenarios.

Scenario Three

Upon viewing vignette three, the majority of the respondents again chose formal help. Scenario three dealt with a student residing with an irresponsible roommate whose antics ultimately began to take its toll on the help-recipient's grades. The overwhelming first choice for preferred ICT was FtF. The telephone ranked better in scenario three ranking second, while text-messaging was again ranked third ahead of email and IM.

IM was ranked last in all three scenarios due to the fact that the respondents indicated that they no longer use it and don't know of anybody who does. The respondents' consider IM to be an outdated communication technology, despite the fact that it is still available and they are comfortable and proficient in using it. The telephone was also similarly described by the

respondents as an outdated, seldom used technology, but the telephone is a high social presence ICT and based on the responses received from the open-ended questionnaire and vignettes, the respondents believe that it still has value in completing interpersonal tasks.

On the other hand, the responses from the open-ended questionnaire and vignettes seem to suggest that text-messaging, as a low social presence ICT, appears to be favored for brief, informal communications among close friends, family members, and endeared inner texting circles, while being discouraged for use within more structured, formal communications. Furthermore, conclusions of the findings suggest that text-messaging doesn't appear to offer the same value for completing the interpersonal task of AHS as high social presence ICTs such as FtF and the telephone. It may also be concluded from the data obtained from the vignettes that for situations deemed as serious to students as AHS, formal help would be preferable to informal help, especially if a grade is in jeopardy or failing a course is a high probability. This is especially true if a high social presence ICT is utilized as the help seeker wants to ensure that his or her request for AH will not be ignored.

The third question addressed was: *What are the characteristics of college students who prefer ICTs to complete interpersonal tasks?* The data were derived from part one of the CUSE instrument by Cassidy and Eachus (2002) that also measured EUT for the five ICTs utilized in this study was cross-tabulated with data from a demographic collection instrument in the following categories: gender, race/ethnicity, class rank, and membership in special populations. The following discussion of RQ3 offers conclusions of the cross-tabulated data results for each category.

Conclusions drawn from cross-tabulated demographic data and EUT indicate that the majority of the respondents have a great deal of experience with most of the ICTs making them

proficient and comfortable with the use of each of the technologies. IM is the exception as it is seldom used by the target demographic and thus, the respondents reported the highest level of lack of experience with this particular ICT. However, this is not to suggest a total unfamiliarity on the respondents' part with the use of IM. Overall, females reporting in this study appear to have more experience with the ICTs and as such, would conceivably use them more than males. Across racial boundaries, over 80% of the respondents reported a great deal of experience with most of the ICTs and in the case of the present study, blacks indicated higher frequency for experience than whites. This is attributable to the fact that the student population of the target institution has a disproportionate black to white ratio in favor of black students. Only 13 respondents self-identified as Hispanic and reported either "quite a lot" or "extensive experience" with all ICTs except for IM. This study was not conceived to be ethnographic and therefore race and ethnicity concerns are actually beyond its scope. However, since the target institution had a high racial demographic in favor of African Americans, the data was additionally cross-tabulated by race/ethnicity and it is felt that this data was worthy of at least brief mention in this conclusions chapter.

More freshmen responded to the surveys than sophomores in this study. However, freshmen and sophomores expressed similar beliefs in their experiences with all five ICTs. The age difference between traditional college freshmen and sophomores is small, typically with no more than a two year difference. This could explain their similarly stated experience with each of the ICTs.

Across special populations, student athletes were the largest group represented followed by extracurricular groups. At the target institution, student athletes comprise approximately 60% of the entire student body. This disproportionate ratio explains the high student athlete response

rate for this study. All groups surveyed, including student athletes, expressed that they had a great deal of experience with the ICTs, with the exception of IM. Since well over 90% of all respondents indicated ownership of a computer and a cell phone, this would explain the high rates of experience and comfort-level reported for the ICTs across all demographic groups.

FtF was the most popular ICT in all three AHS scenarios and was used extensively across all special population groups, across all racial/ethnic groups, across class ranks of freshmen and sophomores, and across genders in favor of females. Text-messaging was also used extensively among all groups surveyed in this study, however, it was not the most favored ICT for the interpersonal task of seeking AH, at best ranking third among the five ICTs utilized in this study. With that said, high social presence ICTs such as FtF and telephone were favored more for AHS than low social presence ICTs such as text-messaging and email, even though the popularity of text-messaging has superseded email and IM and as the preferred means of communication among college students. The age demographic of traditional college students reinforces the conclusion that technology that is perceived to be outdated and not "hip" will typically be shunned in favor of newer, trendier technology. The fact that IM is seldom, if ever used by college students to communicate anymore is a crucial factor in their BI to use it.

Implications

This study has several implications across the fields of information systems (IS), education, and psychology. From an IS perspective, this study endeavored to ascertain if ICTs, specifically text-messaging, could possibly be used in an unconventional way to achieve the goal of interpersonal task completion. Through an extensive review of the literature, this study also identified a gap in the scholarly research on text-messaging as a relatively new technology,

despite its immense world-wide popularity. The results of this study also attempted to reveal any gaps among a variety of groups with regard to access to technology, ownership of technology, and skill and experience level with technology. The concept of low social presence versus high social presence ICTs and the integration of both as a means to understand BI to complete interpersonal tasks within the target group who perhaps uses them most, college students, had not been attempted in prior studies until now.

The findings of the current study are significant in the fact that despite its popularity among college students the world over, the college students who participated in this study were reluctant to use text-messaging for the important self-initiating interpersonal task of AHS. The information attained from a comprehensive review of the literature and the findings from the respondent surveys suggest that college students are major stakeholders in technology and their perceptions, views, opinions, and self-efficacy are important factors in their adoption process with regard to their intended use of ICTs.

Although this study sought to contribute to the scholarly BoK within information systems, it also has implications in the fields of education and psychology. This study had an overarching help-seeking element within it and help-seeking is a behavioral condition that is firmly rooted in psychology. Furthermore, educators have a stake in the outcome of such studies as it allows them, as help-givers, to reach out to potential help-seekers who could then be afforded new, novel ways to seek AH, discreetly if desirable with the use of technology.

Study Limitations

There were four limitations identified in this study. The first limitation was that the interpersonal task selected for this study was limited strictly to academic help-seeking (AHS). It

is conceded that AHS is not the only form of interpersonal task that could have been investigated and without offering a selection of interpersonal tasks for the participants to select from; the results achieved here may not be comparable if this study was ever replicated. The second limitation of this study was the low sample rate that was attained, due to the fact that the target institution itself is very small. The third limitation to this study was that college students comprised the entire sample population and therefore, the results attained here may not be generalizable outside of this target demographic. The fourth limitation of this study is that because the target institution is a junior college, only freshmen and sophomores were sampled. Older college students, juniors and seniors, were not represented in this study, although a few sporadic students within that age range are in fact enrolled at the target institution, but again enrolled as either a freshman or sophomore. Omitting juniors and seniors only gives a partial picture of college student views on ICTs as upper classmen are typically the influential leaders of college communities. Therefore, juniors and seniors as upperclassmen could yield more informed and mature viewpoints on college students' ICT preferences than their freshmen and sophomore counterparts.

Recommendations and Future Research

This study has provided ample opportunities for future research. Of course, generalizability is an important factor as older age groups should be examined with regard to ICT usage. Future research could also include replicating this work in a business related unit where technology is heavily utilized in a team environment. Situating the study or conducting a similar study in another interpersonal context other than AHS would be highly informative as well. As with older age groups, individuals who fall outside the ages of traditional college

students such as adolescents and senior citizens would offer a different perspective on BI to use

ICTs. Because the sample size for the current study was relatively small, this study should be

conducted again in a larger environment with a more sizable population to see if the results and

conclusions drawn are similar, the same, or vastly different than the results and conclusions

attained here. And finally, more research is needed on text-messaging in particular as an ICT,

due to the fact that it is a fairly new technology and hence, there is a vast amount of unexplored

territory to be addressed in the scholarly literature.

Summary

This dissertation addressed the problem of ICT preference for interpersonal task

completion among college students. Although information communication technologies (ICTs)

may be useful in completing organizational tasks, their usefulness in accomplishing interpersonal

tasks required further study (Westerman, Van Der Heide, Klein, & Walther, 2008). This study

defined social presence in the context of ICTs and categorized five ICTs utilized in this study as

either a high social presence ICT or a low social presence ICT. Damian, Lanubile, and Mallardo

(2008) indicated that social presence is an important consideration in ICT usage. The goal of this

research was to investigate college students' behavioral intention (BI) to use ICTs for

interpersonal tasks in the context of academic help-seeking (AHS). Three research questions

were generated to achieve the research goal:

RQ1. How does the availability of ICTs impact intention toward completing interpersonal tasks

among college students?

The first research question sought to measure behavioral intention (BI) to use ICTs

among college students to complete tasks in an AHS context. A variety of themes became

evident from a content analysis of the data. When responding to the communication method

"Email", more respondents considered this form to be "easy and "fast" More themes resonated

from the "email" selection than any of the other ICTs respondents considered implying that this

is a behavioral intention many students may use to complete interpersonal tasks. Approximately

30% of the respondents noted that they did not use IM. It was tied with FtF for the least amount

of themes which resonated from an ICT.

Of the communication methods that received the most "advantages", 45% considered

text-messaging to be "fast" and another 16% considered it to be "easy". In reference to the

"Telephone" ICT, the themes were more evenly distributed and coincidentally, more respondents

noted that they "do not like" the telephone as an option to communicate.

RQ2. Which of the available selection of ICTs is viewed most favorably to complete

interpersonal tasks?

The second research question sought to identify the preferred ICTs perceived to be useful

towards completing AHS tasks, choosing from face-to-face interaction, email, Instant messaging,

text-messaging, and telephone. As justification for the second research question, it is argued that

despite its immense popularity, no studies have been found in the scholarly literature to date that

explored text-messaging, as an ICT, exclusively for college students to engage in practical

interpersonal tasks such as AHS. Additionally, previous BI to use IS studies have focused on

media selection and choice regarding a variety of ICTs, but no studies were found to date that

included text-messaging as an option.

Three vignettes (scenarios) were developed to assist in answering RQ2. For scenario one,

FtF was the consistent and unanimous first choice of the respondents, being the most popular

ICT in all three AHS scenarios. Out of the 274 respondents surveyed, 151 of them indicated that

they would first seek help from their professor or instructor categorized as formal help, representing 54.4% of the entire sample. The results of the data from scenario two revealed that out of the 266 respondents surveyed, 74 of them indicated that they would seek help from their professor or instructor categorized as formal help representing 27.8% of the entire sample. Out of the 266 respondents, 160 of them indicated that they would utilize FtF help as their preferred ICT to seek AH representing 60.2% of the entire sample.

The results of the data from scenario three revealed that out of the 262 respondents surveyed, 51 of them indicated that they would seek help from an administrator categorized as formal help representing 19.5% of the entire sample. In scenario three, 148 of the respondents chose to utilize FtF as their first ICT choice to seek AH.

RQ3.   What are the characteristics of college students who prefer ICTs to complete interpersonal tasks?

The third research question sought to identify the characteristics of users who may actually utilize ICTs for engaging in interpersonal AHS tasks. The third research question was important as user attitudes, gender, experience with technology, and competency, expressed as user characteristics, are useful in the human-technology matching component of media selection.

Results observed when examining the various demographic groups which preferred ICTs to complete interpersonal tasks were illustrated using cross-tabulation. In an examination of email usage, female respondents noted that they have more extensive experience than male respondents. With regard to text-messaging, while the female respondents noted that they have more "extensive" experience using text-messaging overall, this particular communication method yielded the highest response rate among respondents compared against any of the other ICTs when seeking to assess experience.

Other cross-tabulation results illustrated similar results. When examining "IM" and the demographic "gender", there was more of an even distribution of the range between male and female respondents, though a closer observation of the data yields that female respondents still consider themselves to have more experience using this particular ICT. An examination of FtF, cross-tabulated by gender, noted that female respondents had more experience with this ICT. The "telephone" ICT, similar to most of the others, yielded at least 80% or higher from the respondents who noted that they have "quite a lot" or "extensive" experience in that specific communication area. The ICT, "IM", was different in this regard as it yielded approximately 30% from respondents who noted that they have "quite a lot" or "extensive" experience with this particular ICT.

A descriptive approach was taken to achieve the research goal. Both quantitative and qualitative research methods were utilized to analyze and report the findings of the data that stemmed from online data collection instruments consisting of a 6-point Likert-scale instrument measuring CUSE, an ordinal data forced choice instrument measuring EUT, an open-ended questionnaire, and a series of vignettes with corresponding questions to identify ICT preference in the context of AHS that was selected as the interpersonal task under investigation. The nominal group technique was utilized to validate the vignettes. This process was described in detail in the methodology chapter. A content analysis was performed on the data received from the open-ended questionnaire and recurring themes was used to code the data. Pre-analysis data cleaning was required to check for responses that had to be invalidated prior to the actual data analysis.

The findings revealed that the respondents were extremely familiar and comfortable with four out of the five ICTs utilized in this study. The ICT instant messaging (IM) yielded the most

responses from the participants for having little to no experience with this particular ICT. The majority of respondents indicated that IM is an ICT that they seldom use and none of their friends use anymore as well. These findings were consistent across gender, race and ethnicity, class rank, and special populations. Text-messaging, as the ICT of particular interest in this study, was not favored highly in three AHS scenarios as a useful means to seek academic help (AH). Face-to-Face (FtF) was the most preferred ICT while email and the telephone both outranked text-messaging on one occasion each. IM was consistently the least preferred ICT to utilize to seek AH. Formal help was preferred over informal help in all three scenarios.

Conclusions drawn from the findings suggest that for purposes of AH, college students will tend to seek formal help instead of informal help as formal help will generally lead them to the appropriate help-giver. High social presence ICTs will tend to be chosen instead of low social presence ICTs as a high social presence ICT will guarantee that the help-giver will be less likely to ignore the help-seeker's request for help. Short Messaging Service (SMS) text-messaging was found to be impractical for the interpersonal task of AHS due to the fact that it was deemed undesirable and improper for formal interactions, and more acceptable for informal and sometimes discreet conversations within college students' closest texting circles.

It is felt that this study makes a valued contribution to the scholarly BoK with implications that span across several disciplines to include IS, education, and psychology. Four study limitations were identified that was briefly discussed. Recommendations for future research were addressed as text-messaging is a fairly new technology and therefore, a fairly new research area.

Appendix A

April 17, 2012

Dr. Jim Eck
Vice President of Academic Life
Louisburg College

Jeffrey Linney
Campus Police Department
Louisburg College

Dr. Eck,

This letter serves as my formal request seeking permission from Louisburg College to assist me in the completion of my dissertation in order to fulfill the requirements for the doctor of philosophy degree. My dissertation is titled: *Assessing Behavioral Intention to Use Both Low and High Social Presence ICTs for Interpersonal task completion Among College Students.* I wish to use the students of Louisburg College as the principal subjects of my research study.

I plan on administering a series of survey-questionnaire instruments to your students to obtain the data I will need to answer my research questions and thus reach the primary research goal. My intended strategy will be to administer the surveys to all students during the Fall 2012 semester and thus, I hope I can count on the support and assistance of the relevant teaching faculty who would assist in directing students to the survey instruments for me. Also, please note that the students' participation in this proposed study is strictly voluntary. I would expect to be able to collect enough data to effectively complete the study in a period of no more than two weeks.

I have just successfully completed the mandated institutional review board (IRB) training through the Collaborative Institutional Training Institute (CITI), as required by my degree granting institution, Nova Southeastern University. If Louisburg College will permit me to conduct my study on campus using its students, could you please send a written reply on your letter head expressing this permission so it can be included in my dissertation as part of the appendix? I thank you for your anticipated cooperation.

Sincerely,

Jeffrey S. Linney

Jim Eck <jeck@louisburg.edu>
4/24/12
To: Jason, me, Louise
Jeff,

We do not have an IRB at Louisburg although we should form one in the future. Student risk, based on these surveys, seems minimal but you may still want to provide a written informed consent to each participant. I'm comfortable with your research proposal and measurements--I'd ask that you coordinate the administration of surveys with student life and that you'd respond to any concerns that they may rise.
Thanks.

-Jim

Appendix B

Date: August 21, 2012

Re: *Assessing Behavioral Intention to Use Low Social Presence ICTs For Interpersonal Task Completion among College Students: With Special Consideration toward Short Message Service (SMS) Text-Messaging*

IRB Approval Number: wang07151202

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

1)   CONSENT: If recruitment procedures include consent forms these must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.

2)   ADVERSE REACTIONS: The principal investigator is required to notify the IRB chair and me (954-262-5369 and 954-262-2020 respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.

3)   AMENDMENTS: Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Protocol File

Appendix C

Overview of Information Communication Technologies (ICTs)

Information Communication Technologies (ICTs) are methods of communication that include e-mail, the Internet, mobile phones, chat, and short messaging service (SMS) text-messaging to enable communication among humans. This overview will explain the features, advantages, and drawbacks of these various communication methods, or ICTs.

E-mail:
- An electronic version of the United States Postal Service
- Allows for asynchronous (delayed communication) transmission of text-based messages and media between users
- A largely unlimited messaging capacity
- Around-the-clock accessibility provided that there is a computer available with connectivity to the Internet
- Allows the user to remain anonymous if desired

Instant Messaging (IM):
- Allows users to send and receive messages through an electronic communication device
- Allows users to save contacts to a favorites list
- Allows users to save conservations
- Allows users to prevent or block selected users from contacting them

Text-Messaging:
- A synchronous communication feature of mobile phones
- Next to face-to-face communication, it is currently the most utilized form of communication
- Text-messages are limited in capacity to 164 characters in a single message
- Can promote anonymity if desired

Face-to-Face (FtF):
- When human beings communicate in person with one
- FtF can also be considered an ICT due to the fact that this live method of interaction encourages communication among human beings
- Visual cues, body language, and tone of voice can sometimes provide useful insight into whether you are being understood, appreciated, ignored, liked, or disliked

Telephone:
- One of the oldest forms of voice-based electronic communication between two or more callers
- Signal travels through a landline, or a wireless connection
- Offers features such as call forwarding, three-way calling, caller id, star *69, distinctive ringing, voice messaging, etc.

Appendix D

Open-Ended Questionnaire

Based on your personal knowledge and experience with each type of communication presented for this study, you will now be directed to answer a few questions about each one.

List one advantage or thing that you like about each communication method:

E-mail

_____

Instant Messaging

_____

Text-Messaging

_____

Face-to-Face (Live interaction with another human being)

_____

Telephone

_____

List one disadvantage or thing that you dislike about each communication method:

E-mail

_____

Instant Messaging

_____

Text-Messaging

_____

Face-to-Face (Live interaction with another human being)

_____

Telephone

_____

Based on what you know or have read about each communication method, which one do you

believe would provide the most privacy and anonymity? _____

Which communication method could be the most useful in completing everyday tasks?

_____

Briefly state why _____

Which communication method do you like and use the most each week? _____

Briefly state why_____

Which communication method do you dislike and use the least each week? _____

Briefly state why_____

Appendix E

Vignettes and Questionnaire

Please read each of the following situational academic help-seeking scenarios. Upon reading each scenario please select the appropriate response to reveal how you would personally respond to each situation.

Scenario 1

Your Biology Professor has announced a final exam worth 75% of your grade that will be given at your next class meeting. You are struggling with the course and desperately need to pass this upcoming exam. Your professor has given you several options if you need help preparing for the exam. First, the professor recommends reporting to the Biology lab for face-to-face peer learning and tutoring with other Biology students outside of class. The professor also will be available for a one-hour virtual review session of the material covered in class where you can contact him/her by instant messaging (IM). You also are given the option to send the professor an e-mail where you can ask questions and seek additional study tips. Your professor also provided a cell phone number where you can call or send a text-message with any questions prior to the exam. You also have friends who are serious Biology students that you could solicit for help. Please select one of the responses below.

In this scenario I would seek as my <u>first</u> choice for academic help a: (Select One)

1 = Close Friend
2 = Family Member
3 = Peer (Fellow student/Teammate)
4 = Administrator
5 = Professor/Instructor
6 = Counselor/Medical Staff
7 = Coach/Trainer
8 = None of these

In this scenario I would utilize as my <u>first</u> choice to seek academic help: (Select One)

1 = E-mail
2 = Instant Message
3 = Face-to-Face (Live Person)
4 = Text-messaging
5 = Telephone
6 = I would not use any of these particular help-seeking methods
7 = I would not seek any help at all

Please briefly state why you chose this answer_____

From the selection of e-mail, text-messaging, live person, instant messaging, and telephone, please indicate the method of communication that you chose to seek help in this scenario as your <u>first</u> choice. Then rank the remaining four methods of communication in the order you would use them to seek help in this scenario.

****Do NOT rank the methods of communication if you chose <u>not</u> to use any of these communication methods (6) or if you chose <u>not</u> seek any help at all in this scenario (7).**

    1st Choice _____

    2nd Choice_____

    3rd Choice_____

    4th Choice_____

    5th Choice_____

Scenario 2

Due to personal issues involving your family, your grades have suffered since you have not been spending enough time on your studies. You could e-mail the school counselor and speak with her about these issues that are affecting your grades, or you could visit her in person to seek help. You could text or instant message (IM) your friends to seek help or advice. You have friends in your classes that you could study with in person so you can get caught up and improve your grades. There are others you may be able to call on the phone who would be willing to help you during this difficult period as well. Please select one of the following responses.

In this scenario I would seek as my <u>first</u> choice for academic help a: (Select One)

1 = Close Friend
2 = Family Member
3 = Peer (Fellow student/Teammate)
4 = Administrator
5 = Professor/Instructor
6 = Counselor/Medical Staff
7 = Coach/Trainer
8 = None of these

In this scenario I would utilize as my <u>first</u> choice to seek academic help: (Select One)

1 = E-mail
2 = Instant Message
3 = Face-to-Face (Live Person)
4 = Text-message
5 = Telephone
6 = I would not use any of these particular help-seeking methods
7 = I would not seek any help at all

Please briefly state why you chose this answer_____

From the selection of e-mail, text-messaging, live person, instant messaging, and telephone, please indicate the method of communication that you chose to seek help in this scenario as your <u>first</u> choice. Then rank the remaining four methods of communication in the order you would use them to seek help in this scenario.

**Do NOT rank the methods of communication if you chose <u>not</u> to use any of these communication methods (6) or if you chose <u>not</u> seek any help at all in this scenario (7).

1st Choice _____

2nd Choice_____

3rd Choice_____

4th Choice_____

5th Choice_____

Scenario 3

Your roommate seems to repeatedly make irresponsible decisions and then calls on you to bail him/her out of these situations. You frequently lose sleep and are fatigued as a result of being a nursemaid to your roommate, thus causing your grades to slip. You are on a full academic scholarship and you must maintain a certain grade point average to maintain your eligibility. You need to speak with someone to get advice on how to deal with your roommate and preserve your academic scholarship. You could seek online help from a college official by e-mail, contact your residence community coordinator (RCC) by IM, visit the school counselor in person, call a parent by phone, or text a friend for advice. Please select one of the following responses.

In this scenario I would seek as my first choice for academic help a: (Select One)

1 = Close Friend
2 = Family Member
3 = Peer (Fellow student/Teammate)
4 = Administrator
5 = Professor/Instructor
6 = Counselor/Medical Staff
7 = Coach/Trainer
8 = None of these

In this scenario I would utilize as my first choice to seek academic help: (Select One)

1 = E-mail
2 = Instant Message
3 = Face-to-Face (Live Person)
4 = Text-Messaging
5 = Telephone
6 = I would not use any of these particular help-seeking methods
7 = I would not seek any help at all

Please briefly state why you chose this answer_____

From the selection of e-mail, text-messaging, live person, instant messaging, and telephone, please indicate the method of communication that you chose to seek help in this scenario as your <u>first</u> choice below. Then rank the remaining four methods of communication in the order you would use them to seek help in this scenario.

****Do not rank the methods of communication if you chose <u>not</u> to use any of these communication methods or if you chose <u>not</u> seek any help at all in this scenario.**

   1st Choice _____

   2nd Choice_____

   3rd Choice_____

   4th Choice_____

   5th Choice_____

Appendix F

(Part 2)

Below you will find a number of statements concerning how you might feel about ICTs. Please indicate the strength of your agreement or disagreement with the statements using the rating scale shown below. Mark the number (i.e., between 1 and 6) that most closely represents how much you agree or disagree with the statement. The lower your number the more you disagree with the statement. The higher your number the more you agree with the statement. There are no *correct* responses as it is your own views that are important.

Computer User Self-Efficacy (CUSE)

Number	Survey Item

CUSE 1   I find working with e-mail very easy.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 2   I am very unsure of my abilities to use chat rooms.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 3   Communicating in chat rooms frightens me.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 4   I enjoy face-to-face communication when completing tasks.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 5   Face-to-face communication makes me much more productive.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 6   I often have difficulties when trying to learn how to use a new e-mail platform.

strongly disagree   1   2   3   4   5   6   strongly agree

Number	Survey Item
CUSE7	Most of the e-mail platforms I have had experience with, have been easy to use.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE8   I am very confident in my abilities to make use of face-to-face communication.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE 9   I find it difficult to get computers to do what I want them to.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE10   At times I find working with text-messaging very confusing.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE11   I seem to waste a lot of time struggling with chat rooms.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE12   Face-to-face communication makes learning more interesting.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE13   I always seem to have problems when trying to communicate face-to-face.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE14   Chat rooms are far too complicated for me.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE15   Using e-mail is something I rarely enjoy.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE16   Text-messages are good aids to learning.

strongly disagree   1   2   3   4   5   6   strongly agree

Number	Survey Item
CUSE17	Sometimes, when using text-messaging, things seem to happen and I don't know why.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE18   As far as chat rooms go, I don't consider myself to be very competent.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE19   Text-messaging helps me to save a lot of time.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE20   I find working with text-messaging very frustrating.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE21   I consider myself to be a skilled e-mail user.

strongly disagree   1   2   3   4   5   6   strongly agree

CUSE22   When using a computer I worry that I might press the wrong button and damage it.

strongly disagree   1   2   3   4   5   6   strongly agree

Appendix G

Computer User Self-Efficacy Scale (CUSE) and Experience Using Technology (EUT)

(Part 1)   Experience with ICTs: (Select One Answer for <u>Each</u> Communication Method)

<u>E-mail</u>

1 = None
2 = very limited
3 = some experience
4 = Quite a lot
5 = Extensive

<u>Text-Messaging</u>

1 = None
2 = very limited
3 = some experience
4 = Quite a lot
5 = Extensive

<u>Instant Messaging</u>

1 = None
2 = very limited
3 = some experience
4 = Quite a lot
5 = Extensive

<u>Face-to-Face</u>

1 = None
2 = very limited
3 = some experience
4 = Quite a lot
5 = Extensive

<u>Telephone</u>

1 = None
2 = very limited
3 = some experience
4 = Quite a lot
5 = Extensive

Do you own a Computer?   YES   NO
Do you own a Cell Phone?   YES   NO

Appendix H

Demographics (Select One)

Please indicate your gender.

1 = Male
2 = Female

Please indicate your race/ethnicity.

1 = African American or Black
2 = Hispanic
3 = White (Non-Hispanic)
4 = Other
5 = I prefer not to respond

Please indicate your class rank.

1 = Freshman
2 = Sophomore

Please indicate if you are in one of these special student populations.

1 = Honor Society
2 = Student Athlete
3 = Extra-Curricular Group (Drum Line/Chorus/Gospel Choir/Peer Leader/Hurricane
    Advisor)
4 = No member of a special population
5 = I prefer not to respond

Thank you for participating in this study. Your assistance has been greatly appreciated.

Appendix I

Table 11

Gender and Technology

Email				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
None	1	2	1.2%	3
Very limited	13	9	8.5%	22
Some experience	35	19	20.8%	54
Quite a lot	55	68	47.5%	123
Extensive	22	35	22.0%	57
Text-messaging				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
None	5	3	3.1%	8
Very limited	6	2	3.1%	8
Some experience	6	3	3.5%	9
Quite a lot	26	27	20.5%	53
Extensive	83	98	69.9%	181
Instant Messaging (IM)				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
None	32	25	22.0%	57
Very limited	28	16	17.0%	44
Some experience	38	39	29.7%	77
Quite a lot	16	32	18.5%	48
Extensive	12	21	12.7%	33
FtF				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
None	2	2	1.5%	4
Very limited	4	2	2.3%	6
Some experience	20	6	10.0%	26
Quite a lot	25	42	25.9%	67
Extensive	75	81	60.2%	156

(continued)

Table 11 (continued)

Gender and Technology

Telephone				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
None	2	4	2.3%	6
Very limited	12	6	6.9%	18
Some experience	19	11	11.6%	30
Quite a lot	42	45	33.6%	87
Extensive	51	67	45.6%	118
Do you own a Cell Phone?				
Answer Options	**Male**	**Female**	**Response Percent**	**Response Count**
Yes	125	131	98.8%	256
No	1	2	1.2%	3

Appendix J

Table 12

Race/Ethnicity and Technology

Email							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	1	0	2	0	0	1.2%	3
Very limited	14	2	4	0	2	8.5%	22
Some experience	34	2	11	4	3	20.8%	54
Quite a lot	52	8	50	10	3	47.5%	123
Extensive	19	1	25	4	8	22.0%	57
Text-messaging							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	3	0	4	1	0	3.1%	8
Very limited	3	2	2	0	1	3.1%	8
Some experience	5	0	2	0	2	3.5%	9
Quite a lot	25	4	19	3	2	20.5%	53
Extensive	84	7	65	14	11	69.9%	181
Instant Messaging (IM)							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	29	2	17	4	5	22.0%	57
Very limited	21	2	16	3	2	17.0%	44
Some experience	39	2	28	4	4	29.7%	77
Quite a lot	19	3	20	4	2	18.5%	48
Extensive	12	4	11	3	3	12.7%	33

(continued)

Table 12 (continued)

Race/Ethnicity and Technology

Face-to-Face (FtF)							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	1	0	3	0	0	1.5%	4
Very limited	4	0	2	0	0	2.3%	6
Some experience	19	0	4	2	1	10.0%	26
Quite a lot	33	2	22	7	3	25.9%	67
Extensive	63	11	61	9	12	60.2%	156
Telephone							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	2	0	4	0	0	2.3%	6
Very limited	12	1	3	1	1	6.9%	18
Some experience	13	1	12	2	2	11.6%	30
Quite a lot	42	5	32	5	3	33.6%	87
Extensive	51	6	41	10	10	45.6%	118
Do you own a Cell Phone?							
Answer Options	**African American or Black**	**Hispanic**	**White (Non-Hispanic)**	**Other**	**I prefer not to respond**	**Response Percent**	**Response Count**
Yes	117	13	92	18	16	98.8%	256
No	3	0	0	0	0	1.2%	3

Appendix K

Table 13

Class Rank and Technology

Email					
Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
None	2	1		1.2%	3
Very limited	11	11		8.5%	22
Some experience	36	18		20.8%	54
Quite a lot	76	47		47.5%	123
Extensive	20	37		22.0%	57
Text-messaging					
Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
None	6	2		3.1%	8
Very limited	6	2		3.1%	8

Some experience	4	5		3.5%	9
Quite a lot	28	25		20.5%	53
Extensive	101	80		69.9%	181
Instant Messaging (IM)					
Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
None	39	18		22.0%	57
Very limited	24	20		17.0%	44
Some experience	43	34		29.7%	77
Quite a lot	26	22		18.5%	48
Extensive	13	20		12.7%	33
FtF					
Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
None	2	2		1.5%	4
Very limited	3	3		2.3%	6
Some	21	5		10.0%	26

experience					
Quite a lot	40	27		25.9%	67
Extensive	79	77		60.2%	156
Telephone					

Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
None	5	1		2.3%	6
Very limited	12	6		6.9%	18
Some experience	20	10		11.6%	30
Quite a lot	43	44		33.6%	87
Extensive	65	53		45.6%	118
Do you own a Cell Phone?					

Answer Options	**Freshman**	**Sophomore**		**Response Percent**	**Response Count**
Yes	144	112		98.8%	256
No	1	2		1.2%	3

Appendix L

Table 14

Special Population and Technology

Email							
Answer Options	**Honor Society**	**Student Athlete**	**Extra-Curricular Group (Drum Line/Chorus/ Gospel Choir/Peer Leader/Hurricane Advisor)**	**No member of special population**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	0	3	0	0	0	1.2%	3
Very limited	1	10	1	4	6	8.5%	22
Some experience	5	20	5	17	7	20.8%	54
Quite a lot	8	47	19	40	9	47.5%	123
Extensive	7	8	11	23	8	22.0%	57
Text-messaging							
Answer Options	**Honor Society**	**Student Athlete**	**Extra-Curricular Group (Drum Line/Chorus/ Gospel Choir/Peer Leader/Hurricane Advisor)**	**No member of special population**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	2	5	0	0	1	3.1%	8
Very limited	1	2	2	2	1	3.1%	8
Some experience	1	2	1	2	3	3.5%	9
Quite a lot	3	15	5	22	8	20.5%	53
Extensive	14	64	28	58	17	69.9%	181

Instant Messaging (IM)							
Answer Options	**Honor Society**	**Student Athlete**	**Extra-Curricular Group (Drum Line/Chorus/ Gospel Choir/Peer Leader/Hurricane Advisor)**	**No member of special population**	**I prefer not to respond**	**Response Percent**	**Response Count**
None	3	19	8	21	6	22.0%	57
Very limited	2	23	5	11	3	17.0%	44

Some experience	7	29	11	23	7	29.7%	77
Quite a lot	6	12	6	16	8	18.5%	48
Extensive	3	5	6	13	6	12.7.0%	33

Face-to-Face (FtF)

Answer Options	Honor Society	Student Athlete	Extra-Curricular Group (Drum Line/Chorus/ Gospel Choir/Peer Leader/Hurricane Advisor)	No member of special population	I prefer not to respond	Response Percent	Response Count
None	1	3	0	0	0	1.5%	4
Very limited	1	3	0	2	0	2.3%	6
Some experience	1	12	4	8	1	10.0%	26
Quite a lot	6	18	9	21	13	25.9%	67
Extensive	12	52	23	53	16	60.2%	156

Telephone

Answer Options	Honor Society	Student Athlete	Extra-Curricular Group (Drum Line/Chorus/ Gospel Choir/Peer Leader/Hurricane Advisor)	No member of special population	I prefer not to respond	Response Percent	Response Count
None	0	3	1	1	1	2.3%	6
Very limited	0	9	1	6	2	6.9%	18
Some experience	4	11	3	8	4	11.6%	30

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