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Gender Differences In Social Presence In Gender-Segregated And Blended Learning Environments In Saudi Arabia

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GENDER DIFFERENCES IN SOCIAL PRESENCE IN GENDER-SEGREGATED AND BLENDED LEARNING ENVIRONMENTS IN SAUDI ARABIA

by

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Date

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Title	Gender Differences in Social Presence in Gender-Segregated and Blended Learning Environments in Saudi Arabia
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Abdullah Eid Alotaibi
April 30, 2021

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To my God “Allah”… to my affectionate mother “Moudhi”… to my dear father “Eid”… to my dear wife “Hissah” … to my beautiful daughters, “Hour and Jumana” … to my academic supervisor “Dr. Hung”, and all the honorable members of the committee and all those who helped me in the past few years … I dedicate this work to them.

ABSTRACT

The present study aimed to achieve one of the goals of the Saudi Arabia Vision 2030, which is the improvement of the quality of teaching approaches and learning outcomes. Additionally, the vision strives for equality among students in all educational institutions, including equality among men and women, who are mostly segregated in all aspects of life (e.g., education). One of the major issues in the online portion of blended learning environments is the lack of social presence. Therefore, the present study used a quantitative, cross-sectional survey design to investigate the influence of gender on the perception of social presence levels in gender-segregated and blended learning environments in Saudi Arabia. The findings of this study revealed that the independent variable (gender) had an insignificant impact on dependent variable (social presence levels) in single-gender segregated and blended learning environments. Moreover, gender was not related to any of social presence four constructs (social context, privacy, interactivity, and online communication). The discussion of this study revealed that COVID-19 pandemic and technology evolution in the last decade could be two major factors that impacted the results of this study. The implications of this study are also included in the discussion section.

Keywords: Gender differences, social presence, social context, privacy, interactivity, online communication, immediacy, intimacy, blended learning, Saudi Arabia

CHAPTER I

INTRODUCTION

Statement of the Problem

The lack of quality interaction among distant students is a major issue in online learning due to the low levels of online social presence (Hung, Flom, Manu, & Mahmoud, 2015; Kear, 2010; Rovai, 2002). The concept of social presence theory can be concisely defined as a "sense of being with another in a mediated environment" (Biocca & Harms, 2002, p. 10), or "the feeling that other actors are jointly involved in [communicative] interaction" (Walther, 1992, p. 54). To put it more simply, online learners have perceptions of social presence when they feel that they are socially and psychologically joined with other members and a part of the group in an online learning community (OLC) or environment (Cleveland-Innes & Campbell, 2012; Tu & McIsaac, 2002).

Past research has demonstrated that high levels of social presence positively influences several aspects of teaching and learning. Studies have linked social presence with improved instructional effectiveness (Gunawardena, 1995), satisfaction (Akyol & Garrison, 2008; Cobb, 2011; Gunawardena & Zittle, 1997; Reio, & Crim, 2013; Richardson & Swan, 2003; So & Brush, 2008; Swan & Shih, 2005), the development process of online groups (Gunawardena, Nolla, Wilson, Lopez-Islas, Ramirez-Angel, & Megchun-Alpizar, 2001), course grade or academic performance (Joksimovic, Gasevic, Kovanovic, Riecke, & Hatala, 2015; Swan, 2002; Wei, Chen, & Kinshuk, 2012), critical thinking (Tu & Corry, 2002a), perceived learning (Cobb, 2011; Lim & Lim, 2004; Picciano, 2002; Richardson & Swan, 2003), collaborative learning (So

& Brush, 2008), the increase of online enrollment (Reio, & Crim, 2013), and interpersonal interaction (Kehrwald, 2008).

Moreover, social presence is necessary to promote the quality of interaction and sense of community among distant learners (Gunawardena, 1995; Rovai, 2002). Community building in online education is essential to mitigating serious educational issues, such as feelings of isolation, low students' retention, and lack of connection between students (Rovai, 2002). Therefore, social presence is considered by many online researchers as a vital component of an online learning community (Garrison, Anderson, & Archer, 2000; Rourke, Anderson, Garrison, & Archer, 1999; Rovai, 2002; Swan, 2002; Tu & Corry, 2003a). For instance, Garrison et al., (2000) deem social presence (student-student interaction) not only as one of three substantial elements of a community of inquiry (CoI) but also as one of three vital and required components for success in higher education. The other two components of CoI are teaching presence (student-instructor interaction) and cognitive presence (student-content interaction), which also play crucial roles in OLC (Garrison et al., 2000).

Therefore, adequate degrees of social presence among distant students are crucial in the online learning context (Garrison et al., 2000; Tu, 2000a) because, without it, learners are unable to take the cognitive advantage from the activities of collaborative learning. This process is a key principle of social constructivist andragogy that is vital to improving students' learning experiences, as well as one of fundamental 21st century learning skills (Akyol & Garrison, 2011a; Harasim, 2017; Merriam & Bierema, 2013; Vygotsky, 1978). These learning skills include exchanging viewpoints, providing support, seeking for assistance, and building positive relationship with their fellows (Anderson, 2008; Gunawardena, 1995; Johnson & Johnson, 2008; Kreijns, Kirschner, Jochems, 2003).

Conversely, low degrees of social presence can lead to the diminishing of critical learning aspects such as students' interaction, collaborative learning, sense of a community, satisfaction, and performance (Cleveland-Innes & Garrison, 2010; Tu, 2000a; Tu & McIsaac, 2002; Wei et al., 2012; Zhan & Mei, 2013). In addition, many online and communication researchers believe that low levels of social presence can cause negative psychological perceptions among online students. For instance, it can lead to feelings of isolation or loneliness (Hung et al., 2015; Misanchuk & Anderson, 2001), boredom (Naidu, 2008), frustration (Rifkind, 1992, as cited in Tu, 2001), lack of motivation (Johnson & Johnson, 2008), sense of impersonality, poor participation or disengagement, and lack of interpersonal relationships (Kear, Chetwynd, & Jefferis, 2014). In the last few decades, researchers have conducted several studies to identify the factors that impact the level of online social presence such as feelings of closeness and interpersonal relationships (Gooch & Watts, 2013), affective learning (Jolivette, 2006), critical thinking (Costley & Lange, 2016), social identity (Rogers & Lea, 2005), and user interface and social cues (Wei et al., 2012).

Likewise, research indicates that gender is a critical factor that influences learners' interaction. For instance, men and women differ in some aspects of their interaction such as communication patterns (Christen, Kelly, Fall, & Snyder, 2015; Guiller & Durndell, 2006; Lawlor, 2006), flaming behaviors (Atai & Chahkandi, 2012), interpersonal relationship (Kramarae, 2003), perceived learning, (Fredericksen, Pickett, Shea, Pelz, & Swan, 1999), computer literacy skills (Gunawardena et al., 2001; Yau & Cheng, 2012), sharing personal information (Thornthwaite, Balnave, & Barnes, 2018), anonymity level (Koch, Mueller, Kruse, & Zumbach, 2005). All of these differences in interaction can impact the degree of collaborative learning (Hayes, 2001; Thayalan, Shanthi, & Paridi, 2012). Therefore, gender could be an

important variable that can influence learners' perception of social presence levels in the online learning context (Rovai & Baker, 2005; Von Prummer, 2004).

Nonetheless, few studies have been conducted to address the relationship between gender and online social presence (e.g., Thayalan & Shanthi, 2011; Thayalan et al., 2012; Tu, Yen, & Blocher, 2011). These three studies provided mixed results about the differences between male and female students in perceiving online social presence. Also, other studies, which were not focused primarily on the relationship between gender and online social presence, showed inconsistent results in gender differences in the online social presence (e.g., Gibson, Ice, Mitchell, & Kupczynski, 2012; Johnson, 2011; Lowden & Hostetter, 2012). For instance, some studies indicate that women have higher levels of social presence than their men peers (e.g., Angelaki & Mavroidis, 2013; Thayalan & Shanthi, 2011; Thayalan et al., 2012). Contrarily, other studies found that gender does not affect the level of online social presence among online learners (e.g., Cho, Yim, & Paik, 2015; Felnhofer, Kothgassner, Hauk, Beutl, Hlavacs, & Kryspin-Exner, 2014; Tu et al., 2011).

Therefore, it remains unclear whether or not gender impacts the degree of online social presence among distant learners. Moreover, it should be noted that the previously mentioned studies that examined the effect of gender on online social presence mostly took place in Western and Asian contexts; which are mixed-gender communication environments. Saudi Arabia, on the other hand, has very different cultural practices and therefore educational settings. Saudi Arabia employs gender-segregation in most of its educational institutions (Naaj, Nachouki, & Ankit, 2012; Parahoo, Harvey, & Tamin, 2013). The way that people interact is influenced by the language that they use (Gunawardena et al., 2001; Vygotsky, 1978) as well as their cultural norms (Argyle & Dean, 1965). Therefore, Saudi Arabia's cultural environment and gender-segregation practice provide a unique context for studying the effects of gender on social

presence in online education settings, and thus help deepen our understanding about social presence.

Also, gender segregation in education may influence the ways that students interact. One of the arguments for single-gender education implies that males and females prefer communicating with same-gender than opposite-gender interaction (Mael, 1998). Gender differences influence this preference in interaction styles (Martin & Fabes, 2001; Monaco & Gaier, 1992). Also, Hughes (2006) believed that female students might feel more comfortable to participate in single-gender classes than coeducation learning environments, because of the absence of distractions (e.g., attraction to students of the other sex, and vice versa). Likewise, Ding and Harskamp's (2006) agreed with this result. They found that female students performed better in collaborative problem-solving activities in single-gender learning environments than those in the mixed-gender learning environments. They also indicated that female students were more sensitive to the presence of the other gender than male students.

Other studies indicate that female students perform better and participate more than male students in terms of reading content, viewing pages, and posting messages in discussion boards in mixed-gender online learning environments (e.g., Alstete & Beutell, 2004; Arbaugh, 2000; Chyung, 2007; Coldwell, Craig, Paterson, & Mustard, 2008; Gunn, McSporran, Macleod, & French, 2003). Concerning single-gender online environments, Bostock and Lizhi (2005) found that female students tend to post more messages in single-gender than mixed-gender online learning environments, and vice versa for male students. Likewise, Savicki and Kelley (2000) found that women in female-only groups in computer-mediated communication (CMC) environments were more satisfied than males in male-only groups.

Based on the literature cited, a single-gender education environment can be considered as an essential factor that may impact gender differences in interaction, either in face-to-face or

online learning settings. Song, Restivo, Rijt, Scarlatos, Tonjes, and Orlov (2015) conclude that "gender segregation in educational settings may be an underappreciated factor in the explanation of gender differences in student performance" (p. 281). What succeeds for female students may not succeed for male students, and vice versa (Maceli, Fogliasso, & Baack, 2011). Rovai and Baker (2005) agreed that learners' characteristics (e.g., gender, age, learning style, online learning experiences, etc.) might require specific instructional strategies. Therefore, it is critical to examine the impact of gender on social presence in gender-segregated online environments as it could inform educators of their gender-specific educational needs (Francis & Skelton, 2005) in online environments.

Significance of the Study

In this proposed study, examining the relationship between gender and social presence using a quantitative research approach should determine the existing level of equality between two genders in terms of engaging in respectful, trustful, comfortable, and secure learning experiences (Garrison, 2017) as well as diminish the gender gap in using technology in online learning settings (Messmer & Schmitz, 2004; Von Prummer, 2004). Additionally, this study can help identify factors that could enhance their learning experiences in online learning environments. Many potential benefits could arise from the results of this proposed study.

First, one of the broad goals of Saudi Arabia Vision 2030 highlights the importance of achieving equality between men and women, who are physically separated in most aspects of social life, including education (Saudi Vision 2030, 2019). Also, the first general education goal mentioned in the Saudi National Transformation Program 2020, which is one of the Saudi Vision 2030 programs, emphasizes equality for all students (Saudi Ministry of Education, 2019). Accordingly, performing gender studies is critical to achieving one of the fundamental goals of the Saudi Arabia Vision 2030. Besides, the results of this study should help university

administrators and decision-makers to reconsider if current administrative policies (e.g., gender-segregation) provide equal learning experiences for both genders.

Second, past research did not address gender differences in social presence in single-gender online environments. All the previous studies were performed in mixed-education settings, as mentioned earlier. Therefore, distant researchers should pay more attention to single-gender interaction in online learning environments, which will add knowledge to the current body of research on this topic. Third, no single study was found that examine gender difference in online social presence in Saudi Arabia as well as in all other Arabian Gulf States in the region. Online researchers need to extend the research to new contexts that have different traditions and cultural norms.

Fourth, distance learning is relatively new in Saudi Arabia compared to other countries such as the United States, Canada, and the United Kingdom. According to the Saudi National Center for e-Learning (NCeLDL), the first eight out of twenty-nine Saudi public universities launched e-learning systems into their programs in 2010 (NCeLDL, 2019). However, the transition from traditional to e-learning is slow because NCeLDL needed time to train faculty members to use the e-learning systems efficiently (NCeLDL, 2019). Therefore, performing new studies concerning blended/online learning in Saudi Arabia is still in demand. That is because the new shift from traditional to e-learning educational systems requires Saudi Arabian educators and researchers to ensure that their students of both genders have the skills needed to be competent in these new learning environments. One of the most crucial online learning skills that distant students must possess is their abilities to overcome the limitation of social context cues (e.g., visual and verbal) in blended/online learning environments through assisting them to be socially and psychologically present. Thus, they will be able to comfortably and efficiently

exchange their ideas, experiences, and emotions with each other (Cleveland-Innes & Garrison, 2010; Garrison & Cleveland-Innes, 2005).

Finally, Garrison and Cleveland-Innes (2005) indicated that course structure and instructors' leadership are critical factors to influence online students' interaction and deep learning. Therefore, it is essential for faculty members, teachers, practitioners, and instructional designers to understand their academic roles and take into their consideration the factors that impact distant students' learning such as learners' characteristics, the current teaching methods, practices, instructional strategies, courses designs, and technologies (Cleveland-Innes & Garrison, 2010) in order to facilitate learning experiences for all students in single-gender online learning environments in the Saudi Arabian context.

Purpose Statement

This survey study intends to examine the influence of gender factor on the College of Education at King Saud University (KSU) undergraduate/graduate students' perception of social presence level in an online portion of a hybrid learning environment in Saudi Arabia. The independent variable (IV) of the study is gender, while the dependent variable (DV) is the level of social presence perceived by students of both genders.

Research Question

This proposed study aims to answer the following research question: Does gender impact Saudi students' perceptions of social presence in an online portion of a hybrid learning environment?

Research Hypothesis

Based on the results of the past studies, the researcher hypothesizes the following directional alternative hypothesis:

1. Hypothesis 1 (H1): Gender will influence the degree of perceived social presence in an online portion of a hybrid learning environment for Saudi Arabian students at KSU in favor of Saudi female students.

Definitions of Key Terms

Blended Learning. It is defined by Hung (2004) as "a method that takes the advantage of both face-to-face and online classroom settings, and provides a viable solution to various dilemmas" (p. 90).

Computer-mediated communication (CMC). Angarita, Georgantas, Parra, Holston, & Issarny (2017) defined CMC as "any form of human communication achieved through computer technology" (p. 1). CMC involves both synchronous and asynchronous communication technologies such as chat rooms, email, discussion forums, and so forth (Arbaugh & Benbunan-Fich, 2007; Mykota & Duncan, 2007).

Community of Inquiry (CoI). Garrison, et al (2000) stated that "Community of Inquiry assumes that learning occurs within the Community through the interaction of three core elements. Fig. 1 shows the three essential elements: cognitive presence, social presence, and teaching presence" (p. 88).

Community of Practice (CoP). "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis." (Wenger, McDermott & Snyder, 2002, p. 4).

Emoticons. Emoticons refer to "facial expression surrogates, which correspond to symbolic, lexical, or graphical resources used in written communication to convey emotional expressions" (Aldunate & Gonzalez-Ibanez, 2017, p. 3).

Gender. The Mediterranean Institute of Gender Studies (MIGS; 2005) defined gender as "the socially given attributes, roles, activities, responsibilities and needs connected to being men

(masculine) and women (feminine) in a given society at a given time, and as a member of a specific community within that society" (p. 1).

Immediacy. Gunawardena (1995) defines the concept of immediacy as "a measure of the psychological distance which a communicator puts between himself or herself and the object of his/her communication" (p. 153).

Intimacy. According to Argyle and Dean (1965), intimacy is "a joint function of eye-contact, physical proximity, intimacy of topic, smiling, etc." (p. 293).

Interactivity. It refers to "The active communication and learning activities in which CMC users engage and the communication styles they use, such as response time, task types, topics, and size of groups" (Tu, 2002a, p. 2).

Interaction. According to Gunawardena, Lowe, Anderson (1998), "interaction is the process through which negotiation of meaning and co-creation of knowledge occurs in a constructivist learning environment" (p. 4).

Online Communication. It refers to "the attributes of the language used online and the applications of online language, such as attributes of CMC, computer literacy skills, online immediacy, and online language skills" (Tu, 2002b, p. 296).

Online Learning Communities. According to Hung et al. (2015) "Online learning [communities] could be seen as communities that are established in a virtual [environment] to achieve the goal of enhancing learning processes, experiences, and outcomes" (p. 232).

Online Paralanguage. It refers to "the use of manner of speaking to communicate particular meanings, such as capitalization, acronym, quotation, coloration, font, font size, "I agree," abbreviation, exclamation, slang, and colloquialism, etc." (Tu, 2002a, p. 2).

Privacy. Lowry, Cao, and Everard defined privacy as "the desire to control others' access to and use of personal information" (p. 168).

Social context. It is "constructed from the characteristics of CMC users and their feelings about the CMC environment regarding another intelligent being" (Tu & Yen, 2006, p. 84).

Social Presence. Yen and Tu' (2008) definition of social presence will be used in this study, who defined it as "the degree of perception (online communication), feeling (social context), reaction (interactivity), and trustworthiness (privacy) of being connected by CMC to another intellectual entity through electronic media" (pp. 306-307).

Summary

This study aims to examine the relationship between gender (IV) and social presence (DV) in hybrid learning environments in the Saudi Arabian context. Chapter one included an overview of the problem statement, the independent (gender) and dependent (social presence) variables of the study, the significance of the study, the research questions, hypotheses, and definitions of key terms in the study. This study is mainly guided by the theoretical framework of the social presence of Tu and McIsaac's (2002) conceptual framework of social presence as well as (Tu & Yen, 2006; Yen & Tu, 2008) studies.

CHAPTER II

LITERATURE REVIEW

Theoretical Background of Interaction in Distance Learning

Overview

As long ago as 1377, Ibn Khaldun, who was the founder of sociology, said in his famous book (Muqaddimah) that people are civil or social by nature and tend to live together in a community (2004, p. 137). Humanistic psychologists concur that "A person does not live alone. People are social by nature, and their interpersonal interactions are a part of their development" (Stewart, 2005, p. 229). This point of view that part of individuals' cognitive growth is based on their communication and working with others in a community is also true in the educational context (Vygotsky, 1978).

Ormrod (2008) corresponds that "human beings are, by nature, very social creatures, and a great deal of their learning depends on the people around them" (p. 428). Likewise, Denny (2009) states, "Education is all about communication..." (p. 7). There is no possibility for collaboration or a chance for learning from others without social interaction (Gunawardena, Lowe, Anderson, 1997; Kreijns et al., 2003). Therefore, building a community of learning and enhancing social interaction among students is fundamental and valued, especially, in online higher education programs (Garrison & Cleveland-Innes, 2005; Gunawardena & McIsaac, 2004; Hung, 2004; Hung et al., 2015; Wang, Chen, & Anderson, 2014;).

That is because the main goal for higher education, whether in face-to-face, online, or in blended learning environments, is to enhance students' higher-order learning outcomes (Garrison

& Cleveland-Innes, 2005; Garrison, 2009; Huba & Freed, 2000). This goal can be accomplished by fostering interaction between students within comfortable, collaborative community learning environments (Akyol, Garrison, & Ozden, 2009; Anderson, 2008; Garrison, 2009; LaPointe & Gunawardena, 2004; Swan, 2002). For instance, Cleveland-Innes and Emes (2005) found that peer-to-peer interaction in higher education was correlated to social integration and deep learning approach, which influenced students' learning outcomes. Likewise, Garrison and Cleveland-Innes (2005) revealed that social interaction is necessary to foster interpersonal relationships, deep and meaningful learning, and a comfortable social climate.

Also, interaction allows students to assist each other through sharing and exchanging information, different backgrounds, experiences, ideas, and opinions. Thus, interaction aids them to reduce their anxieties, fears, and feeling of loneliness as well as develop their communication skills, relationships, group cohesion, motivation for learning, and personal and occupational success (Anderson, 2003; Cleveland-Innes & Garrison, 2010; Hung et al., 2015). Furthermore, social interaction is necessary to develop a sense of community (Garrison, 2007; Misanchuk & Anderson, 2001; Rovai, 2002; Tu & Yen, 2006), regulate the dynamics and the interdependency components of community such as relationship, trust, and support (Hung, 2004; Hung et al., 2015), and promote the sense of competence in online learning (Cleveland-Innes, Garrison, & Kinsel, 2007).

According to several researchers, learning activities in the 21st century emphasize social negotiation, group discussion, knowledge construction, and learner-centered learning approach via establishing collaborative learning communities that mediate through synchronous and asynchronous communication technologies such as computers, emails, bulletin boards, and Web 2.0 tools (Anderson & Dron, 2012; Harasim, 2017; Gunawardena & McIsaac, 2004; Reiser & Dempsey, 2012; Wang et al., 2014). Therefore, the contemporary view of learning stresses on

social constructivist andragogy, which emphasizes the trend that learners benefit from interpersonal interaction and collaboration with their peers in a community of learning rather than an individual cognitive learning process, in which a learner assimilates the information in isolation (Benbunan-Fich & Arbaugh, 2006; Garrison, 2003, 2017; Hall, 2007; Kehrwald, 2008; Merriam & Bierema, 2013). Within the next few paragraphs of this section, it is important to briefly explain the theory of constructivism and some of its related concepts, which are social constructivism and collaborative communities of learning in both face-to-face and online setting, to clarify the relationship between these concepts and the theory of social presence.

Constructivism

It is a learning paradigm that posits "the most effective learning occurs when people actively derive meaning from their experiences and the context in which they take place" (Richey, Klein, & Tracey, 2011, p. 129). In other words, instead of passively receiving the information from the instructor, learners construct knowledge either individually by their interpretations of the experiences (cognitive constructivism) and socially through their interactions with other peers in a community or an authentic collaborative learning context/environment (social constructivism) (Driscoll, 2005; Ertmer & Newby, 2013; Hall, 2007; Harasim, 2017; Garrison, 2013; Gunawardena et al., 1998). In other words, the constructivist view of learning moves away from an instructor-centered approach to a learner-centered approach (Driscoll, 2005; Hall, 2007; Ormrod, 2008; Tu & Corry, 2002b). However, the role of a teacher is not ignored in constructivism. The teacher is viewed as a facilitator who coaches, encourages, and assists students in building on their knowledge (Harasim, 2017; Seifert & Sutton, 2009). Constructivism falls into two major orientations: cognitive constructivism, also known as individual or psychological constructivism, and social constructivism, which is the focus here (Gunawardena et al., 1998; Richey et al., 2011; Seifert & Sutton, 2009).

Social constructivism. The term social constructivism is used to differentiate it from cognitive constructivism, which stresses on the construction of knowledge that takes place at the social level or interactions with others rather than personal level of knowledge creation (Gunawardena et al., 1998). Simply put, social constructivism can be described as collaborative construction (Garrison, 2013). Despite that many social learning theorists (e.g., Albert Bandura; Jean Piaget; Jerome Bruner; John Dewey) asserted on the importance of interaction with peers or environment, social constructivism was founded by the Soviet psychologist Lev Vygotsky (Driscoll, 2005; Garrison, 2013; Wells, 2000). Vygotsky (1978) emphasized the importance of social and cultural factors in human cognitive development more than of biological factors. He postulated that learning within the sociocultural contexts leads to cognitive development. In other words, learning stimulates maturation; thus, maturation is a product of learning (Vygotsky, 1978). According to Vygotsky (1978), "every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological"; p. 57).

Vygotsky (1986) posited that "the only good kind of instruction is that which marches ahead of development and leads it…" (p. 188). He assumed that children could go beyond their abilities or expand their cognitive developments to an advanced level if they get involved in a collaboration activity with a person (e.g., teacher, peer, parent) who is more knowledgeable than them (Ormrod, 2008; Richey et al. 2011; Seifert & Sutton, 2009; Vygotsky, 1986; Wells, 2000). Therefore, Vygotsky came up with what he called the zone of proximal development (ZPD), which is similar to scaffolded learning that was later suggested by the psychologist Bruner (Seifert & Sutton, 2009). Vygotsky (1978) defined the ZPD concept as "the distance between the actual developmental level as [determined] by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in

collaboration with more capable peers" (p. 86). Put differently, ZPD is the difference between what the child can do with assistance (scaffolding) today and what he can do independently tomorrow (Vygotsky, 1986). However, the aid should be removed progressively until the learner becomes an independent professional who can handle the learning task alone (Driscoll, 2005; Harasim, 2017; Seifert & Sutton, 2009).

Teaching students what they can do alone is useless because they cannot benefit from their zone of proximal development (Vygotsky, 1986). Thus, ZPD is a great instructional strategy for those who learn new skills, strengthen their weaknesses, or need help and support (Driscoll, 2005; Harasim, 2017; Seifert & Sutton, 2009; Vygotsky, 1986). ZPD also helps learners to gain higher-order thinking skills such as reasoning, problem-solving, and metacognition. ZPD enhances learners' cognitive development because it occurs in a challenging learning task rather than an easy one (Ormrod, 2008). In a nutshell, learners' higher psychological/mental processes can be promoted through interactions and collaborations with other peers within a sociocultural learning context. Therefore, learning experience in a Vygotskian social constructivist view is embedded in collaborative learning communities, which means that learners are connected and not isolated from each other (Driscoll, 2005; Garrison, 2009; 2013; Misanchuk & Anderson, 2001; Vygotsky, 1978; Wells, 2000).

Collaborative communities of learning. It can be deduced from Vygotsky's social constructivist principles that the current classroom should not be viewed just as a collection of students. Still, instead a collaborative community of learners, who all collaborate, solve problems, inquire, practice, engage together, and relate one to another in purposeful learning activities to achieve an academic and common goal of their community (Garrison, 2013; Gunawardena, 1995; Hung et al., 2015; Johnson & Johnson, 2008; Wells, 2000). In other words, the Vygotskian perspective of learning is viewed as a mutual or reciprocal relationship between

students and a society whose members they are (Wells, 2000). Therefore, a collaborative community of learning can be defined as "a general sense of connection, belonging, and comfort that develops over time among members of a group who share purpose or commitment to a common goal" (Conrad, 2005, p. 2).

A collaborative community of learning has become a widely used andragogical approach in higher education (Garrison, 2009) because of its benefits on students' learning in terms of promoting their skills of critical thinking and problem-solving, clarifying misconceptions, assessing peers' opinions, and strengthening interpersonal relationships (Gokhale, 1995; LaPointe & Gunawardena, 2004). Moreover, it allows students to share their viewpoints as well as recognize other students' perspectives (Driscoll, 2005; Ormrod; 2008; Richey et al., 2011; Smith & Ragan, 2005). In this way, learners complete each other in terms of using other fellows' strengths and comparing their ideas and solutions with their colleagues' opinions, which enable them to see the problem from a different point of view (Anderson, 2008; Reiser & Dempsey, 2012; Stacey, 2002).

Therefore, learners may reconsider their solutions and understandings of the problem as well as learning other useful techniques and strategies from their peers (Driscoll, 2005). To put it differently, a collaborative community of learning permits learners to use and distribute their cognitive efforts to solve learning tasks (Ormrod, 2008) that may not be accomplished by the learner alone (Wells, 2000). Thus, all learners have the responsibilities to contribute to finding solutions for problems as well as get involved in an intersubjective process or a shared meaning/understanding during their collaboration (Driscoll 2005; Garrison, 2013; Johnson & Johnson, 2008; Tu & Corry, 2002b; Wells, 2000). This means that all learners should share authority and power instead of using their influence over other fellows (Driscoll, 2005).

Online learning communities (OLC). Vygotsky's works — and some other prominent theorists such as Dewey, Piaget, and Bandura as well— have been borrowed and adopted by some theorists to be employed not only in traditional learning but in online learning settings as well. For instance, some andragogical approaches that have been used in distance education such as the theory of situated learning, the concept of communities of practice [CoP; Lave & Wenger, 1991], and the concept of CoI (Lipman, 1991; Garrison et al., 2000) built upon Vygotsky's ideas (Anderson, 2008; Garrison, Anderson & Archer, 2010; Garrison, 2013; Kehrwald, 2007; Wells, 2000). Tu and Corry (2002b) concur that "OLC is necessarily grounded in the social learning process" (p. 6). Thus, the social constructivist framework has been influenced by the instructional design of online learning environments in higher education. However, building and sustaining active collaborative learning communities in distance education has been an interest and concern for most online researchers since the emergence of the internet (Garrison, Anderson, & Archer, 2003; Gunawardena, 1995; Rovai, 2002; Stepich, & Ertmer, 2003).

The nature of online interaction is different than what it is in a face-to-face setting (Gunawardena, 1995). The challenge with distance education is that it is difficult for online instructors to know if their students are motivated, active, enthusiastic, or are frustrated, bored, confounded, and so forth (Misanchuk & Anderson, 2001). Similarly, it is also hard for online learners to collaborate efficiently with their classmates, such as setting a goal, building trust, and feeling a sense of community when they are geographically and physically separated from each other (Anderson, 2008). The physical separation causes unavoidable communication obstacles between distant learners because an OLC depends on computer-mediated communication (CMC), which suffers from lacking social context cues due to its text-based nature (Garrison, 2017; Gunawardena & McIsaac, 2004; Hung et al., 2015; Tu & Corry, 2002c). Thus, the CMC learning environment "can leave students feeling isolated, anonymous, and apprehensive about

participating" (Rourke & Anderson, 2002, p. 263). Likewise, Misanchuk and Anderson (2001) indicate that "since learners are now engaged with the computer instead of other learners, they lack a natural social outlet which can lead to feelings of isolation" (p. 3). Accordingly, online students feel that they are socially and psychologically isolated, which diminish their levels of social presence and feeling a sense of community (Hung et al., 2015; Rovai, 2002). If this occurs, online learners cannot take the cognitive advantages from collaboration with their fellows (e.g., encouragement, support, shared understanding and meaning, etc.; Johnson & Johnson, 2008).

To clarify this point more, face-to-face social interaction is considered by many researchers (e.g., Cleveland-Innes & Garrison, 2010; Daft, Lengel & Trevino, 1987; Garrison, 2017; Gunawardena, 1995; Hung, 2004; Hung et al., 2015; Kehrwald, 2008) as the ideal point of reference for all other communication media. That is because real-time response mode and social context cues (e.g., verbal and non-verbal) are innate within that setting. Hence, online researchers are concerned that these natural visual cues in face-to-face environments may not convert properly to online learning settings (Garrison et al., 2000; Lowenthal & Dunlap, 2014), which are necessary for promoting interpersonal collaborative activities (Garrison, 2017) as well as understand addressees' reactions, moods, attitudes, and feelings (Short et al., 1976). Consequently, if social interaction in traditional face-to-face environment is considered very critical in social constructivism, then, it is obviously more paramount in online learning environments where a part of interpersonal/relational non-verbal communication cues is inescapably absent, which in turn leads to the decrease of the level of social presence, and then to the collapse of the collaborative community (Gunawardena, 1995; Hung et al., 2015; Rovai, 2002; Tu & Corry, 2003a; Walther, 1992).

To recap, the physical presence of students in face-to-face learning environments naturally provides sufficient minimum levels of social presence. Thus, the absence of physical presence (physical separation) in an online learning setting will certainly lead to a lack of social presence (Tu & Yen, 2006). Correspondingly, the goal of online researchers, educators, and instructional designers are to maximize the learning experiences in online environments to be similar to those in face-to-face settings (Schlosser & Anderson, 1994). This goal can be accomplished by overcoming the drawbacks of online learning, such as the feeling of isolation, lack of motivation, low quality of interaction, and decreased sense of community among online students. To do so, online educators must strengthen socioemotional/interpersonal communication, sense of connection, and relational information between distant learners by increasing their levels of social presence (Carabajal, LaPointe, & Gunawardena, 2003; Johnson & Johnson, 2008; Jolivette, 2006; Kehrwald, 2010a; Rourke et al., 1999; Rovai, 2002, 2007; Swan, 2002; Tu & Corry, 2003a).

The role of social presence concept in OLC. It is vital for online instructors not to assume that their distant students are naturally able to develop a sense of community just by letting them communicate with each other. Feeling a sense of community among online learners is not likely to take place unless constant and efficient care is offered by distant educators to increase their students' sense of social presence (Rovai, 2002). In other words, it is dangerous for online facilitators to presume that their students already have sufficient degrees of social presence just because they are in the online learning environment (Yen & Tu, 2008). Garrison (2007) agrees that although active communication is definitely crucial in online learning, it is not enough by itself to support the educational goals of the community.

To support social presence and a sense of community, online faculty members should emphasize more the quality of the interaction rather than focusing only on the quantity of

interaction (Kehrwald, 2010b; Rovai, 2002). Online learners may frequently participate and send a massive number of messages in the discussion forums while they feel lonely and isolated from other learners (Reio & Crim, 2006; Tu & McIsaac, 2002). Garrison and Cleveland-Innes (2005) point out that the number of posted messages does not guarantee that students are cognitively engaged, it is the quality of interaction that reinforces and sustains students' understanding and meaningful learning. Indeed, the focus only on the frequency of participation may lead to conflict between students, such as the use of unfriendly language (e.g., flaming) or the involvement in competition instead of collaboration (Woods & Baker, 2004). Therefore, online instructors should emphasize both the quantity and the quality of social interaction to increase the degrees of social presence and the sense of community among their distant learners (Kehrwald, 2010b; Rovai, 2002;).

Social presence plays a central role in distance education. According to Tu (2000a), "social learning requires cognitive and environmental determinants, social presence is required to enhance and foster online social interaction, a major vehicle of social learning" (p. 1). It is also considered as a major component of OLC (Garrison et al., 2000; 2010; Rovai, 2002; Tu, 2000a). Likewise, Garrison (2017) argues that "it is inconceivable to think that one could create a community without some degree of social presence" (p. 37). Garrison et al. (2000; 2010) propose a CoI model, which represents the assumption that a successful learning experience in higher education consists of the interactions between three overlapped presences: learner-learner interaction (social presence), learner-instructor interaction (teaching presence), and learner-content interaction (cognitive presence). The importance of social presence in the CoI model emerges from its role that functions as a mediating variable or a connection between teaching and cognitive presences (Garrison, Cleveland-Innes, & Fung, 2010; Garrison, 2013).

Online instructors (teaching presence) are responsible for assisting their students' learning (cognitive presence) by establishing social presence first (Aragon, 2003; Gunawardena, 1995; Kehrwald, 2008; Rourke et al., 1999; Stacey, 2002). To do so, they should first facilitate (e.g., direct, manage, guide, etc.) and design a purposeful, supportive, secure, and respectful environment where students can comfortably and safely discourse, criticize, collaborate, express thoughts and emotions, and build interpersonal relationship and trust with their peers, which generate adequate levels of social presence (Anderson, 2008; Garrison et al., 2000; Rourke et al., 1999). When this occurs, students can easily construct knowledge and meaning as well as develop and maintain higher-order thinking skills and metacognition (e.g., critical thinking, problem solving, decision making, etc.), which indicates that cognitive presence is engendered (Akyol & Garrison, 2011a; Garrison et al., 2000; Garrison, 2007; 2013; Garrison & Akyol, 2015; Rourke et al., 1999; Wang et al., 2014). Therefore, social presence is an antecedent component for the creation of cognitive presence (construct knowledge) and the sense of community (Garrison, 2006; 2017; Garrison & Arbaugh, 2007; Garrison & Cleveland-Innes, 2005; Tu & Corry, 2001).

Based on these above discussions, it can be concluded that social presence is a pivotal variable that must be fostered in OLC due to its necessity to support and regulate the quality of social interaction (Rovai, 2002; 2007; Tu, 2000a; Tu & McIsaac, 2002), collaboration group and teamwork learning activities (Carabajal et al., 2003; So & Brush, 2008), and socio-emotional communication (Carabajal et al., 2003; Gunawardena & McIsaac, 2004; Kehrwald, 2008; Tu, 2001), in order to accomplish the educational goals of OLC as well as create a successful educational experience in distance education (Anderson, 2008; Garrison et al., 2000). As indicated earlier, it is impossible to imagine that students can take the advantages of collaborative learning while they are in isolation (Johnson & Johnson, 2008). If students do not

feel socially and psychologically connected with their fellows or a part of group, then, they cannot comfortably collaborate or express their ideas, viewpoints, feelings, and get support from each other to achieve the educational purpose of a community (Akyol & Garrison, 2008, Akyol et al., 2009; Anderson, 2008; Cleveland-Innes & Garrison, 2010; Jolivette, 2006). In short, online students need first to establish social presence (e.g., developing positive interpersonal relationship, building trust, knowing each other, etc.) before they can get involved with their peers to any learning activities such as meaningful social interaction, forming groups, and collaboration (Gunawardena et al., 2001; Kreijns et al., 2003). Therefore, it can be said that the concept of social presence is the heart of social constructivism because the key social constructivist principle — collaborative learning community — cannot be accomplished without it. For that reason, the concept of social presence has become a popular theory in the studies of distance education (Gunawardena, 1995; Gunawardena & McIsaac, 2004; Lowenthal, 2010).

This section aimed to touch upon and highlight the most significant properties of social constructivist concepts, which are a collaborative learning community, interaction, and social presence, and to determine if social presence is within social constructivist learning environments. The next section will provide more specific information about the theory of social presence in terms of its conceptualization, history, and fundamental constructs/variables.

Theoretical Perspective of Social Presence

Definitions of Social Presence

Previous researchers have endeavored to define and conceptualize the notion of social presence; however, they could not come up with a unanimous definition of this phenomenon (Jolivette, 2006; Kehrwald, 2008; McKerlich, Riis, Anderson, & Eastman, 2011; Kyei-Blankson, Ntuli, & Donnelly, 2016; Lowenthal & Snelson, 2017; Tu, 2002c). Some reasons behind the lack of a uniform conceptualization for social presence theory include the complexity and the

ambiguity of the concept (Biocca, Harms, & Burgoon, 2003; Lowenthal, 2010; Oztok & Kehrwald, 2017; Tu, 2000a; 2002c), multitude of disciplines related to the theory (Kehrwald & Oztok, 2016), and the ongoing evolution of computer-mediated communication technologies (Biocca et al., 2003). For instance, Lowenthal (2010) said that "it is often hard to distinguish between whether someone is talking about social interaction, immediacy, intimacy, emotion, and/or connectedness when they talk about social presence" (p. 125). Tu and McIssac (2002) admitted after the results of their study have been revealed that the concept of social presence is more complicated than what they thought. Nevertheless, some of the earlier definitions of social presence intersect at certain significant aspects even though the slight differences existed in their definitions, and the varied terms were used for their constructs or variables as well. Therefore, this section aims to briefly review the historical development of the conceptualization of the social presence theory for a better understanding of this phenomenon.

The developmental history of the social presence theory. The conceptualizations of social presence have been changing over the last few decades (Lowenthal & Snelson, 2017). According to Lowenthal (2010), the historical development of the social presence theory falls into three major stages. The first era was about the series of research that stressed the use of telecommunication media, which led to the establishment of social presence as a theory. The second era was about the appearance of what he called "competing theories of social presence" (p. 9) that include theories such as cuelessness, media richness, and social information processing theories, which were focused on CMC. The final era, which is the most important, was about online learning. The following sections will discuss these three eras proposed by Lowenthal (2010), which will be renamed by the researcher of this study as the foundation of social presence theory, prominent theories and research of CMC, and, lastly, online learning.

The first era: The foundation of social presence theory. Social presence is a social psychology theory that was introduced by the communication theorists John Short and his colleagues Ederyn Williams and Bruce Christie in 1976. According to Short et al. (1976), two social psychology concepts are primarily related to social presence: *intimacy* (Argyle & Dean 1965) and *immediacy* (Mehrabian, 1967; Wiener & Mehrabian, 1968). In other words, these two concepts, which were related to face-to-face environments (Tu, 2002a), were used in the creation of social presence to address the communication issues in telecommunications media such as facsimile machines, closed-circuit television, and audio-teleconferencing (Rourke et al., 1999, Short et al., 1976, Walther, 1992). To understand the background and nature of social presence, it is essential first to briefly explain the meaning of these two critical concepts through their founders' lens.

The concept of intimacy refers to behaviors such as eye contact (EC), physical proximity, the nature of the topic of conversation (e.g., personal/impersonal), amount of smiling, and so on (Argyle & Dean, 1965). To enhance the level of intimacy, these behaviors must take place within the acceptable degree that is determined by factors such as gender (same-gender/opposite-gender interactions), the cultural norms, the nature of the relationship between communicators, and the type of task (e.g., cooperation or competition). Therefore, the preferred degree of intimacy may not be the same between the interactants due to the factors mentioned above (Argyle & Dean, 1965). If intimacy behavior exceeds the desired amount of intimacy, anxiety occurs. When this happens, communicators adjust their behaviors, either maximize or minimize it, to attain a comfortable degree of intimacy (Argyle & Dean, 1965). For example, if someone talks closer than the acceptable cultural norm, then another person tends to get a step back or diminish his or her eye contact to obtain the optimal level of intimacy (Argyle & Dean, 1965; Cui et al., 2012). The process of adapting intimacy behaviors is called "*equilibrium*," which is a theory that means

"a certain degree of intimacy for any pair of people" (Argyle & Dean, 1965, p. 293). In a nutshell, during the process of equilibrium, "communicators counterbalance each other in a subconscious attempt to preserve the status quo" (Tu & Yen, 2006, p. 82).

On the other hand, according to Mehrabian (1969b), the concept of immediacy (it is also known as proxemics) was introduced by Mehrabian (1967) and Wiener and Mehrabian (1968). It refers to "the extent to which communication behaviors enhance closeness to and nonverbal interaction with another" (Mehrabian, 1969a, p. 203). Mehrabian (1969a) indicates that the communicators' attitudes — the nonverbal immediacy cues in a face-to-face setting — include: "touching, distance, forward lean, eye contact, and body orientation" (p. 203). If the communicators want to increase their degree of immediacy, they may touch each other in some way, decrease the physical distance, adjust the direction of their faces and bodies, increase the duration of eye contact, and vice versa (Mehrabian, 1969a). These nonverbal immediacy cues are essential in communicators' interpersonal interactions, which can be used to gather information about the other interactants' attitudes, emotions, and characteristics as well (Mehrabian, 1969b).

In short, immediacy is the psychological distance that communicators set between themselves and other addressees. In contrast, intimacy is the social/physical distance that is represented in verbal and non-verbal social cues such as addressing others by their names, humor, eye contact, smiling, the topic of conversation, and so forth (Argyle & Dean, 1965; Gunawardena, 1995; Hung et al., 2015; Short et al., 1976; Tu, 2002a). These immediacy and intimacy behaviors are positively reflected in people' interactions and their interpersonal relationships. In other words, constructing interpersonal relationships among communicators in an online setting relies on their aptitudes to engender social presence (Johnson & Johnson, 2008).

Based on immediacy and intimacy concepts, Short et al. (1976) also stressed the importance of visual cues on communicators' interpersonal perceptions in telecommunication

settings. They postulated that nonverbal cues play a critical role in establishing and maintaining interpersonal relationships among communicators. Thus, the absence of these visual signals in a medium may negatively affect the quality of communication in terms of refraining communicators from expressing their presence and feelings as well as providing them a little information and feedback about other recipients' emotions, rapports, attitudes, moods, personalities, reactions, and so on. Garrison (2017) explains that Short and his partners used the term "social presence" to point out that interactants via mediated communication mode suffer to represent themselves that they are socially and psychologically present. Therefore, Short et al. (1976) introduced their theory of social presence and defined it as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships…" (p. 65). Short et al. (1976) explained social presence as "the degree to which a medium is perceived as conveying the presence of the communicating participants" (Rice, 1993, p. 452). From this perspective, Short et al. (1976) conceptualized social presence as "…a quality of the medium itself" (p. 65).

To conclude this section, the level of social presence varies among mediums, because of the differences in their characteristics (e.g., affordability, fidelity, capacity, richness, bandwidth, etc.) in conveying verbal and non-verbal information from one communicator to another, which in turn affect the way people perceive their interpersonal interactions (Gunawardena, 1995; Lowenthal & Snelson, 2017; Rice, 1993; Shin, 2002; Short et al., 1976; Tu & Yen, 2006; Walther, 1992). Short et al. (1976) suggested that the social presence of the medium should be considered as one factor that influences the degree of intimacy and immediacy. For instance, videoconferencing should contribute to a higher level of intimacy than audio-conferencing systems. A face-to-face medium can transmit more abundant information than the telephone, which indicates more degree of immediacy. Therefore, Short et al. (1976) claimed that a face-to-

face medium was regarded to be the highest sociable medium, followed by the video medium, and the lowest medium was audio. That is because the immediacy and intimacy cues are naturally inherent in a face-to-face setting while they are reliant on the attributes of the medium, which may sometime provide delayed, inadequate, or missing information (Gunawardena, 1995; Hung et al., 2015).

The second era: prominent theories and research of CMC. After the creation of the social presence theory, other researchers (e.g., Daft & Lengel, 1986; Daft et al., 1987; Lengel & Daft, 1984; Sproull & Kiesler, 1986; Walther 1992, 1995; 1996) also stressed the importance of non-verbal cues in CMC environments. Lengel and Daft (1984), for instance, concurred with Short et al. (1976) that media vary in their richness due to their diff erences in capacity to provide various cues (e.g., visual and audio), language variety (e.g., symbols and natural), personal focus (e.g., feelings and emotions), and instant feedback (Daft & Lengel, 1986; Daft et al., 1987). Later, Daft and Lengel (1986) introduced their theory of media richness, which posited that media is considered precious when it can "change understanding within a time interval" (p. 560). In other words, information richness is determined by its bandwidth capacity to illuminate the equivocation of messages, overcome disagreements among communicators, enable understanding in an appropriate time frame, and vice versa. (Daft & Lengel, 1986).

Based upon the above criteria of the media richness theory, media can be classified in terms of their richness as: face-to-face is the most precious communication medium, followed by the telephone, addressed/personal documents (e.g., memos, letters, notes, etc.), and unaddressed/impersonal documents (e.g., bulletins, standard reports, fliers, etc.) which was ranked as the least rich medium (Daft & Lengel, 1986; Daft et al., 1987). However, Daft et al. (1987) argued that the selection of media should not be based only on their richness, but also on the degree of ambiguity of information and the communication task. For example, rich media,

such as face-to-face, is ideal with the equivocality and complicated unstructured messages while less-rich media, such as written documents, are suitable for routine, standard, and unequivocal information (Daft and Lengel, 1986; Daft et al., 1987; Lengel & Daft, 1984).

On the other hand, Short et al. (1976) and Sproull and Kiesler (1986) hypothesized that social context is a critical factor in influencing the quality of interaction between communicators. They affirmed that senders and receivers perceive the social context via static cues, which are represented in the exterior appearance of individuals such as a clock, table, office, and so on, and dynamic cues that naturally occur during communication like body language. When communicators can perceive these social context cues, they can simultaneously develop cognitive, interpretation, and emotion behaviors. Sproull and Kiesler (1986) agreed with the previous researchers (e.g., Daft & Lengel, 1986; Daft et al., 1987; Lengel & Daft, 1984; Short., 1976) that social context cues are lower in CMC (e.g., email) than face-to-face settings, which impact communication in terms of offering information with a high degree of self-absorption, more depersonalized or uninhabited behaviors (e.g., flaming, sending bad news, disregarding social norms, etc.), and high amount of new information in messages.

Walther (1992) reviewed the previous theories of social presence (Short et al., 1976), media richness (Daft & Lengel, 1986), and the hypothesis of the absence of social context cues (Sproull & Kiesler, 1986) to address relational issues in CMC setting. These theories and hypotheses represent what Culnan and Markus (1987) called "cues-filtered-out" point of view because they emphasize the assumption that non-verbal cues suffer in CMC communication system compared to traditional face-to-face environments, which results in declining the level of social presence as well as impacting communicators' attitudes toward the communication setting and their understanding of the content of the messages (Walther, 1992). From this perspective, relational quality of CMC is perceived as an impersonal, a less-socioemotional, and a task-

oriented communication system (Rice & Love, 1987). Walther (1992) introduced his theory of social information processing (SIP) and criticized the cues-filtered-out perspective because it is a structural orientation that stresses primarily on the bandwidth of the medium. This suggests that "…such effects are inherent and constant whenever people communicate using computers" (Walther, 1995, p. 188).

In other words, although Walther (1992) agreed on the importance of non-verbal cues in relational qualities, he believed that CMC users can develop interpersonal relationships by adapting or investing the power of verbal cues to compensate for the deficiency of nonverbal cues in a CMC medium. Other researchers (e.g., Gunawardena, 1995; Swan, 2002) corresponded with Walther (1992) that interactants can employ the equilibrium principle stated earlier to overcome the lack of nonverbal immediacy cues (e.g., head-nod for agreement) by using more verbal immediacy cues (e.g., I agree with you) to facilitate interaction among their fellow members.

Also, Walther (1992) argued that the cues-filtered-out perspective disregards other important functional and contextual communication factors such as the amount of information exchanged, the affiliation to the place as well as the time needed for tasks such as exchanging information, relationship development, processing information (e.g., encoding and decoding), and so forth. Therefore, Walther (1992) concluded that the nature of communication in CMC requires a longer time for communicators to accomplish cognitive and environmental processes than face-to-face settings. Once enough time is given for CMC users, the relational qualities will be equal to those in a face-to-face context. Moreover, Walther (1996) stated that CMC communication — under certain conditions that are related to the characteristics of sender, receiver, channel, and feedback elements — can be even more hyperpersonal than face-to-face communication.

To summarize this era, it seems that these three theories and hypotheses were conscious of concepts such as social presence, immediacy, intimacy, equilibrium although media richness theory (Daft & Lengel, 1986) and lack of social context cues hypothesis (Sproull & Kiesler, 1986) did not mention them per se. For instance, (Daft & Lengel, 1986; Daft, Lengel & Trevino, 1987) showed a similar point of view to (Short et al. 1976) concerning the richness and the selection of media. All of them indicated that face-to-face is the richest medium, while audio or written documents mediums are the leanest. Also, they both declared that the richness, the type of interaction and information, and the purpose of communication influence the selection of the media.

Likewise, Sproull and Kiesler (1986) appear to agree with the equilibrium concept when they stated, "people adjust the target, the tone and verbal content of their communications in response to their definition and interpretation of the situation" (p. 1495). Also, as discussed earlier, these three theories and hypotheses agreed with social presence in terms of the importance of non-verbal cues in creating social relationships. Nevertheless, Walther (1992) posited that people could accommodate verbal cues to recompense the absence of non-verbal cues; thus, CMC, in particular circumstances, can be equivalent or even more personal than face-to-face. Lastly, most research of this era, including these three theories and hypotheses, focuses fundamentally on CMC communication in business settings. Therefore, the next era shifts the focus of research from organizational communication to the online learning contexts (Lowenthal, 2010).

The third era: online learning. Three reasons contributed to the appearance of this era. First, since the beginning of the nineties of the last century, a debate has grown up between educators and researchers (e.g., the famous debate between Richard Clark and Robert Kozma in 1991-1994) on whether the medium itself has an effect on students learning, or the

message/content inside the medium (Anderson, 2007; Becker, 2010; Simonson et al., 2012). More specifically, concerning research on social presence, Walther (1992) started questioning that it was not explicit in Short et al.' (1976) definition of social presence if the level of social presence is based on the quality of the medium or on the communicators' perceptions toward the medium.

For instance, Short et al. (1976) indicated clearly that they view social presence as "…a quality of the communications medium" (p. 65). However, they operationalized it by measuring users' attitudes regarding the medium (Walther, 1992). Further, Short et al.' (1976) stated that "it is important to know how the user perceives the medium, what his feelings are, and what his 'mental set' is" (p. 66). To put it briefly, at that time, the conceptualization of social presence that was proposed by Short et al. (1976) was not clear for communication researchers (e.g., Johansen, Vallee, & Spangler, 1988; Rafaeli, 1988; Walther, 1992), which led them to scrutinize factors other than the quality of the medium that may impact the degree of social presence (Shin, 2002).

Second, Gunawardena (1995) stated that the rapid development of technologies and the appearance of the internet stresses the need to understand CMC in the context of online learning environments. Third, some researchers (e.g., Tu, 2000; 2002c; Walther, 1992) argued that the social presence theory was not primarily developed for CMC setting, especially, for educational communication purposes. All of these three reasons led some prominent researchers (e.g., Gunawardena, 1995; Tu, 2000; 2002c) to reconceptualize the concept of social presence in terms of emphasizing how online students develop their interpersonal interactions, identities, and online communities instead of emphasizing the quality of medium itself (Lowenthal, 2010).

Gunawardena (1995), who was influenced by the work of Walther (1992), is considered by Swan, Richardson, Ice, Garrison, Cleveland-Innes, and Arbaugh (2008) and Lowenthal

(2012) as the first researcher who reconceptualized social presence in online learning environment as well as changed the focus from only the attributes of the medium to be more toward the CMC users' perceptions and behaviors within that medium. Gunawardena (1995) conducted two studies to examine if the social presence theory is based on the characteristics of the medium or communicators' attitudes toward the medium. She found that CMC users developed social presence by "projecting their identities and building online communities" (p. 163).

With her findings, she coincides with Walther's (1992) social information processing theory (SIP) that the skills and techniques that CMC users use to accommodate the absence of non-verbal cues in text-based environment affect interaction and social presence rather than the medium alone; thereby, social presence can be learned and trained among CMC users (Gunawardena, 1995). In other words, Gunawardena (1995) agrees with the argument of Walther (1992) that the relational, functional, and social/contextual aspects (e.g., skills and techniques of interaction used by communicators, interactivity, collaboration, etc.) should be taken into consideration and studied rather than concentrating only on the characteristics of medium itself. Therefore, Gunawardena (1995) defines social presence as "the degree to which a person is perceived as a 'real person' in mediated communication" (p. 151). Nevertheless, Gunawardena also values the features of the medium when she declared that social presence can also be viewed as "a factor of the medium, as well as that of the communicators and their presence in a sequence of interaction" (p. 151). Therefore, the concentration of instructors and instructional designers should be more on the skills or the design of interaction methods that online learners can learn to develop sufficient levels of social presence in text-based environments rather than focusing only on the quality of medium itself (Gunawardena, 1995; Gunawardena & McIsaac, 2004).

In the same way, several later researchers (e.g., Biocca et al., 2003; Cleveland-Innes & Garrison, 2010; Rourke et al., 1999; Swan et al., 2008; Tu, 2002b) support Gunawardena's (1995) definition of social presence in terms of the emphasis on individuals' perceptions and behaviors more than the medium. However, Kehrwald (2008) and Lowenthal and Snelson (2017) indicated that current definitions of social presence in online learning environments somewhat differ by focusing on some interpersonal qualities regarding communicators' aptitudes to: (1) perceive, be aware, or sense others as being real and there in a mediated learning environment (e.g., Gunawardena & Zittle, 1997; Oztok & Kehrwald, 2017; Zhao, 2003), (2) project themselves as being real and there by presenting their identities, feelings, personalities, emotions, interpersonal relationships, and so on (e.g., Garrison et al., 2000; Kehrwald & Oztok, 2016; Rourke et al., 1999), and (3) connect with others by exchanging behaviors, information, and emotions via an interactive online learning environment (e.g., Biocca & Harms, 2002; Swan et al., 2008; Tu, 2002b, see table 1 below).

Table 1. The Relational Aspects Among Definitions of Social Presence in Online Learning Era

The relational aspect	The definitions of social presence (examples)
Perceiving behaviors	• "The degree to which a person is perceived as a 'real person' in mediated communication" (Gunawardena & Zittle, 1997, p. 9). • "The subjective feeling of being with other salient social actors in a technologically mediated space" (Oztok & Kehrwald, 2017, p. 263). • "The sense of being together with others in a mediated— either remote or virtual— [environment]." (Zhao, 2003, p. 445).
Presenting behaviors	• "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop [interpersonal] relationships by way of projecting their individual personalities" (Garrison, 2009, p. 352). • "a form of subjective agency (Kehrwald, 2010) in which learners intentionally present themselves in particular ways" (Kehrwald & Oztok, 2016, p. 6). • "The ability of learners to project themselves socially and affectively into a community of inquiry" (Rourke et al., 1999, p. 50).

Exchanging behaviors "Connectedness"	• "subjective or intersubjective judgment of mutual accessibility of the other, such as mutual attention, mutual comprehension, shared emotional states, and interdependent behavior" (Biocca & Harms, 2002, p. 11). • "The degree to which learners feel socially and emotionally connected with others in an online environment" (Swan et al., 2008, p. 1). • "The degree of person-to-person awareness, which occurs in a mediated environment" (Tu, 2002b, p. 294).

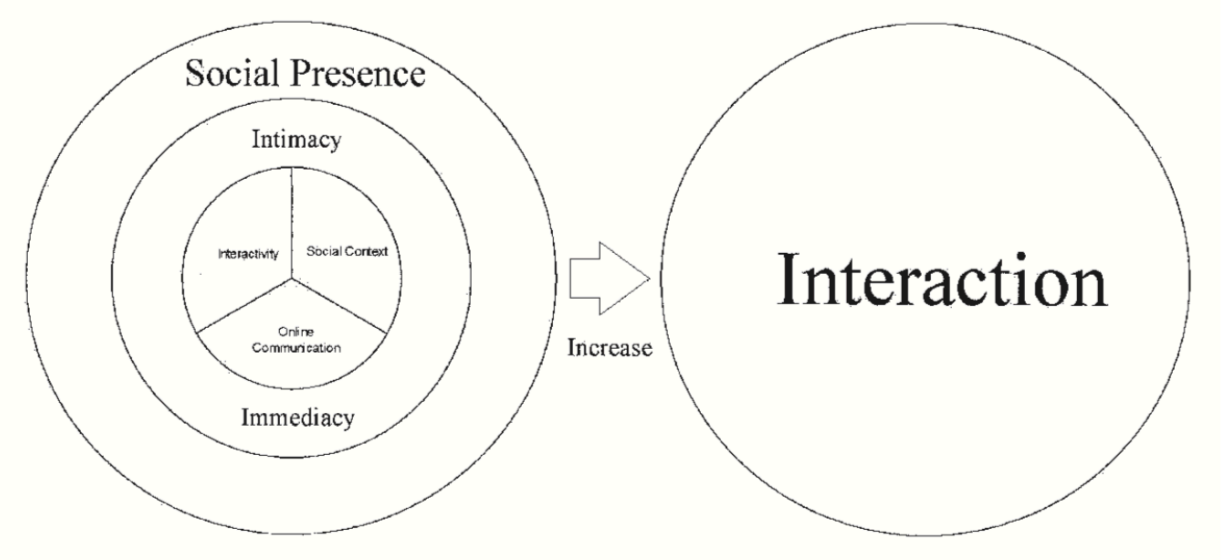
It is noticeable from the table above that social presence definitions are complicated and overlapping. Some of them emphasize multiple relational aspects (e.g., Garrison et al., 2000) while other definitions focus only on one interpersonal aspect (e.g., Gunawardena & Zittle, 1997). Regardless of the interpersonal aspects, which are mainly related to intimacy and immediacy behaviors, some definitions also highlight functional and contextual communication factors proposed by Walther (1992), which are the communication context such as community of inquiry (Garrison et al., 2000; Rourke et al., 1999), the medium of communication (Garrison et al., 2000; Gunawardena & Zittle, 1997; Oztok & Kehrwald, 2017), and reciprocal/mutual communication or connection (Biocca & Harms, 2002; Swan et al., 2008; Tu, 2002b).

Tu and McIsaac (2002) proposed a comprehensive definition that combines all the relational components as well as the functional and environmental communication issues previously mentioned, which is "the degree of feeling, perception, and reaction of being connected by CMC to another intellectual entity through a text-based encounter" (p. 140). Tu and Yen (2006) explained that based on this definition, social presence falls into three constructs: social context (e.g., feelings, relations, experiences, etc.), online communication, (e.g., perceptions, medium usage, written language skills, etc.), and interactivity (e.g., reaction or reflection, immediate feedback, active interaction/engagements, etc.). Tu and McIsaac (2002) justified that these three constructs are sub-components of the two essential elements of social

presence: intimacy and immediacy, which can be "expanded individually in the online environment" (p. 132; see Figure 2.1 below).

Figure 2.1

Social Presence and Interaction



**Permission of use obtained from Tu and McIsaac (2002)*

Later, (Tu & Yen, 2006; Yen & Tu, 2004; Yen & Tu, 2008) reverified these three dimensions of social presence. They found that four aspects of social presence emerged from the results, which are social context, online communication, interactivity, and privacy as a fourth dimension. Therefore, Yen and Tu (2008) reconceptualized the concept of social presence to be as "the degree of perception (online communication), feeling (social context), reaction (interactivity), and trustworthiness (privacy) of being connected by CMC to another intellectual entity through electronic media" (pp. 306-307). In a nutshell, the definition of social presence should not be limited to only the feelings and experiences of the users. Other action behaviors (e.g., reactions, active interaction, judgment, social relations, etc.) as well as the privacy factor should also be taken into consideration while studying the concept of social presence (Tu & Yen,

2006; Yen & Tu, 2008). This study is primarily guided by the theoretical framework of Tu and McIsaac (2002) study. Nevertheless, the researcher will slightly modify this theoretical framework to fit the results from previous studies (Tu & Yen, 2006; Yen & Tu, 2004; Yen & Tu, 2008). The following section will briefly explain the four constructs/variables of social presence, as predominantly suggested by the references mentioned above.

The Constructs of Social Presence

Social Context

Social context refers to "social feelings and experiences of CMC users toward the CMC environment and another intelligent being" (Yen & Tu, 2008, p. 299). In other words, the social context represents subjective perceptions of the CMC users toward their peers within an online learning community (Tu, 2001; Tu & Corry, 2002c; Tu, 2004). The essence of the social context is what Chih-Hsiung Tu called the "familiarity with recipients," which means intimacy and closeness among the CMC participants (Tu & Corry, 2002b; 2002c; Tu & McIsaac, 2002; Tu & Yen, 2006). According to Tu & Corry (2004), "…the feeling of human touch must arrive before any active interaction can occur" (p. 3). To put it more clearly, when online interactants have more intimacy or a better knowing of each other, they tend to get involved in more comfortable online interaction activities (e.g., exchanging views, feelings, emotions, etc.) as well as avoid uninhibited/competition behaviors such as hostility, conflict, and flaming (Kear et al., 2014; Tu & Corry, 2002c; Tu, 2004; Tu & Yen, 2006; Walther, Heide, Ramirez, Burgoon, & Pena, 2015). This dimension represents the contextual factor that was proposed by Walther (1992).

Many factors influence the social context to comprise positive social relationships, caring, trust, exchanging feeling and emotions, informal communication, personal conversation, sociable sense, and the sensitivity of the communication topics (Tu, 2002b; Tu & Corry, 2004; Tu & Yen, 2006; Yen & Tu, 2008). These social context factors play a critical role in the levels

of social presence and interaction among online users. To explain more, interpersonal relationships are a fundamental element in the social presence (Kehrwald, 2008; Short et al., 1976). For instance, CMC users are comfortably able to disagree with their peers' views when they have suitable social relationships with them rather than those who sound unfamiliar to them (Tu, 2001).

Also, several online communication researchers (e.g., Conrad, 2005; Cutler, 1995; Garrison, Cleveland-Innes, & Fung, 2010; Gunawardena et al., 2001; Rovai, 2002; Sproull & Kiesler, 1986) stress that it is vital for CMC users to trust each other in learning community context. That is because trust is a prerequisite for CMC interactants to safely share their thoughts, views, comments, personal information, to familiarize with others, and avoid misunderstanding (Anderson, 2008; Hung et al., 2015; Kear, 2010; Lowenthal & Dunlap, 2014; Tu & Corry, 2003b; Tu & Yen, 2006; Vaughan et al., 2013). However, building trust is a challenging task in the CMC environment that requires a long time to be established among online interactants due to the lack of social context cues (Anderson, 2008; Garrison & Arbaugh, 2007; Tu & Corry, 2002c). Thus, trust must be built early in the class to give CMC users time to interact with others through introductory activities such as sharing their personal biographies with others (Vaughan et al., 2013), answering questions model (Anderson, 2008), and self-introduction techniques (Tu & Yen, 2006). Also, CMC users need to avoid anonymity, which indicates mistrust and lack of confidence (Tu, 2004).

Another critical relationship mechanism (Kehrwald, 2008) is a caring and concerning attitude to other members of the group/community (Carabajal et al., 2003; Yen & Tu, 2004). According to Tu and McIsaac (2002) and Yen and Tu (2004), caring among CMC users is a critical factor that impacts social presence and online interaction. Also, caring helps instructors to judge their distant students' levels of intimacy among each other (Tu & Yen, 2006). Online

instructors can increase caring among their students by using techniques such as expressing personal concern (e.g., asking others about their worries), using appreciation statements (e.g., Thanks), and offering assistance and support more than just perusing help from others (Tu, 2004). Likewise, expressing and exchanging feelings and emotions is essential in human interaction (Tu, 2002a). Garrison et al. (2000) consider emotional expression as one of three major categories of social presence, which refers to the physical presence among distant learners such as closeness, warmth, and attraction. According to Daft et al. (1987), "A message will be [conveyed] more fully when personal feelings and emotions infuse the communication" (p. 358). Also, the lack of social context cues in virtual environments negatively impacts the communicators' abilities to express their feelings and emotions (Tu, 2001). When this occurs, some undesirable sequences may arise among CMC users, such as frustration, anxiety, misinterpretation, and lack of relationships (Tu, 2001; Yen & Tu, 2008).

Furthermore, as discussed earlier, CMC has been described by many online communication researchers as impersonal (task-oriented), antisocial (e.g., negative relationships, absence of participation, misapprehension, etc.), and unregulated due to low levels of social presence, which result from the lack of social context cues in text-based environment (Daft & Lengel, 1986; Kear, 2010; Short et al. 1976; Sproull & Kiesler, 1986; Tu, 2000a; Walther, 1992). When online students feel that the CMC context is impersonal, they may face some difficulty, such as feeling isolated, lacking participation, and dropping the class, or failure to complete it (Russo & Benson 2005). However, some researchers (Gunawardena, 1995; Walther, 1995; 1997) found that CMC moves over time from impersonal, at the beginning of the class, to more personal and social-oriented at the middle or the end of the class. Therefore, online instructors should provide a long-time frame for their students to interact with each other (Walther, 1997).

Another critical factor in the social context is building and promoting informal and casual relationships and communication (Tu & McIsaac, 2002). According to Akyol and Garrison (2008), "social presence may well have more influence in informal learning environments…" (p. 18). Also, Gokhale (1995) found that informal environments enhance interaction and dialogue. When students participate in formal discussions (e.g., bulletin board), they spend more time to organize their thoughts, especially if they are non-native speakers of the written language (Tu, 2001; Tu, 2002a). To build informal learning environments, online instructors must create a less formal CMC setting, which is "informal, casual and brief, like oral communication" (Tu, 2001, p. 56). To do so, online instructors can use some strategies such as creating a discussion café (Cleveland-Innes & Garrison, 2010; Tu & Corry, 2003b), using informal communication tools (e.g., email; Tu, 2002a), encouraging students to use informal statements (e.g., "Hi" instead of "Dear") (Tu, 2004; Tu & Corry, 2002c).

The final important factor in the social context is the nature of communication topic, which is described as one of the intimacy aspects as indicated earlier (Argyle & Dean, 1965; Sproull & Kiesler, 1986). Communicators prefer not to share sensitive, personal, or bad news or information (Sproull & Kiesler, 1986; Tu, 2000b). Also, Argyle and Dean (1965) found that "there is more [eye contact] when less personal topics are [discussed]…" (p. 290). To recap, social context factors are also overlapping (Tu & Yen, 2006) due to the complexity of the social presence concept (Biocca, Harms, & Burgoon, 2003; Lowenthal, 2010; Oztok & Kehrwald, 2017; Tu, 2000a; 2002c). For example, sharing personal information helps to build trust among CMC users and vice versa.

Online Communication

It is also sometimes known as technology communication (Tu & Corry, 2003a) or online community technology (Tu & Yen, 2006). It stresses two fundamental aspects: the language used

and the attributes of the CMC technology (Tu, 2002b; Tu & Corry, 2001). In other words, it emphasizes the communicators' abilities of expression and skills of using CMC technologies (Yen & Tu, 2008). Therefore, online communication can be defined as "the attributes of the language used online and the applications of online languages, such as attributes of CMC, computer literacy skills, online immediacy, and online language skills" (Tu, 2002b, p. 296). Kehrwald (2008) concurs that social presence can be viewed as "a quality of people in online environments conveyed through their use of language, media, and communications tools" (p. 99). To put it in a nutshell, online communication is about the CMC users' subjective perceptions of the CMC technologies in terms of their attributes (e.g., synchronous & asynchronous technologies) and usage (e.g., computer literacy skills) that allow interactants to be connected with others in virtual environments (Cui, et al., 2012; Tu & McIsaac, 2002; Tu & Yen, 2006; Yen & Tu, 2008).

The dimension of online communication represents that Short et al. (1976) described as social presence is the users' perceptions toward the quality of the medium (Tu & Yen, 2006). In other words, users have a high degree of social presence if they perceive that the CMC is capable of delivering their thoughts, opinions, views, and so forth (Tu, 2000a; Tu & Yen, 2006). Also, this dimension implies the functional factor that was suggested by Walther (1992) in his SIP theory because it focuses on the communicators' use of the language and the communication technologies. As mentioned previously, language is viewed by Vygotsky (1978; 1986) as a vital vehicle for the cognitive development of individuals. The social and cultural interaction in the online learning environment is primarily mediated and encoded through a written symbol language system (Driscoll 2005; Vygotsky, 1978; Wells, 2000). Thus, CMC users present themselves socially in bulletin forums by posting written messages (Kehrwald, 2010b). Also, the use and the attributes/capacities of the CMC system influence the degrees of social presence

(Carabajal et al., 2003; Cleveland-Innes & Garrison, 2010; Kear et al., 2014; Tu, 2002a). Tu (2002a) found that e-mail was perceived as the highest in the levels of social presence, then synchronous discussions, and lastly asynchronous discussions forums. Thus, online instructors need to select technologies that are suitable for their learners' preferences and needs (Gunawardena & McIsaac, 2004; Kear et al., 2014; Tu, 2000b; Tu, 2002a).

Online communication includes expressive, stimulated, meaningful and understandable language, computer literacy skills, and accessibility of the CMC system. As previously stated, the quality of online communication increases if learners can comfortably and safely express their thoughts, intentions, and immediacy behaviors to others (Anderson, 2008; Conrad, 1995; Garrison et al., 2000; Swan, 2002; Tu, 2002a). One of the advantages of CMC is that it gives users a feeling that they are hidden, which encourages them to express their ideas and thoughts (Tu, 2002b; Tu & Corry, 2003b). However, online instructors should take into consideration those students who came from a different cultural background and are not native (Tu, 2001). For instance, Chinese students often hesitate to express their points of view. Also, they prefer to communicate with people they already know, or they tend to be silent. Therefore, online instructors should guide, encourage, and give more time to non-native English speakers (Tu, 2001). Also, instructors should provide social communication etiquette to their students to determine the suitability and allowed expressions (Tu, 2002b).

CMC users can stimulate their online interactions, increase their social presence, and overcome the lack of social cues in a text-based environment by using symbols system of expression, which are paralanguage and emoticons (Daft, Lengel & Trevino, 1987; Gunawardena & Zittle, 1997; Stenbom, Hrastinski, & Cleveland-Innes, 2016; Tu & Yen, 2006). Paralanguage means "The use of manner of speaking to communicate particular meanings, such as capitalization, acronym, quotation, coloration, font, font size, "I agree," abbreviation,

exclamation, slang, and colloquialism, etc." (Tu, 2002a, p. 2). Also, emoticons are online communication tools referring to "facial expression surrogates, which correspond to symbolic, lexical, or graphical resources used in written communication to convey emotional expressions" (Aldunate & Gonzalez-Ibanez, 2017, p. 3). According to Tu and Yen (2006), paralanguage and emoticons ameliorate an online learning environment to be more informal, alive, warm, friendly, and sociable.

Nowadays, CMC users can use "Emoji", for the same purpose of emoticons, to convey feelings, emotions, and emphasis, increase understanding, and the comfort of the group (Doiron, 2018; Stenbom et al., 2016). Online instructors should keep in mind that culture differences impact the way of using paralanguage and emoticons. For instance, Chinese students do not use contractions, unlike Americans students. Therefore, instructors need to provide a guide for their students about the appropriate common paralanguage and emoticons that will be used in the class at the beginning of the semester (Tu, 2001). Also, unnecessary overuse may lead to low immediacy, misunderstanding, hypocrisy, and rudeness (Tu, 2002a).

Another critical online communication factor in text-based forms is that the language used must reflect the intended meaning (Tu & McIsaac, 2002). This can be challenging for students from a different cultural background, who may find it difficult to interpret other' students' messages. For instance, American students usually use acronym and contractions, which hinder Chinese students from understanding the meaning of the message (Tu, 2001). In contrast, Chinese students faced difficulty to express the deliberate meaning, which led other students to ignore their messages. This may result in frustration and withdrawing from participation. Also, red text color has a serious meaning (e.g., warning, correction, danger, etc.) for Chinese students than some other cultures (Tu, 2001). As indicated earlier, social presence is a mutual comprehension (Biocca & Harms, 2002; Tu & Yen, 2006). However, a high quality of

interaction can be a challenging task in text-based environments due to the low social context cues as well as students' typing is slower than their thinking (Gunawardena et al., 2001; Tu, 2002a; Tu & Corry, 2004). As a result, misunderstanding among communicators is more likely to occur (Anderson, 2008; Garrison et al., 2000; Kear, 2010). Therefore, students must use a common language (e.g., without jargon, shortened terms, such as CMC or OMG, regional words), so others can make sense of their peers' posts (Gunawardena et al., 2001; Tu & Corry, 2004). If the messages are not clear for the recipients, they should request a clarification of the intended meaning out of the messages (Kehrwald, 2007; Tu & Corry, 2004). Finally, CMC instructors should give students time for writing messages as well as encourage them to clarify ambiguous messages from other interactants (Tu, 2002a).

The access location of CMC is a critical factor that influences students' social presence (Stacey, 2002). According to Tu and McIssac (2002), when CMC users have access at home, they feel more privacy, acquaintance with their CMC technologies, comfortable time elasticity, and motivation for participation. Conversely, when CMC users gain access at public places (e.g., computer laboratory), they will face some issues that will affect their participation in-class activities such as lack of privacy, time-consuming issue, and anxiety to gain access to computers, unfamiliarity with the computers, and so forth (Tu, 2002a; Tu & McIssac, 2002). In other words, CMC technologies should always be accessible for users; thereby, they can participate at any time and everywhere (Lobry de Bruyn, 2004; Gunawardena and Zittle, 1997; Tu, 2000b).

Finally, CMC users must possess computer literacy skills (e.g., typing, reading, writing skills, etc.) to be able to communicate efficiently in synchronous discussion forums. Users with lack of keyboarding skills face difficulty to rival proficient typing skills users in real-time communication, which leads to anxiety, frustration, low frequency of participation, and declined levels of social presence (Anderson, 2008; Gunawardena et al., 2001; Jaffe, Lee, Huang, &

Oshagan, 1995; Li & Lee, 2016; Kehrwald, 2008; Mykota & Duncan, 2007; Tu, 2001; Tu & McIsaac, 2002). In contrast, one of the advantages of asynchronous discussion forums is that they allow more time for students with low typing skills or different cultural backgrounds to comfortably prepare and write high-quality messages (Garrison, 2003; Tu, 2002a; Tu & Yen, 2006; Walther, 1996). Online instructors should assess their students' computer literacy skills to select the most suitable CMC technologies for them (Tu & McIsaac, 2002). Also, students with low keyboarding skills should be trained, encouraged, and given sufficient time to respond to their peers (Li & Lee, 2016; Tu, 2004).

Interactivity

The dimension of interactivity refers to the "*behavioral reaction* [emphasis added] as an element of social presence. The potential for feedback from another [contributes] to the degree of salience of another person in the interaction" (Yen & Tu, 2008, p. 299). In other words, interactivity emphasizes the notion that the quality of interaction behaviors of communicators (e.g., reciprocal awareness, communication styles, collaborative activities, etc.) is a critical component that impacts social presence (Cutler, 1995; Gunawardena, 1995; Kim, Kwon, & Cho, 2011; Rourke et al., 1999; Tu & McIsaac, 2002; Tu & Yen, 2006) and online learning community (Rovai, 2002). Interactivity helps learners to connect with others, thus, building knowledge and meaning, to gain higher levels of learning (e.g., critical thinking) and social presence, and to increase course completion rate (Anderson, 2008; Jolivette, 2006; Ritter & Polnick 2008). To recap, the essence of interactivity refers to the reaction (Heeter, 1992) discussion and interaction (Cutler, 1995; Swan, 2002), collaboration, or the mutual interdependence between interactants (Rovai, 2002; Garrison, 2013).

The dimension of interactivity involves variables of pleasantness, responsive time, familiarity with the discussed topics, aggressiveness, messages overload, and communication

styles (Tu & Yen, 2006; Yen & Tu, 2008). As discussed earlier, the interaction is enjoyable if the CMC users sustain the optimal level of intimacy. If the communicators discuss personal topics, for instance, they may feel that the interaction is unpleasant. As a result, they increase physical proximity to adjust their level of intimacy, a process known as equilibrium (Argyle & Dean, 1965; Sproull & Kiesler, 1986; Tu, 2001). Therefore, in order for CMC users to experience pleasant and connected feelings during discussions with others, instructors should create a friendly, casual, personal, fearless, and warm learning environment by using strategies such as initiating conversation, greeting, praise, emoticons (Aragon, 2003; Cleveland-Innes & Garrison, 2010; Kehrwald, 2007; So & Brush, 2008; Tu, 2002a; Tu, 2004; Tung & Deng, 2007).

Another very crucial factor of interactivity that impacts social presence—and the process of communication and learning in general—is obtaining immediate feedback from other recipients (Daft et. al., 1987; Gagne, Wager, Golas, & Keller, 2005; Hall, 2007; Harasim, 2017; Tu & McIsaac, 2002; Walther, 1996). Feedback is an essential element for the receivers to gain clarification and a better understanding of the meaning of the message (Tu, 2000b). Also, high levels of social presence are produced when the interaction in synchronous communication mode is more interactive and responsive (Tu & Yen, 2006). This is why low degrees of social presence are more likely to occur in asynchronous communication environments due to the delayed response from the addresses of the messages to the senders (Tu & McIsaac, 2002). Delayed reflection/feedback may lead senders to believe that their messages are worthless, which reduces their perceptions of social presence (Tu & Yen, 2006).

However, asynchronous communication technologies provide more time for students to prepare their answers, which is a good option in higher-order thinking tasks (Garrison et al., 2000; Tu, 2000b). Tu (2004) suggested that CMC instructors should set feedback protocols for their students to follow. First, students should reply to the emails within a time frame between

one-two days on business days or two-three days on weekend days. Second, students should not hesitate to send a short notification if they have not received a response in accepted time. Third, a communicator, who will be out of contact for a while, should inform others by taking the benefit of "Vacation Automatic Notice" in email.

The familiarity with the conversation topics is also an important indicator of interactivity that affects social presence (Tu & McIsaac, 2002). The familiarity with discussion topics was found to be correlated with the number of posted messages, collaboration, and receiving feedback from others as well as replying to others' messages (LaPointe & Gunawardena, 2004). Students tend to participate more and get involved if they are more knowledgeable about the topics discussed. Contrarily, if students have no prior knowledge about the topics, they are more likely to withdraw from participation or being silent in the discussion forums (Tu & McIsaac, 2002; Tu & Yen, 2006). Also, sometimes, the communicators are familiar with the topics, however, they ignore to share it with others due to reasons such as sensitive, personal, confidential conversation topics, bad news, or the presence of a person with high social status (Argyle and Dean, 1965; Sproull and Kiesler, 1986; Tu & Yen, 2006). Therefore, CMC instructors should allow their students to choose the topics (Tu & McIsaac, 2002).

As discussed earlier, a safe learning environment should enable the learners to comfortably and freely express, discourse, and criticize others' points of views without worry about their aggressive reactions (Akyol & Garrison, 2011b; Gulati, 2004; Hill & Raven, 2000; Vaughan, Cleveland-Innes, & Garrison, 2013). However, excessive/uninhibited behaviors (e.g., aggressive, flaming, conflict, hostility, etc.) may sometime occur in CMC environments due to the lack of social context cues; especially if communicators are not familiar with each other, which negatively affect students' participation in the discussion forums (Kear et al., 2014; Rovai,

2007; Sproull & Kiesler, 1986; Tu, 2000b; Tu & Corry, 2002c; Walther, 1995; Walther et al., 2015).

Another critical indicator of interactivity that impacts students' interaction is the amount and the length of discussion messages (Tu, 2004; Tu & McIsaac, 2002). When the discussion forum messages are either too long or numerous, CMC users will encounter heavy reading load (Lobry de Bruyn, 2004; Tu, 2000b). When this happens, students can get lost, confused, overwhelmed, and frustrated, which prevents them from following up on the discussion forum conversations. As a result, students become silent and disabled observers instead of being active contributors who reflect affectively on their peers' messages, which may reduce their perceptions levels of social presence (Lobry de Bruyn, 2004; Tu, 2001; Tu, 2002a; Tu & McIsaac, 2002).

Therefore, CMC instructors should notify students to balance the length of their writing (not too short or too long) to be readable, understandable, and easy to follow (Tu, 2001; Tu, 2002a). Also, the group size is an essential element that influences the group development (Carabajal et al., 2003), participation and anonymity (Kreijns et al., 2003), and connection among participants (Rovai, 2002). If the group size is too large, the number of messages increase, thus, the communicators may get lost. Therefore, instructors should divide the class into small groups to be under users' control (Akyol et al., 2009; Tu, 2002a; Tu & Yen, 2006). Tu (2004) suggested that the suitable size for synchronous communication technologies is between two-four members, while the asynchronous discussion forums should be ranged between 12-15 students. Finally, instructors should set protocols for class discussion such as determining the acceptable amount of participation (Kim et al., 2011), the required time for the discussion topic (e.g., one or two weeks; Garrison et al., 2000), and taking the advantage of CMC features (e.g.

sorting, choosing, summarizing, etc.) to deal with overload information (Chen, Pedersen, Murphy, 2011; Gunawardena, 1995).

The last factor that affects interactivity and social presence is the communication styles of the interactants (Tu & McIsaac, 2002). Due to the lack of social context cues in CMC environments, users need to use particular communication styles to interact effectively with others (Tu & Corry, 2003a; Tu, 2004). Norton (1986) suggested eleven communication styles that affect online users' interaction: animated, attentive, communicator image, contentious, dominant, dramatic, friendly, impression-leaving, open, precise, and relaxed. These eleven communication styles were found to affect interactants' communication, feelings, and learning (Tu & McIsaac, 2002). Therefore, CMC users should capitalize on the sufficient time available in asynchronous communication technologies to be familiar with these preceding communication styles (Tu & Corry, 2004). Also, instructors should clarify to their students to take into consideration the cultural differences in communication styles in mixed-culture learning environments (Gunawardena et al., 2001; Tu & Yen, 2006; Wang, Fussell, & Setlock, 2009).

Privacy

Privacy is considered as one critical dimension of social presence (Aragon, 2003; Rafaeli, 1988; Yen & Tu, 2004). The concept of privacy can be defined as "the desire to control others' access to and use of personal information" (Lowry, Cao, & Everard, 2011, p. 168). In other words, it refers to the sense of detachment from others in online communication for the purpose of protecting personal information (Sung & Mayer, 2012; Tu & Yen, 2006). Concerning social presence, privacy is about how users perceive CMC as a secure, confident, and trustworthy medium to sustain their personal information (Yen & Tu, 2008). Privacy falls into two major types: system privacy and feeling of privacy (Tu & Yen, 2006). The system privacy refers to the extent of the degree of CMC technologies reliability to maintain the security of users, such as

protecting their personal and identity data to be inadvertently forwarded to unintended recipients (Tu, 2002b). The feeling of privacy is "the perception of privacy psychologically, mentally, culturally, or conditionally rather than actual security" (Tu, 2002a, p. 2).

When CMC users perceive it as a less private environment, their degrees of social presence decline (Tu, 2000a; Tu & Yen, 2006). For example, if users feel that CMC is private and confidential, they tend to be more comfortable and open to share their feelings and concerns during their communications and vice versa because they think that they are anonymous, which means they do not worry about their face-saving (Chen, 2004; Tu, 2001; Tu, 2002a; Tu & McIsaac, 2002; Wang, Hong, & Pi, 2015). However, privacy should be viewed as a subjective, dynamic, and an unstable variable that differs among CMC technologies (e.g., email, real-time discussion, and asynchronous discussion forums, etc.) as well as from a user to another (Tu, 2002b; Tu, 2002c; Yen & Tu, 2008). For instance, knowledgeable computer users tend to be more aware of the privacy issues in online setting communication rather than novice users (Tu, 2002a). In contrast, some other users may still discuss sensitive personal topics, share personal profiles, and have high degrees of social presence in less-private environments because they think that others are not interested in their information (Kear et al., 2014; Tu, 2001; Tu, 2002c; Tu & McIsaac, 2002; Tu & Yen, 2006). Therefore, CMC users should be given the freedom to control their desired level of privacy (Anderson, 2008; Jaffe et al., 1995; Tu, 2002b). The dimension of privacy involves factors of the feeling of confidentiality in CMC, the quality of security in CMC, obtaining personal information, and the accidental forwarding of messages (Tu & Yen, 2006; Yen & Tu, 2008).

The feelings of less privacy are engendered if CMC's users perceive it as a more public setting and vice versa. Moreover, users believe that CMC is more public when more than two interactants are involved in the communication process (Tu, 2002a). As a result, the levels of

privacy vary among CMC technologies (Tu, 2002b; Tu, 2002c; Tu & McIsaac, 2002). The research showed that the one-to-one e-mail communication style was classified as the most confidential communication technology because users are unlikely to encounter embarrassing situations. Thus, they can freely express their intended ideas and emotions in that setting (Tu, 2002a; Tu, 2002c). After that, it is followed by one-to-many e-mail and one-to-one real-time discussion, and then many-to-many real-time discussions (Tu, 2001; Tu, 2002a).

Bulletin board discussions were considered to be the least private as well as the most public setting because students realize that their messages probably will be forever posted there (Tu, 2002b; Tu & McIsaac, 2002). Instructors should inform their students that all CMC communications are considered public, but with varying degrees of privacy (Tu, 2002b). Also, as mentioned before, instructors should allow their students to adjust their comfortable level of privacy (e.g., Wikis) as well as giving them a choice to delete their messages in discussion forums (Anderson & Dron, 2012; Tu, 2002b). Lastly, instructors should use the BCC feature instead of CC one in one-to-many email messages; therefore, users perceive more private feelings (Tu, 2002b).

Another vital variable is that the CMC system must be reliable and free from technical defects, which means personal information is protected from sending it to unintended addressees (Tu, 2002b). Although all students admitted that CMC is not entirely secure and private, they were varied in their levels of privacy. Moreover, some of them were not worried if unintentional users see or receive their information (Tu, 2002b). To interpret this phenomenon, humans sometimes perform risky behaviors, although they are aware of the sequences of these dangerous and harmful actions. That is because they naturally believe that they may survive from the negative consequences of these risky behaviors (Tu, 2002b; Tu & Yen, 2006). Therefore, instructors should clarify to their students the etiquette of participation in class. For instance,

students should be encouraged to read their messages carefully before posting in discussion forums (Tu, 2002a).

One of the critical variables of system privacy is the users' concerns about their identity and personal information (Tu, 2002b). According to Tu (2002c), approximately half of the participants in his study indicated that others might obtain and share their personal information in discussion forums. For instance, some students worry that others may print their messages to use them in an inappropriate way later, like posting them in other public online settings (Tu, 2002a). These concerns are more likely to occur in many-to-many communication forms (e.g., bulletin board) rather than one-to-one communication forms (e.g., email) where users feel more comfortable about privacy (Tu, 2002a; Tu, 2002b). Instructors should warn students that personal information of others must be protected. Therefore, students ought to gain permission from others before posting any sensitive information about them (Tu, 2001).

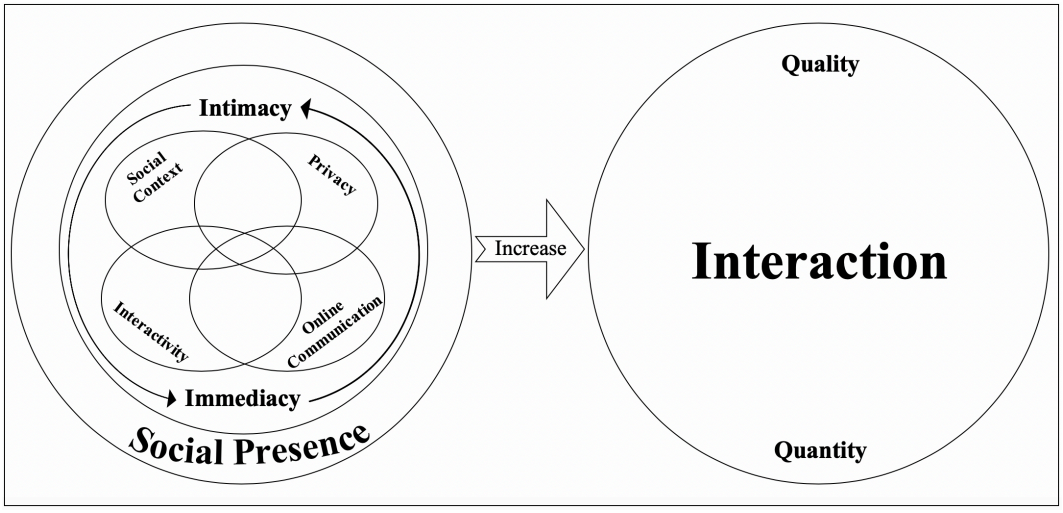
The last important variable of the system privacy is that CMC communicators should feel safe that their messages are secured from reposting by other users, which may lead them to lose their faces. Students, in general, are aware that a CMC system is not entirely secured from accessing their information and redirecting their messages (Tu, 2001; Tu, 2002b). However, most of them believe that nobody is interested in their posts or have the daring to use them. This is because all contributors' critical information (e.g., their names, time of posting, available online, etc.) are shown on the platform as well as their posts were part of the class participation (Tu, 2002a; Tu, 2002c). Also, some students indicate that they trust email more than either real-time discussion or asynchronous discussion forum because one-to-one communication style is more secured that many-to-many communication styles (Tu, 2002c). However, email can threat users' privacy if the personal message is forwarded to multiple recipients either intentionally or unintentionally (Tu, 2001).

Summary of Social Presence Constructs

As explained earlier, social presence is a complicated phenomenon and that all of its four dimensions — which are all sub-components of intimacy and immediacy — overlap with each other. For instance, trust (social context) can be strengthened through sharing personal information (privacy), and vice versa. Also, recipients can clarify misunderstanding (online communication) by requesting feedback from the senders of messages (interactivity). However, the social context and privacy are more oriented toward intimacy, while online communication and interactivity are more related to immediacy behaviors (Tu & McIsaac, 2002; Tu & Yen, 2006; Tu & Corry, 2004). Once all of these four dimensions of social presence work appropriately and simultaneously, the levels of social presence increase (Tu & McIsaac, 2002), which in turn raises the quality and the quantity of social interaction in online learning (Kehrwald, 2010b; Rovai, 2002; see Figure 2.2).

Figure 2.2

The theoretical framework of social presence.



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Gender and Social Presence

Overview of the Importance of Gender

Gender is considered by several researchers (e.g., Ding, Bosker, & Harskamp, 2011; Fredericksen et al., 1999; Hamidah, Sarina, & Jusoff, 2009; Hayes, 2001; Von Prummer, 2004; Woods & Baker, 2004) as a critical factor that influences the quality of students' communication, perceived learning, and learning performance either in face-to-face or online learning. For instance, in face-to-face context, women use different learning styles (Hamidah et al., 2009) and engage in more eye contact than men (Argyle & Dean, 1965). Similarly, past research indicate that men and women also differ in their online learning interaction experiences such as communication styles/patterns (Burrell, Mabry, & Allen, 2010; Chen, Jones, & Xu, 2018; Garland & Martin, 2005; Rovai, 2001), expression of voice and deeper learning (Anderson & Haddad, 2005), the dominance of the interaction (Atai & Chahkandi, 2012; Crocco, Cramer, & Meier, 2008; Lawlor, 2006), the feeling of anonymity (Song et al., 2015), and the frequency of participation (Chou, 2002; Morante, Djenidi, Clark, & West, 2017; Prinsen, Volman, & Terwel, 2007; Wishart & Guy, 2009).

To put it more clearly, overall, women are more likely to have more interpersonal relationship (Lawlor, 2006), purposeful and positive learning experiences, sense of community, intrinsic motivation (Ku & Chang, 2011; Yoo & Huang, 2013), online completion rate (Murugesan, Nobes, & Wild, 2017; Price, 2006) being more collaborative (Hayes, 2001; Rovai, 2002; Rovai & Baker, 2005; Thayalan et al., 2012) and satisfied (Lowden & Hostetter, 2012). In other words, women prefer to learn in a connected manner while expressing ideas, responding to others' questions, establishing relationship and emotions, and so forth (Hayes, 2001). Therefore, women are considered to be more socially oriented learners than men (Dennis, Kinney, & Hung, 1999; Guadagno & Cialdini, 2002; Tu et al., 2011).

In contrast, most researchers (e.g., Alasmari & Zhang, 2019; Bujala, 2012; Li & Kirkup, 2007; Yau & Cheng, 2012) found that men possess more technological skills and online experiences than women do, which may be due to the dominance of males in electrical engineering and computer science fields (Von Prummer, 2004). Also, men were found to be more task-oriented (Dennis et al., 1999; Tu et al., 2011) and competitive (Guadagno & Cialdini, 2002) learners than women. Overall, researchers (e.g., Johnson, 2011; Kramarae, 2007; Yang, Cho, Mathew, & Worth, 2011) indicate that women tend to perform better in online courses than face-to-face courses, and vice versa for their male peers. Therefore, the quality of social interaction between men and women also differs based on the learning social context either in traditional or online learning.

Taking individual characteristics (e.g., gender) into consideration is vital for understanding the learning needs of the learners. According to Cleveland-Innes and Emes (2005), "individual characteristics interact with the education context and result in a type of motivation and a set of strategies to generate learning outcomes" (p. 244). With regard to gender factor, disregarding the impact of gender can lead to substantial negative influence on cognitive outcomes of learners (Carabajal et al., 2003; Hayes, 2001; Maceli, et al., 2011). Therefore, gender differences cannot be ignored in online or blended learning environments where learners encounter psychological obstacles due to the geographical distance (Anderson, 2008; Gibson, 2003; Smith & Ragan, 2005). The recent research regarding gender differences shifted the focus from the brain functions and the biological interpretations to be more directed toward the socio-cultural context of learning that emphasizes the gendered behaviors (Deaux & Major 1987; Hayes, 2001). Although gender is considered by Smith and Ragan (2005) as one of stable differences of learners' characteristics, like race and ethnicity, it should not be entirely viewed as fixed or innate behaviors, but instead as slightly changeable behaviors that depend on particular

factors such as historical situations, society, culture, and site (Carabajal et al., 2003; Gunawardena & McIsaac, 2004; Hayes, 2001).

Based on the above statements, creating an effective online/blended learning environment is necessary to support both genders' learning styles; especially, of women who possess a social-oriented knowledge foregoing mentioned (Hayes, 2001; Kramarae, 2007; McKnight-Tutein & Thackaberry, 2011). Therefore, educators and instructional designers should emphasize the constructivist instructional design strategies like a collaborative learning that cannot be accomplished without some adequate levels of social presence as explained earlier (Gunawardena & McIsaac, 2004; Hayes, 2001; Lowenthal, 2010). However, educators should keep in mind that designing an effective online/blended learning environment is challenging because it requires an advanced plan, time, and commitment to ensure high quality as well as equal learning experiences for all learners (Jolivette, 2006; Kramarae, 2003; 2007; McKnight-Tutein & Thackaberry, 2011; Simonson et al., 2012; Tu & Corry, 2003).

Gender Differences in Co-Education and Single-Gender Education Environments

As indicated earlier in the previous chapter, gender differences in social interaction were found in traditional and online learning, or in mixed and single-gender education environments (Bostock & Lizhi, 2005; Ding et al., 2011; Hughes, 2006). For instance, in online mixed-gender learning environments, women tend to use pseudonymous to protect their identity more than the men peers (Jaffe et al., 1995). Also, men were found to be more dominating than women in coeducation (Atai & Chahkandi, 2012; Dennis et al., 1999). On the other hand, in online single-gender learning environments, women showed a higher level of participation (Savicki, Kelley, & Ammon, 2002), were more sensitive to the absence of the nonverbal cues (Dennis et al., 1999), and showed more preference for single-gender education than men (Zhan, Fong, Mei, & Liang, 2015). Conversely, Bayeck, Hristova, Jablokow, and Bonafini (2018) found that women revealed

less preference to single-gender learning environments in massive open online courses (MOOC). Similarly, in Saudi Arabia, females prefer interacting with the other gender while males prefer single-gender education (Mirza, 2008). Therefore, the results of past studies were inconsistent about each gender preference toward the type of online learning in either mixed or single-gender education.

The Saudi Arabian Higher Education Context

As mentioned previously, the education system is a predominantly gender-segregated in Saudi Arabia as a response from the government to a particular Islamic interpretation as well as cultural traditions of Saudi Arabian people (Baki, 2004; Mirza, 2008). In addition, men are considered in Saudi Arabian culture and Islamic religion as the fundamental breadwinner to their families. Thus, fewer females were able to complete their higher education learning due to their home and family responsibilities (Mirza, 2008). As a result of these cultural traditions, Saudi Arabia faced a shortage of female faculty members in higher education, which was temporarily solved by allowing male instructors to teach female students via closed-circuit television (CCTV). In other words, males had more advantage than females by interacting with their instructor in a face-to-face environment while females were limited to the capacity of CCTV (Alahmari & Amirault, 2017; Mirza, 2008; Yamin, 2015).

Interaction between the two genders takes place in very limited public areas, like hospitals and medical colleges (Mirza, 2008). Nevertheless, recently, the Saudi Arabian government has issued a package of reforms regarding women's rights as one of Saudi Vision 2030 goals. These reforms can diminish their segregation from their male peers in many aspects of life (Saudi Vision 2030, 2019). For instance, currently, Saudi women have the right to drive a car, travel without parental permission, attend arenas, and possess high positions such as a minister, ambassador, member of the Saudi Consultative Assembly, and so forth (Mansyuroh,

2019). However, some Saudi women still encounter some restrictions regarding the guardianship system due to their traditional and religious families (Yee, 2020). Also, the public and higher education system is still gender-segregated in most of its institutions. For instance, Saudi Arabia has Princess Nourah Bint Abdulrahman University in Riyadh, which is considered the largest female-only university in the world (Yamin, 2015). With regard to online/blended learning environments, Saudi students generally indicated positive perceptions toward e-learning system either female-only (Alahmari & Amirault, 2017) or both genders (Al-Juda, 2017).

Social Presence and Gender

Gender Differences Among the Four Constructs of Social Presence

Social context. As mentioned previously, past research (e.g., Dennis et al., 1999; Guadagno & Cialdini, 2002; Johnson, 2011; Tu et al., 2011) showed that women tend to be more socially connected than their men peers. For instance, women were found to reveal more social connection or intimacy behaviors such as building positive interpersonal relationship, caring, support (Burleson, Hanasono, Bodie, Holmstrom, Rack, Rosier, & McCullough, 2009; Kramarae, 2003; Wade, Cameron, Morgan, & Williams, 2011) and empathy/emotions (Derntl, Finkelmeyer, Eickhoff, Kellermann, Falkenberg, Schneider, & Habel, 2010; Rodriguez-Ardura & Meseguer-Artola, 2016).

Online communication. Social presence, gender, language, and technological skills are considered as critical factors that impact the dynamic development of the group (Gunawardena et al., 2001; Woods & Baker, 2004). Men and women demonstrate differences in their technology skills levels and language use. For example, researchers (e.g., Alkhalaf, Nguyen, Nguyen, & Drew, 2013; Li & Kirkup, 2007; Yau & Cheng, 2012) found that males revealed more confidence in using technology than females. Also, gender impacts the linguistic choices of

learners (Cubukcu & Kutlu, 2013) and their use and style of using emoticons (Huffaker & Calvert, 2005).

Interactivity. Similar to online communication, gender also influences the levels of conflict or flaming behaviors (Gunawardena et al., 2001), communication patterns, feedback, and interactivity or immediacy-communication behaviors (Christen et al., 2015; Murphrey et al., 2012; Woods & Baker, 2004). For instance, women revealed more interactive messages than men, which means that their messages were extended to previous posts (Barrett & Lally, 1999; Christen et al., 2015; Thayalan & Shanthi, 2011). Also, women revealed different communication styles than men. For example, women are more likely to use an epistolary communication style (Lawlor, 2006) and intuitive statements (Prinsen et al. 2007), while men prefer using expository pattern of communication (Lawlor, 2006) and authoritative assertions (Prinsen et al., 2007). In addition, most studies (e.g., Goldstein & Puntambekar, 2004; Morante, Djenidi, Clark, & West, 2017; Prinsen et al., 2007; Rovai & Baker, 2005) indicated that women participated more than men in CMC learning environments. However, one study (Atai & Chahkandi, 2012) found that men tend to post more topics, frequent and longer messages than women. Finally, it seems that all researchers agree that men tend to use more flaming and conflict behaviors while women are more likely to show more agreement and supportive contributions (Atai & Chahkandi, 2012; Burleson et al., 2009; Chang, 2016; Guiller & Durndell, 2006).

Privacy. Few studies address the relationship between gender and privacy concerns with regard to social presence (Tu et al., 2011). However, most studies (e.g., Flanagin, Tiyaamornwong, O'Connor, & Seibold, 2002; Fogel & Nehmad, 2009; Thornthwaite et al., 2018) found that women were more cautious about sharing personal and sensitive information about themselves online, as compared to men. However, Tu et al. (2011) found no difference

between both genders regarding privacy concerns. In addition, women preferred to be anonymous and use pseudonymous to hide their gender identities more than men (Jaffe et al., 1995; Koch et al., 2005). Therefore, it seems that women experience more levels of social presence in social context and interactivity while men experience more degrees of social presence in online communication and privacy.

Empirical Studies of Gender and Social Presence

The analysis of the literature review shows lack of empirical studies that are primarily intended to assess the impact of gender factor on the level of online social presence. Only three studies (Thayalan & Shanthi, 2011; Thayalan et al., 2012; Tu et al., 2011) were found that their primary purposes were to examine the relationship between gender and social presence. Their results were conflicting: two of these three studies (Thayalan & Shanthi, 2011; Thayalan et al., 2012) found that females perceived social presence more than males while Tu et al (2011) found no relationship between both gender and social presence.

On the other hand, fifteen other studies examined social presence, but with other dependent variables such as CoI presences (e.g., Gibson et al., 2012; Horzum, 2015; Almasi, Zhu, & Machumu, 2018), physical presence (e.g., Felnhofer et al., 2014; Cho et al., 2015), and satisfaction (e.g., Cobb, 2011; Johnson, 2011; Sorden & Munene, 2013). Also, these studies examined gender in addition to other demographic/independent variables such as age (e.g., Kim, 2011; Lowden & Hostetter, 2012; Elcicek, Erdemci, & Karal, 2018), ethnicity (e.g., Cobb, 2011; Gibson et al., 2012; Sorden & Munene, 2013) and online learning experience (e.g., Cobb, 2011; Kim, 2011; Elcicek et al., 2018). The results of these fifteen studies were also inconsistent.

Seven studies (Angelaki & Mavroidis, 2013; Christen et al., 2015; Cobb, 2009; 2011; Johnson, 2011; Lowden & Hostetter, 2012; Kim 2011) found gender differences in the levels of perceiving social presence. Only one study (Kim, 2011) found that males had higher levels of

social presence than females, while six other studies showed that women perceived social presence more than their men peers. Conversely, eight studies (Almasi et al., 2018; Cho et al., 2015; Elcicek et al., 2018; Felnhofer et al., 2014; Gibson et al., 2012; Horzum, 2015; Kim et al., 2011; Sorden & Munene, 2013) found that the CMC learning environments nearly equal perception levels of social presence for both genders.

In sum, the review of the past studies in the second decade of this century shows mixed results of the impact of gender on social presence; thus, the influence of gender variable on social presence is still unclear, and further research is needed. Nine out of eighteen studies found significant gender differences, while the other nine studies showed no gender impact on the level of online social presence. With regard to the nine studies that observed gender differences in social presence, eight of them (Angelaki & Mavroidis, 2013; Christen et al., 2015; Cobb, 2011; Johnson; 2011; Lowden & Hostetter, 2012; Thayalan & Shanthi, 2011; Thayalan et al. 2012) indicated that females perceived online social presence higher than male participants. Only one study (Kim, 2011) found that men had a higher degree of online social presence than women. In addition to the inconsistency of the results, Felnhofer and Kothgassner (2014) stated that studies that aimed to find gender differences in presence, specifically, physical and social presences, are still rare, and they are even scarcer concerning social presence and gender.

Summary

The review of the literature shows some limitations in the previous studies. First, there is a lack of studies that emphasized assessing the influence of gender demographic variable on the level of online social presence while most studies examined gender and online social presence with other dependent and independent variables. Second, prior studies were performed in the United States (e.g., Christen et al., 2015; Cobb, 2009; 2011; Gibson et al., 2012; Johnson, 2011; Lowden & Hostetter, 2012; Sorden & Munene, 2013; Tu et al., 2011), Greece (Angelaki &

Mavroidis, 2013), Germany (Felnhofer et al., 2014), Turkey (Elcicek et al., 2018; Horzum, 2015), South Korea (Kim, 2011; Kim et al., 2011), Malaysia (Thayalan & Shanthi, 2011; Thayalan et al., 2012), Singapore (Cho et al., 2015), and Tanzania (Almasi et al., 2018).

Therefore, no study has taken place in Saudi Arabia, or even in the other Arabian Gulf countries in the region that have similar cultures such as Kuwait, Bahrain, Qatar, the United Arab Emirates, and Oman. Third, it is more likely that all previous studies have been carried out in countries that employ the co-education system. Thus, no study investigated gender differences in social presence in a country that applies a single-gender education system (e.g., Saudi Arabia) where male and female students are physically separated from each other. Even though this study does not primarily intend to provide interpretations for gender differences in a single-gender learning environment, the researcher assumes the levels of social presence should be varied by gender due to this type of environment as well as the Middle Eastern culture.

Lastly, only two studies (Almasi et al., 2018; Sorden & Munene, 2013) examined gender differences in social presence in the online portion of blended/hybrid learning environments. Most studies discussed earlier, ten studies, emphasized fully online learning environments (e.g., Christen et al., 2015; Elcicek et al., 2018; Gibson et al., 2012). The rest of the prior studies examined virtual (Cho et al., 2015; Felnhofer et al., 2014) e-learning (Johnson, 2011; Thayalan et al., 2012), and video conferencing learning environments (Lowden & Hostetter, 2012). Therefore, this study aims at adding knowledge to prior studies and filling the gap in literature by investigating the relationship between gender and online social presence in the online part of a blended learning environment on a Saudi Arabian site that uses a single-gender educational system in the majority of its educational institutions.

CHAPTER III

METHODOLOGY

Research Design

A quantitative cross-sectional survey design was used in this study. This method was chosen because the research problem, purpose, questions, and conceptualization and operationalization of online social presence theory all suggest using a survey design method (Creswell, 2014). Creswell (2105) defines survey research designs as "procedures in quantitative research in which investigators [administer] a survey to a sample or to the entire population of people to describe the [attitudes], opinions, behaviors, or characteristics of the population" (p. 379). As discussed earlier, online social presence can be measured by self-report items that ask distant learners about their perceptions toward the four constructs of social presence: social context, online communication, interactivity, and privacy. Therefore, a survey was the ideal research design to collect this information from the participants. In addition, the survey research design has other advantages such as the ability of generalization, gathering a large sample, rapid data collection, applicability at a distance, and economy (Creswell, 2014). The researcher used a web based Qualtrics Survey Software of the University of North Dakota to manage and host the instrument, which means collecting data at one point of time (Creswell, 2015).

Target Population, Site, Sample, and Sampling Procedure

In survey research design, researchers select a sample from a target population, which is "a group of individuals (or group of organizations) with some common defining characteristic that the researcher can identify and study" (Creswell, 2015, p. 141). The participants of this

study were currently enrolled undergraduate/graduate students, who had taken at least one blended course, in the College of Education at King Saud University (KSU) in Saudi Arabia. According to KSU's website, there are nine departments in the College of Education, which are Art Education, Curriculum and Instruction, Educational Administration, Educational Technology, Islamic Culture, Psychology, Quranic Studies, and Special Education (College of Education, 2018). KSU, like the majority of Saudi Arabian Universities, employs gender-segregation, which means male and female students are separated into two different campuses (Naaj et al., 2012; Parahoo et al., 2013). Also, the online discussions are also gender-separated in the majority of Saudi Arabian Universities.

In this current study, the researcher contacted the dean of the College of Education or his representative (gatekeeper) in KSU to obtain the information about the target population. Based on the information obtained from the gatekeeper, the population size of the College of Education two male and female campuses is 4177 students. Females represent the majority of the population (62%) with 2600 students while males represent the minority of the population (38%) with only 1577 students. Therefore, there is imbalance between the two gender groups, which may lead to an exclusive domination of one group (e.g., females) on the other group (e.g., males). Since the gender percentages in the sample was almost identical to the gender percentages in the population (61.20% for females and 38.80% for males), the researcher used only a random smapling procedure. In other words, there is no need for using a stratified sampling technique as suggested by Creswell (2015). As displayed in Table 4-2, the descriptive results showed that, as anticipated on Item 29, female students were the majority in the sample with 194 respondents (61.20%), while the male students consisted of 123 respondents (38.80%). These percentages were consistent with the overall population percentages mentioned previously (see Figure 4.3).

To determine the appropriate sample size of this study, Creswell (2015) suggests researchers to use the sample size tables. In this study, the population size number was 4177, which was between (3500-5000) students. Accordingly, with a margin of error of 5 percentage points (95% interval confidence), the minimum sample would be between (N~346-357). As a result, the sample size of 346-357 (using stratified sampling) suggests that females would be between 214-221 participants to represent 62% of the population while males would be between 131-136 participants represent 38% of the target population. Creswell (2015) suggests using a large sample (N~350) for a survey research design to minimize sampling error, increase statistical power, and enhance the external validity and the representation of the target population. Onwuegbuzie (2000) agrees that "large and random samples tend to increase the population validity of the results" (p. 31). Moreover, Warner (2013) states that errors are more likely to occur when a researcher measures participants' perceptions or attitudes (e.g., social presence). Therefore, utilizing a random sampling procedure can reduce measurement errors (e.g., a selection bias), which ensures the equivalence between groups (Creswell, 2014; Creswell, 2015; Onwuegbuzie, 2000).

Variables

Creswell (2015) suggests determining and defining the variables of the study to answer the research questions and hypotheses. As discussed earlier, four variables/constructs of online social presence were identified, which are social context, online communication, interactivity, and privacy. The conceptual definitions of these four variables/constructs are summarized in table 2 below. In addition, all of these four variables were measured by self-report items (see the attached questionnaire).

Table 2. Conceptual Definitions of Online Social Presence Constructs

A construct	A conceptual definition
Social context	It is "constructed from the characteristics of CMC users and their feelings about the CMC environment regarding another intelligent being" (Tu & Yen, 2006, p. 84).
Online communication	The proper use of online language to exchange information and emotions (Tu & Corry, 2001; Tu, 2000).
Interactivity	"the activities in which CMC participants engage and the communication styles they use" (Tu & Corry, 2001a, p. 254).
Privacy	"Privacy is referred to the levels of private, safe, and secure of CMC technologies" (Yen & Tu, 2004, p. 12). 1- System privacy is "the actual security of CMC technologies and considers the likelihood that someone may read, send, or resend a message to or from you" (Tu, 2002, p. 298). 2- The feeling of privacy refers to "the perception of privacy psychologically, mentally, culturally, or conditionally rather than actual security" (Tu, 2002a, p. 2).

The independent variable (gender) was measured in a demographic section (question number twenty-nine) of the questionnaire by asking participants to specify their gender that involves two categorical scores (male = 1 and female = 2; see Appendix A). More details about the instrument will be discussed in the next section.

Instrumentation

General description of the instrument. To measure the four foregoing variables/constructs of online social presence, the researcher used an existing instrument named "Computer-Mediated Communication (CMC) Questionnaire" (CMCQ) that was developed first by Chih-Hsiung Tu (Tu, 2002c) and then revised later in its final version by Cherng-Jyh Yen & Chih-Hsiung Tu (Yen & Tu, 2008). The permission of using the instrument was obtained (see Appendix B). This instrument covers all the four variables/constructs of online social presence previously mentioned, which are social context, online commination, interactivity, and privacy. The instrument involves 33 items that are distributed into three main sections. The first section

aims to measure the four foregoing constructs of social presence concept, which comprises of 24 items. The second section intends to determine the proficiency in using CMC, which contains only four items. The final section aims to collect general information about the participants (e.g., gender) that includes only five items. The instrument uses a five-point continuous Likert-scale (from 1 = strongly disagree to 5 = strongly agree), which can be considered adequate for the sensitivity of the individuals' characteristics (Warner, 2013).

Reliability and validity. Short et al. (1976) conceptualized social presence as a unidimensional concept that can be operationalized by asking users to rate the attributes of the medium, which was first instrument to measure social presence by only four items using semantic differential scales method (seven-point bipolar scales): "unsociable-sociable, insensitive-sensitive, cold-warm, and impersonal-personal" (p. 66). Gunawardena and Zittle (1997) developed an instrument of 17 items that was built upon the works of Short et al. (1976). They modified and improved it to capture more complexity of social presence in the online learning age. These two instruments do not include the four major constructs of social presence — social context, online communication, and interactivity — suggested by Tu and later his colleague Yen (Tu, 2002c, Yen & Tu, 2008). Therefore, the latest version of the CMCQ instrument that was revised by (Yen & Tu, 2008) was used in this study.

Gunawardena and Zittle (1997) developed an instrument of 17 items that was built upon the works of Short et al. (1976). They modified and improved it to capture more complexity of social presence in the online learning age. Later, Tu (2002c) reviewed these two instruments, and concluded that the four items of Short et al' (1976) instrument are too broad to measure the complexity of online social presence. Also, Tu (2002c) criticized Gunawardena and Zittle' (1997) instrument because it failed to cover other important factors that are related to online social presence such as users' privacy, receivers, the topics, and so forth (Tu, 2002c; Tu &

McIsaac, 2002). Tu (2002c) states that social presence is more complicated than what was indicated before in these past studies. According to Warner (2013), the perfect instrument needs to capture all relevant components of the concept, especially if the concept is complicated such as depression (p. 914). Therefore, Tu (2000a; 2002a; 2002c) reconceptualize the social presence concept to involve three new constructs — social context, online communication, and interactivity — that measure the two major folds of social presence: intimacy and immediacy. Accordingly, Tu (2002c) created the CMCQ instrument that can measure the foregoing constructs as well as their more critical and specific indicators such as the use of the language, the communication styles, privacy, and so on.

Tu and Yen conducted a couple of studies (Yen & Tu, 2004; Tu & Yen, 2006; Yen & Tu, 2008) to revise and improve the reliability and validity of the CMCQ instrument. According to Tu and Yen (2006), based on the analysis of reliability coefficient (Cronbach alpha), the CMCQ instrument has a coefficient value of .834, which indicated high internal consistency between items. Moreover, the findings of the exploratory factor analysis (EFA; Yen & Tu, 2004; Tu & Yen, 2006) and the confirmatory factor analysis (Yen & Tu, 2008) resulted in adding the privacy as a fourth dimension of social presence instead of being an inductor under the construct of social context. In other words, social presence is a multidimensional concept that involves four constructs: social context, online communication, interactivity, and privacy, which is consistent with the theoretical framework of this study. Furthermore, the CMCQ instrument has been retested in other studies (e.g., Mykota, 2015a; 2015b; 2017; Tu et al., 2011). Based on the above, the CMCQ (Yen & Tu, 2008) is a valid and reliable instrument.

Translation of the instrument. As previously mentioned, this study was conducted in the College of Education at KSU in Saudi Arabia, and the primary language in Saudi Arabia is Arabic. Therefore, the researcher translated the instrument from English to Arabic. The first

version of the translation was sent to an assistant professor at the Educational Technology Department of Curriculum and Instruction in the College of Education at KSU to get feedback and suggestions for more revision. After that, the researcher obtained an approval letter about the accuracy of the translation from the same faculty member (see the attached translation approval).

Data Collection Procedures

The researcher gained a permission from the University of North Dakota (UND) Institutional Review Board (IRB), because the study involved human subjects (IRB Project Number: IRB-202003-209). Also, the researcher obtained a permit from the Head of Instructional Technology Department at the College of Education in King Saud University to conduct the study. The researcher is aware of the importance of the ethical practices such as informing the participants for the potential minimal risks, protecting their identity, respecting their privacy and anonymity, and keeping their information confidential (Creswell, 2014; 2015).

After getting the approval to conduct the study from the committee members, the researcher sent the recruitment email (that contained the link to the survey, the invitation for participation, the purpose of the study, the required time to complete the survey, information about the participants' rights, and the information contact of the principal investigator PI) to the dean of the Education College or his representative to send it to the participants. One week later, the researcher sent a reminder email to the dean of the Education College or his representative to resend the link of the survey again to the rest of the target subjects to participate in the study. Additionally, the participants were asked to fill out a questionnaire about how they perceive social presence in single-gender and blended learning environments. The survey aimed to measure four constructs, which are social context, online communication, interactivity, and privacy.

Data Analysis

The independent samples *t*-test was used to test the hypotheses. Creswell (2014) suggests using independent samples *t*-test when a researcher wants to compare between two groups (e.g., male and female) on a continuous dependent variable (e.g., online social presence). The researcher aimed to find out if there is a statistically significant difference between male and female students' mean scores (Warner, 2013). Therefore, the researcher used both descriptive and inferential analysis that was presented in tables, figures, and statements to interpret the results (Creswell, 2014).

Limitations and Delimitations

As discussed earlier, the sample was large enough to be representative of the target population, which, in turn, enhances the population validity (Onwuegbuzie, 2000). Thus, if the response rate is low, then the results from the sample may not be generalizable to all undergraduate/graduate students, who have taken at least one blended learning course in the College of Education at KSU in Saudi Arabia. This can be one of the limitations of the current study. On the other hand, this study was restricted to the students who only have taken one or more blended learning courses in the College of Education at KSU. That is because KSU does not offer any fully online courses across its colleges. The researcher chose the students at the College of Education, because it had an accessible population of a large size (4177 students).

Research Timeline

This study was conducted during Spring 2020 and Fall 2020 semesters. During the spring 2020, the researcher had his dissertation proposal meeting. After passing the dissertation proposal defense, the researcher sent the recruitment email to the College of Education gatekeeper to send it to the participants from the target population. The questionnaire's link was available for around three months (from July 13th, 2020 to October 1st, 2020), because of the

initially low response late. Eventually, the study reached 317 responses, which was near the ideal response rate (between 346-357 responses). After that, the researcher analyzed the collected data (reported in Chapter Four).

CHAPTER IV

RESULTS

The purpose of the study was to find the influence of the gender variable on social presence levels among undergraduate and graduate students in gender-segregated and blended learning environments. Therefore, the independent variable (IV) of the study was gender, while the dependent variable (DV) was the level of social presence perceived by students of both genders. The study took place in the College of Education at King Saud University (KSU) in Saudi Arabia. The study aimed to explore differences in social presence perception levels by gender.

Chapter Four includes the results of the study in statements, tables, and figures for both the descriptive and inferential findings, related to the research question of the study: "Does gender impact Saudi students' perceptions of social presence in an online portion of a hybrid learning environment?" The descriptive results of this chapter provide organized, simplified, and summarized information (Gravetter & Wallnau, 2013) about the participants' demographic characteristics, such as gender, age, computer expertise levels, the location access of computer-mediated communication (CMC), and educational level. Also, the results provide information about the participants' knowledge and experiences in using CMC, such as their keyboard skills, years of using technologies and internet, and time spent communicating between interactants.

In addition, this chapter includes a detailed report about the surevy questions, percentages with some form of agreement, mean, and standard deviation for all four social presence

constructs: social context, privacy, interactivity, and online communication. Moreover, the inferential findings include sample data to infer conclusions about the population (Creswell, 2015; Gravetter & Wallnau, 2013). The researcher of this study used both Microsoft Excel and Statistical Package for Social Science (SPSS version 26) to analyze data gathered from Computer-Mediated Communication (CMC) Questionnaire (CMCQ) that was administered on a web-based Qualtrics Survey Software from the University of North Dakota to manage and host the instrument. The independent samples *t*-test (one-tailed) was used to test the hypotheses and reveal a statistically significant difference between two groups' means (male and female) on a continuous dependent variable (social presence). This chapter concludes with a general summary about the fundamental results.

Participants' Characteristics

Population Characteristics

As indicated earlier, the research participants were both undergraduate and graduate students in the College of Education at KSU environment in Saudi Arabia. The population consisted of approximately 4117 students. The majority of them (2600) were female students (62%), while there were 1577 male students (38%). The population included 2385 bachelor's students (1418 female and 967 male), 1152 master students (790 female and 362 male), and 640 doctoral students (392 female and 248 male; see Figures 4.1 & 2, and Table 4.2).

Figure 4.1

Gender Percentage in the Population

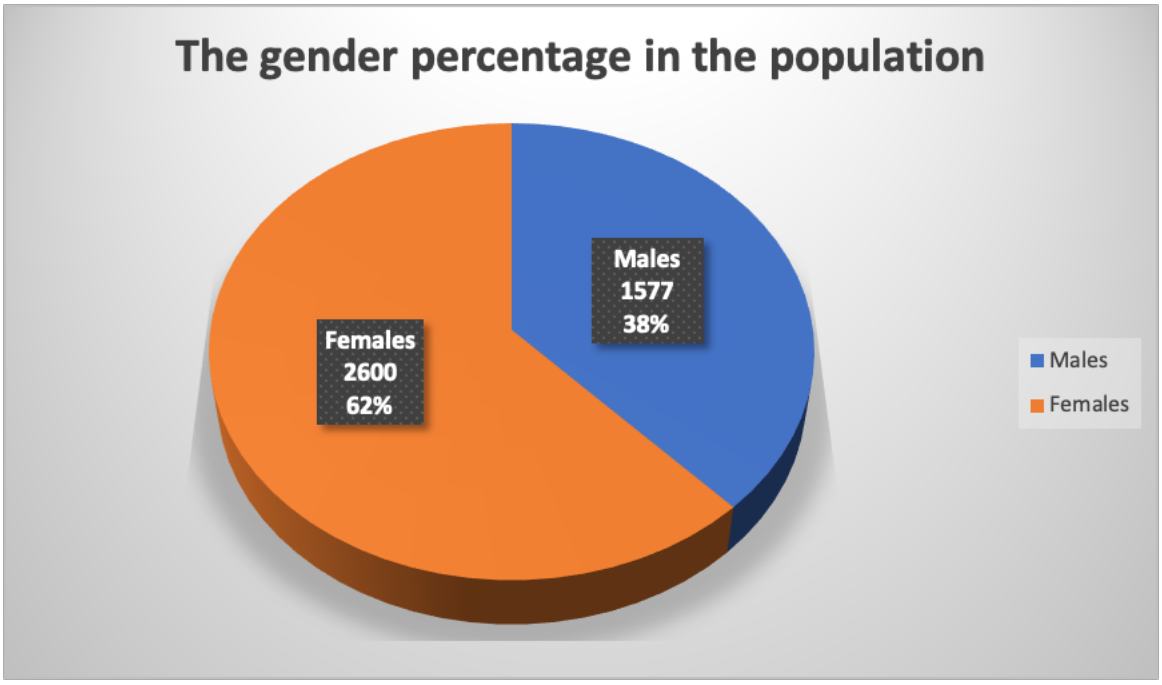


Figure 4.2

Student Distribution by Major in the College of Education

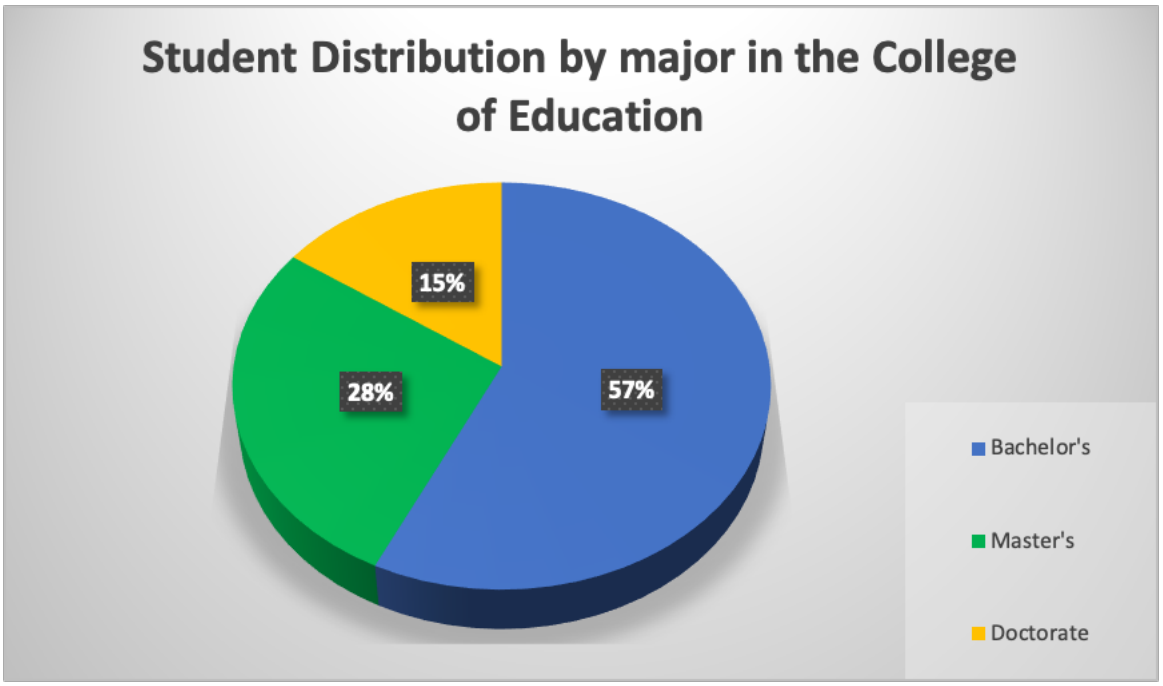


Table: 4.1
Population Demographics

Gender	Bachelor	Master	Doctoral	Total
Female	1418	790	392	2600 (62%)
Male	967	362	248	1577 (38%)
Total	2385	1152	640	4177 (100%)

Sample Characteristics

The survey was sent to all 4117 students in the College of Education population. A total of 755 out of 4117 students returned the survey, which means the overall response rate was 18.7%. However, 438 respondents (58.01% of the respondents) were eliminated by Qualtrics because they had never taken any blended courses. Thus, they would be unable to answer the questionnaire questions with regard to social presence in blended learning environment. Therefore, the remaining 317 participants (41.99% of the respondents) completed the survey with valid responses to be used in data analyzation.

Demographic/Descriptive Questions

The data collected from the CMCQ was scored, coded, and administered on Qualtrics; then the data was transferred into Microsoft Excel for further clearing and organizing processes (Creswell, 2015). Descriptive statistics were also analyzed in Microsoft Excel for all five demographic questions about gender, age, computer expertise levels, the location access of CMC, and educational level (Item 29-Item 33). As displayed in Table 4-2, the descriptive results showed that, as anticipated on Item 29, female students were the majority in the sample with 194 respondents (61.20%), while the male students consisted of 123 respondents (38.80%). These percentages were consistent with the overall population percentages mentioned previously (see Figure 4.3).

Results from Item 30 showed that 1.58% of the participants were under 18 years old, 51.42% were between 18 to 25 years old, 29.34% were between 26 to 35 years old, 15.77% were between 36 to 45 years old, and only 1.89% were older than 45 years old (see Figure 4.4). On Item 31, 0.63% admitted that they have no experience in using CMC technologies, 5.68% reported that their expertise level in computer is novice, 53.63% indicated that their level is intermediate, and 40.06% stated that they are experts in using technology (see Figure 4.5). On Item 32, 90.54% of participants indicated that they have computer access in their homes, 6.31% in their offices, 1.89% in a computer lab, and 0.95% in a classroom, and only 0.32% in a library or media center (see Figure 4.6). Finally, on Item 33, 49.84% of the respondents indicated that they are undergraduate students (bachelor's degree), 50.57% of the respondents mentioned that they graduate students (38.49% were master's students and 11.67% were doctoral students; see Figure 4.8).

Table 4.2
Participants' Gender, Age, Level of Computer Expertise, Location Access, and Educational Level

Participants' Characteristics	Overall sample count (n = 317)	%
Item 29- Gender (Figure 4.3)		
Males	123	38.80
Females	194	61.20
Total	317	100
Item 30- Age (Figure 4.4)		
0 – 17	5	1.58
18 – 25	163	51.42
26 – 35	93	29.34
36 – 45	50	15.77
Over 45	6	1.89
Total	317	100
Item 31- The computer expertise (Figure 4.5)		
No experience	2	0.63
Novice	18	5.68
Intermediate	170	53.63
Expert	127	40.06
Total	317	100
Item 32- The location access (Figure 4.7)		
Home	287	90.54

Computer Lab	6	1.89
Library or Media Center	1	0.32
Classroom	3	0.95
Office	20	6.31
Total	317	100
Item 33- The education level (Figure 4.8)		
Bachelor	158	49.84
Master	122	38.49
Doctorate	37	11.67
Total	317	100

Figure 4.3

Gender Distribution of Sample

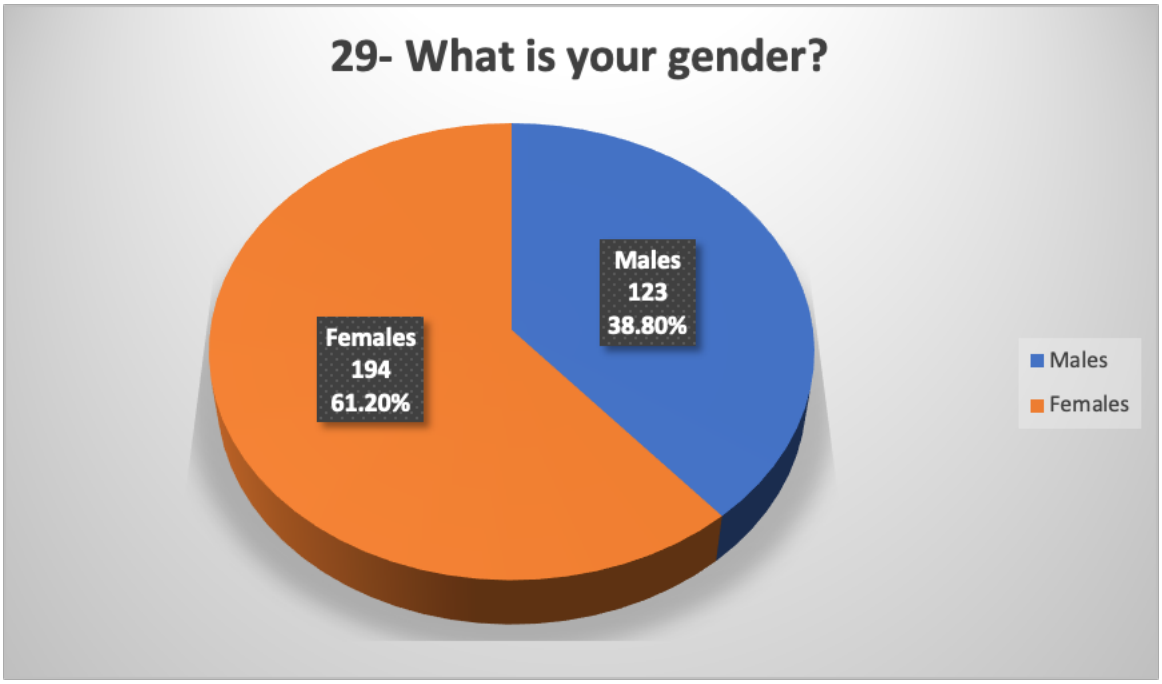


Figure 4.4

Age

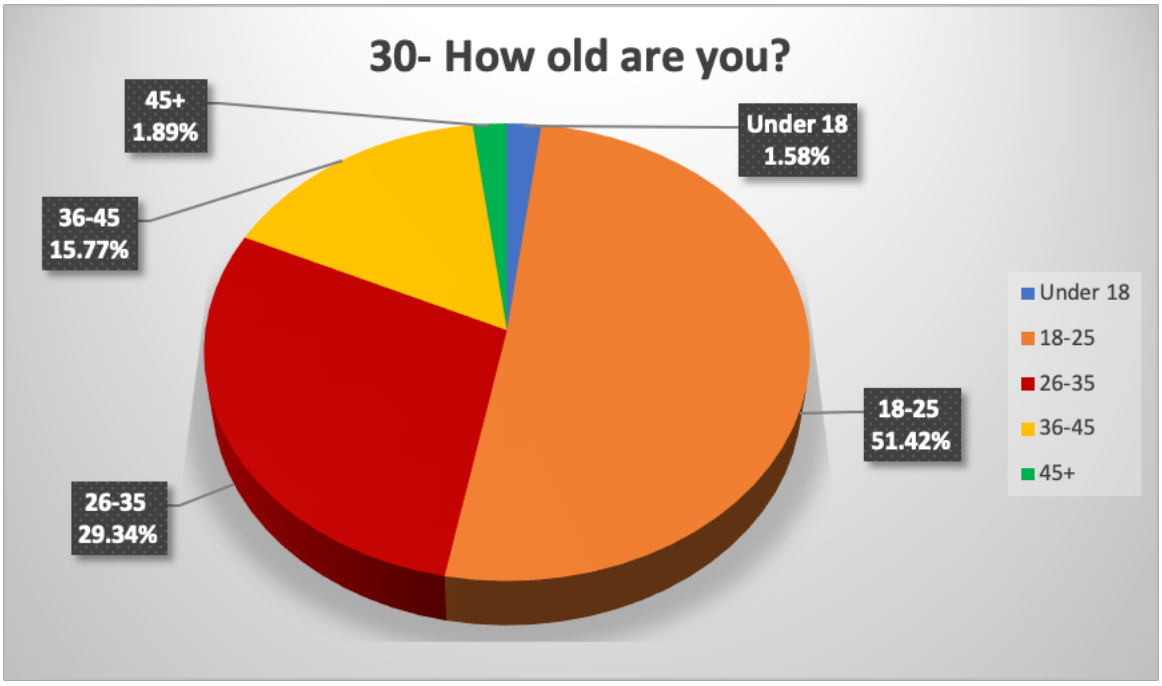


Figure 4.5

Level of Computer Expertise

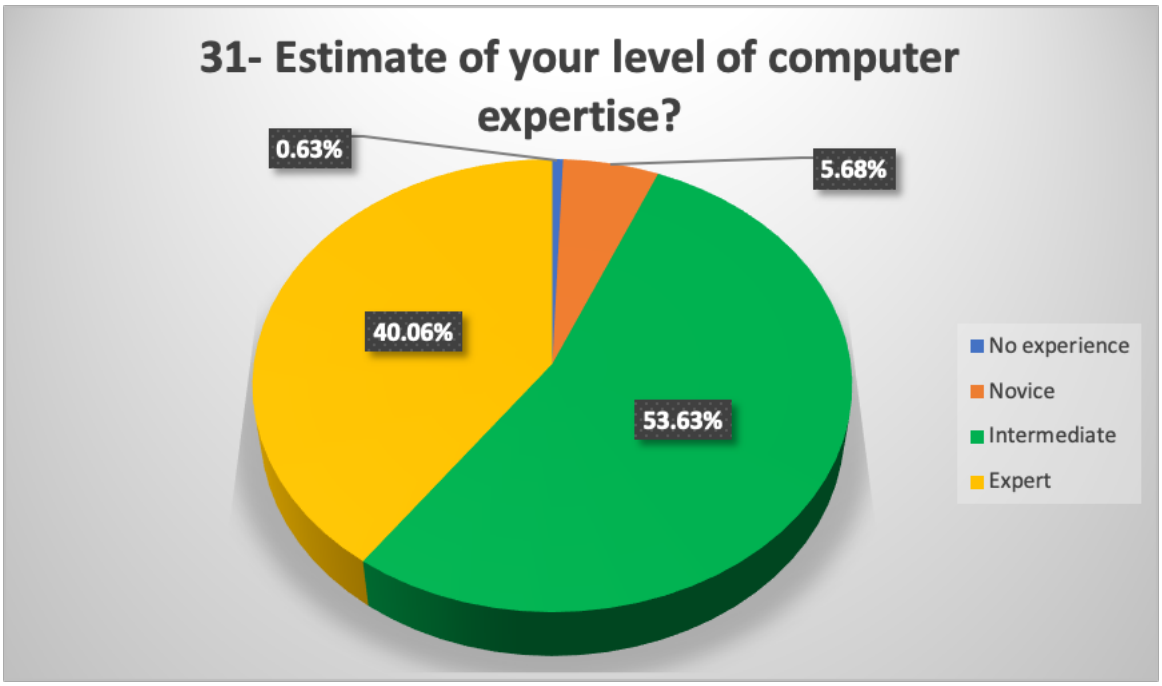


Figure 4.6

Comparison Between Men and Women in the Level of Computer Expertise

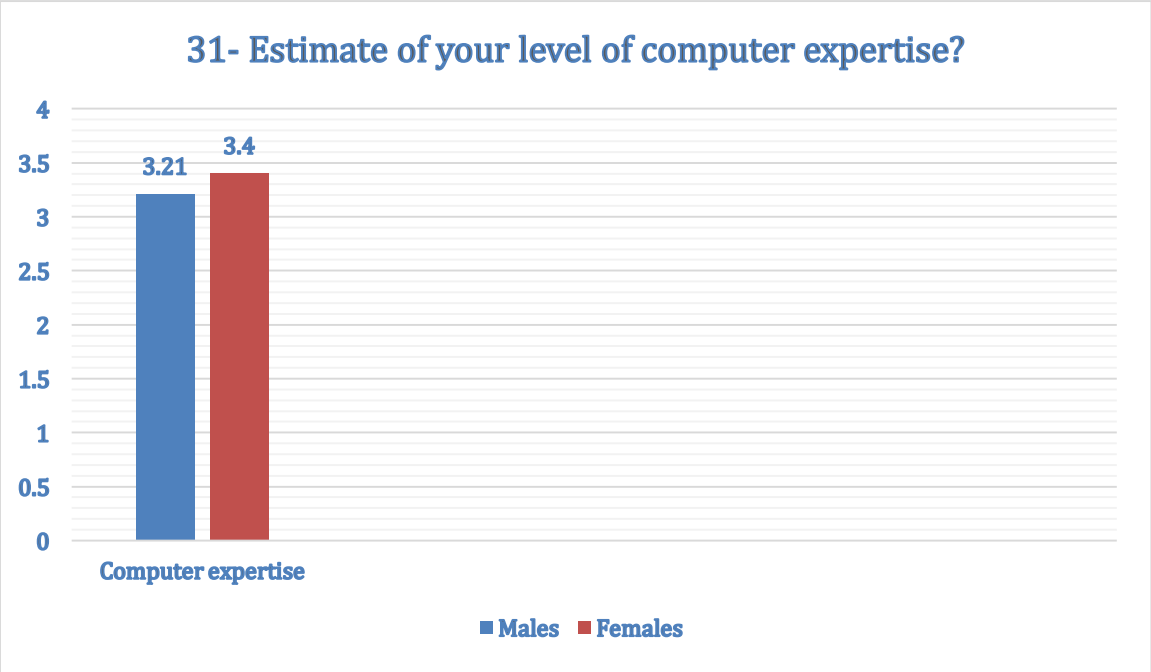


Figure 4.7

Location of Access

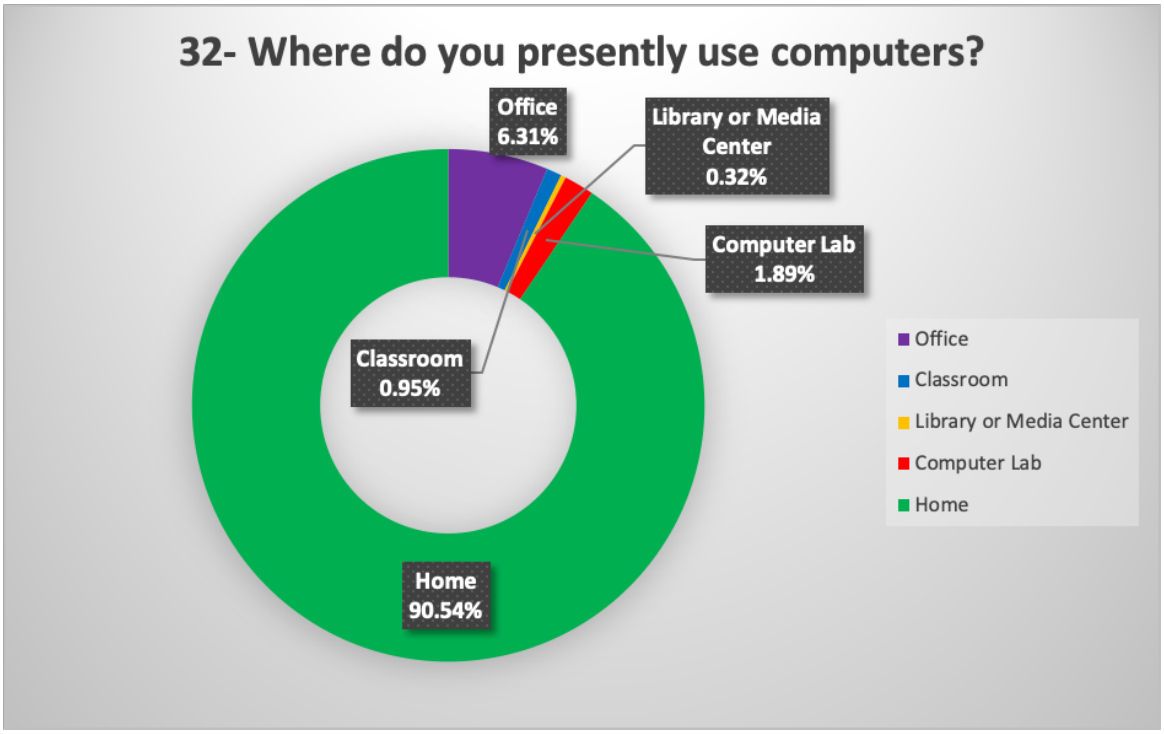
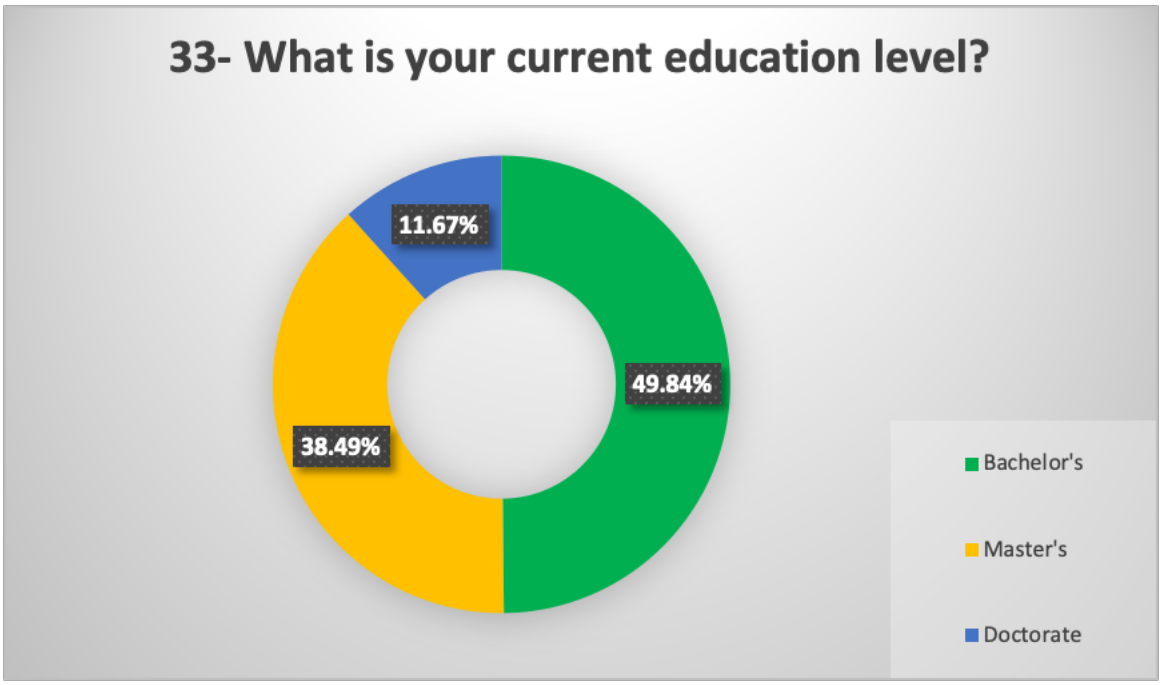


Figure 4.8

Educational Level



Other Descriptive Questions

Question Items 25-28 present descriptive information about the participants' knowledge and experiences with CMC technologies (e.g., e-mail, threaded discussion real-time chat), such as their keyboard skills, experiences in using software programs and internet, and the amount of time spent weekly in learning a blended course. The emphasis was on the comparison between female participants and male participants, because gender is the independent variable (IV) in this study. As shown in Table 4-3, the descriptive results indicated that females performed slightly better than males in e-mail, threaded discussion, and real-time chat. However, male participants' experience with using the internet was almost identical with their female peers (see Figures 4.8; 4.9; 4.10; & 4.11).

Table 4.3
Participants' Gender, Age, Level of Computer Expertise, Location Access, and Educational Level

Participants' knowledge and experience in using CMC	Overall sample count (n = 317) % Males and females average out of 5					
Item 25 - Proficiency in using CMC (Figure 4-7)	Novice	Below Average	Average	Above Average	Expert	Total
E-mail	9	7	61	128	112	317
	2.84%	2.21%	19.24%	40.38%	35.33%	100%
	Males					3.86
	Females					4.13
Threaded Discussion	15	29	113	107	53	317
	4.73%	9.15%	35.65%	33.75%	16.72%	100%
	Males					3.30
	Females					3.59
Real-time chat	7	11	52	105	142	317
	2.21%	3.47%	16.40%	33.12%	44.79%	100%
	Males					4.04
	Females					4.21
Item 26 - Experience in using CMC (Figure 4.8)	Average of years					
E-mail	Males			10.02		
	Females			10.43		
	Total			10.27		
Threaded Discussion	Males			4.09		
	Females			4.25		
	Total			4.19		
Real-time chat	Males			6.82		
	Females			7.65		
	Total			7.33		
Item 27 - Time spent weekly studying in blended course (Figure 4.9)	Average of hours (weekly)					
Email	Males			6.87		
	Females			7.01		
	Total			6.95		
Threaded Discussion	Males			5.43		
	Females			6.44		
	Total			6.05		
Real-time chat	Males			8.51		
	Females			10.52		
	Total			9.74		

Item 28 - Experience in using Internet (Figure 4.10)	Average of years
Males	13.146
Females	13.135
Total	13.139

Figure 4.9

Proficiency in using CMC

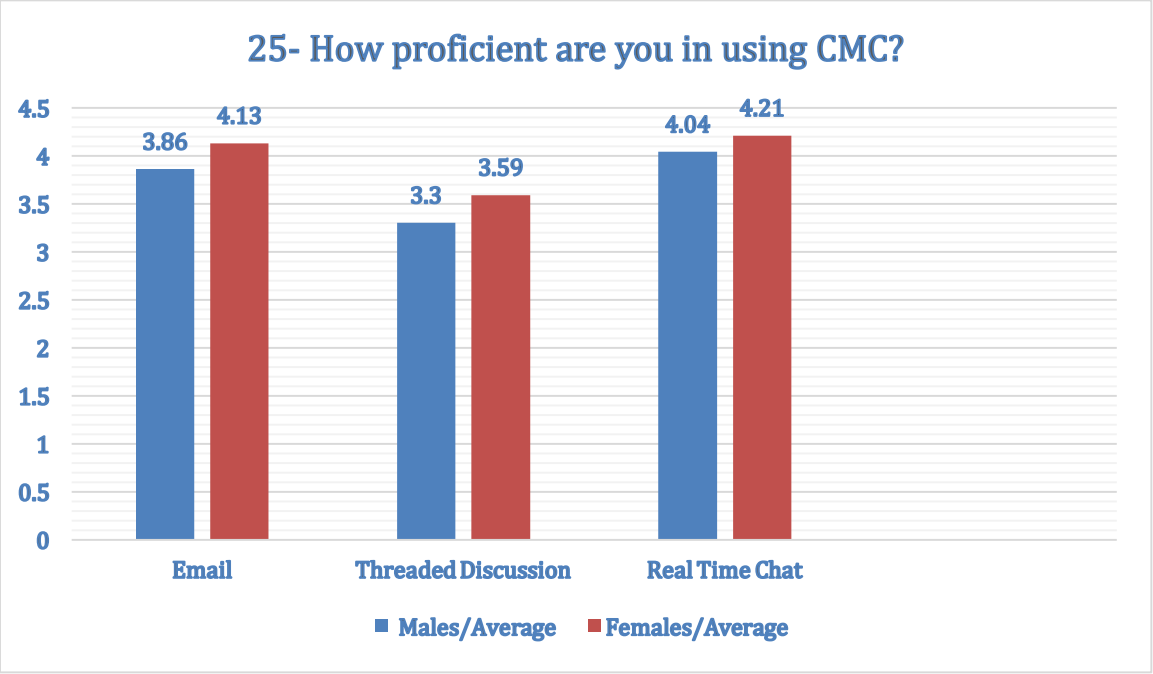


Figure 4.10

Experience in using CMC

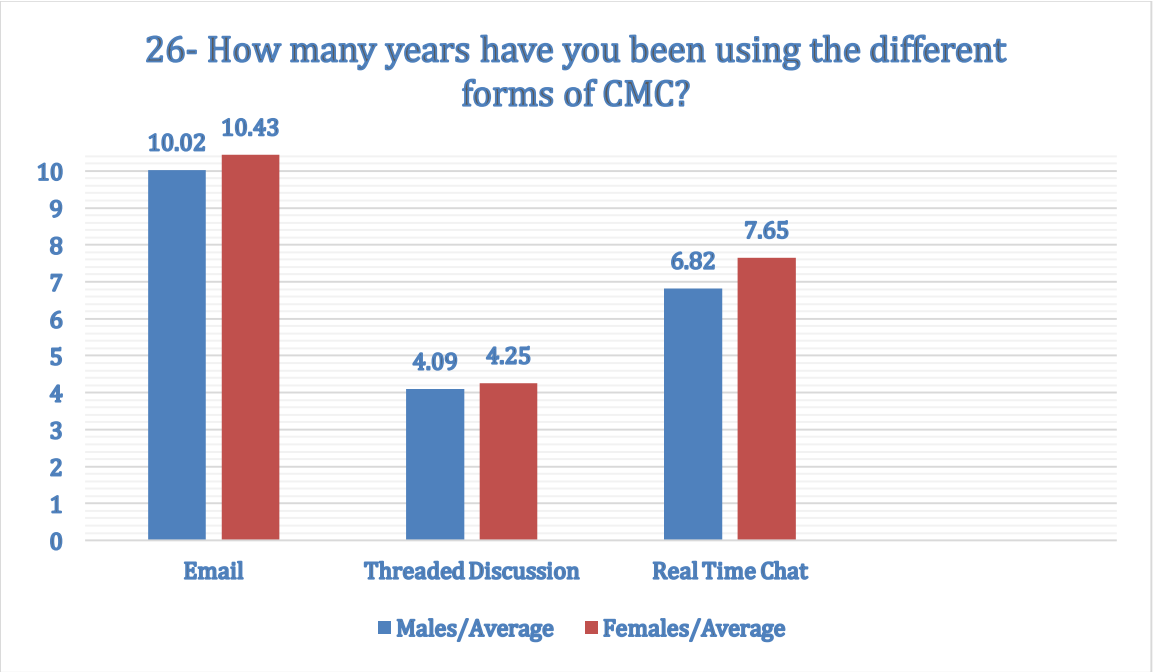


Figure 4.11

Time spent studying in a blended course

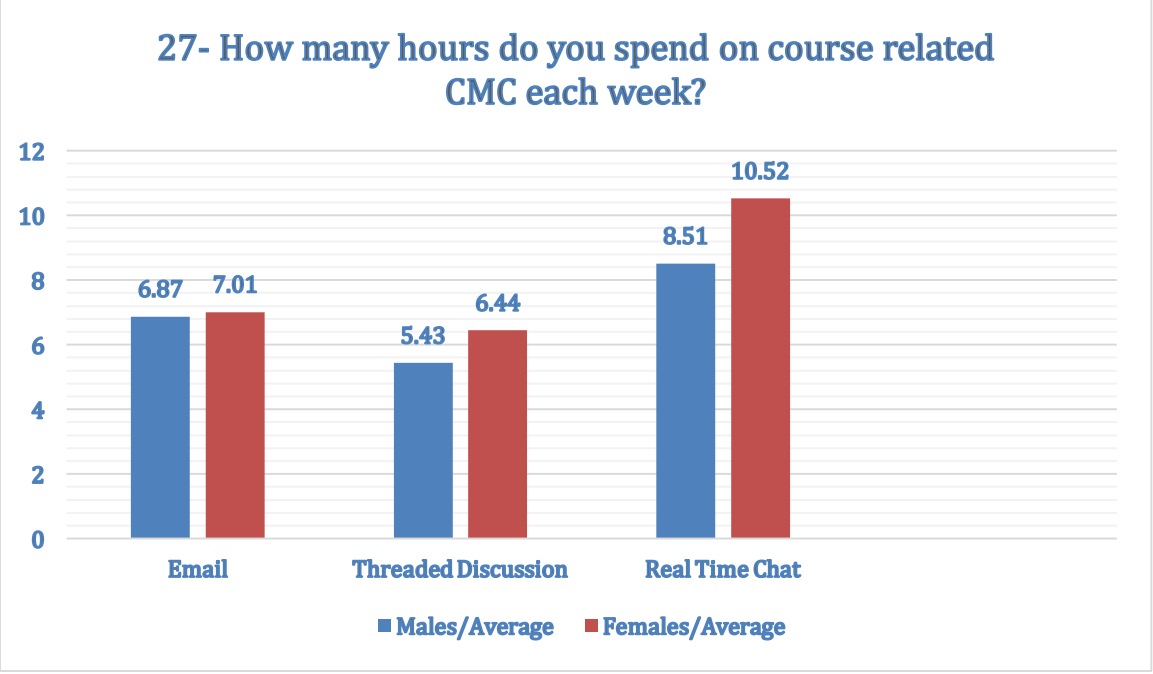
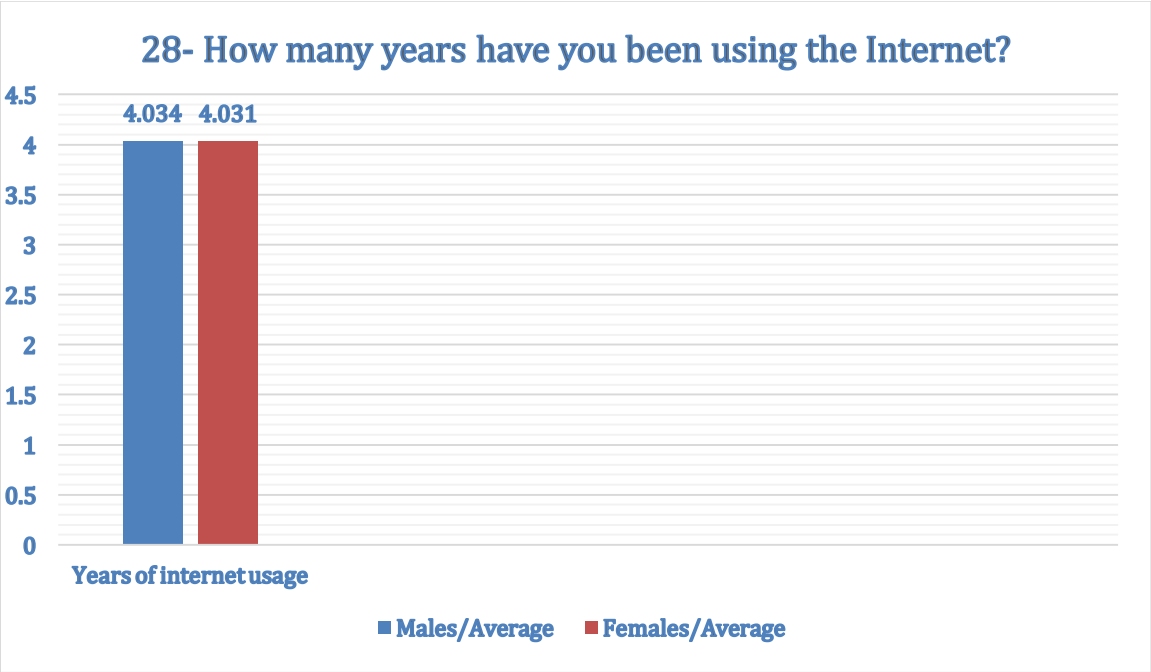


Figure 4.12

Experience in using the Internet



Survey Questions (Some Form of Agreement)

The descriptive statistics were calculated by computing the number of frequencies, means, and standard deviations. Table 4.4 shows the percentages of some form of agreement (cumulative percentage) for all survey questions. The survey was designed using a five-point continuous Likert-scale (from 1 = Strongly disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly agree). Therefore, some form of agreement was computed by combining the percentages of Agree and Strongly agree, while some form of disagreement was computed by adding the percentages of Disagree and Strongly disagree. The mean score of 3 is considered a center point. What is above the mean score of 3 is viewed as a high percentage of some form of agreement, and what is below it is considered as a high percentage of some form of disagreement, and vice versa.

As shown in Table 4.4 (Item 1) "CMC messages are social forms of communication," had the highest percent rating (89.5%) of some form of agreement, the highest mean (4.29), and the lowest (0.82) standard deviation among all other CMCQ items. In contrast, Item 24, "it is unlikely that someone else might redirect your messages," had the lowest percent rating (17.8%) of some form of agreement and the lowest mean (2.47) among all CMCQ questions. Item 19, "where I access CMC (home, office, computer labs, public areas, etc.) does not affect my ability/desire to participate," had the highest standard deviation (1.26) across all of survey statements. In general, means and percentages of some form of agreement can be considered moderate to high for most of the questions, particularly the questions of construct three (*interactivity*) and four (*online communication*). By comparison, means and the percentages of some form of agreement are considered moderate to low for most items in construct one (*social context*), and low in all items of construct two (*privacy*). By comparison men and women means across the four constructs, women were slightly higher than men in three constructs (privacy, interactivity, online communication) while men were slightly higher than women only in the social context construct (see figure 4. 12). All items have positive statements except item five. Thus, item five was reverse-coded; before statistical analysis, because it was worded in a negative/reverse statement.

Table 4.4
Percentage of Some Form of Agreement for the Four Constructs of Social Presence: Social Context, Privacy, Interactivity, and Online Communication

Surevy Questions		% Some Form of Agreement	M	SD
C1. Social context				
Q1.	CMC messages are social forms of communication.	89.5	4.29	0.82
Q15.	CMC allow relationships to be established based upon sharing and exchanging information.	74.4	3.84	0.95

Q16.	CMC allows me to build more caring social relationship with others.	59.3	3.54	1.19
Q6.	CMC is a sensitive means of communicating with others.	49.2	3.27	1.05
Q3.	CMC messages convey feeling and emotion.	46.3	3.20	1.15
Q5.	CMC messages are impersonal.	45.2	3.22	1.18
Q20.	CMC permits the building of trust relationships.	31.5	2.91	1.02
Q2.	CMC messages are an informal and casual way to communicate.	22.7	2.43	1.20
C2. Privacy				
Q14.	CMC is technically reliable (e.g., free of system or software errors that might compromise the reliability of your online messages reaching ONLY the target destination).	38.1	2.97	1.19
Q18.	It is unlikely that someone might obtain personal information about you from the CMC messages.	31.8	2.85	1.16
Q4.	CMC is private/confidential.	30.6	2.91	1.12
Q24.	It is unlikely that someone else might redirect your messages.	17.8	2.47	1.10
C3. Interactivity				
Q23.	I am comfortable with the communication styles employed by CMC users.	73.1	3.80	0.93
Q7.	Using CMC is a pleasant way to communicate with others.	71.3	3.78	1.05
Q17.	The aggressive over-participation of others in CMC may cause me to participate less in CMC.	60.2	3.56	1.07
Q13.	I am comfortable participating, even I am not familiar with the topics.	56.1	3.40	1.10
Q8.	Users of CMC normally respond to messages immediately.	44.8	3.18	1.07
Q21.	The large amounts of CMC messages (numbers of messages and length of messages) do not inhibit my ability to communicate.	44.1	3.14	1.15
C4. Online communication				
Q22.	My computer keyboard skills allow me to be comfortable while participating in CMC.	74.1	3.85	1.01

Q10.	It is easy to express what I want to communicate through CMC.	56.7	3.42	1.16
Q11.	The language used to express oneself in CMC is meaningful.	51.7	3.36	1.03
Q9.	The language people use to express themselves in online communication is stimulating.	50.7	3.43	0.93
Q12.	The language used to express oneself in online communication is easily understood.	48.2	3.36	1.06
Q19.	Where I access CMC (home, office, computer labs, public areas, etc.) does not affect my ability/desire to participate.	43.8	3.04	1.26

**For more details, see Appendix C*

Figure 4.13

Comparison between men and women among the four constructs of social presence by the overall means

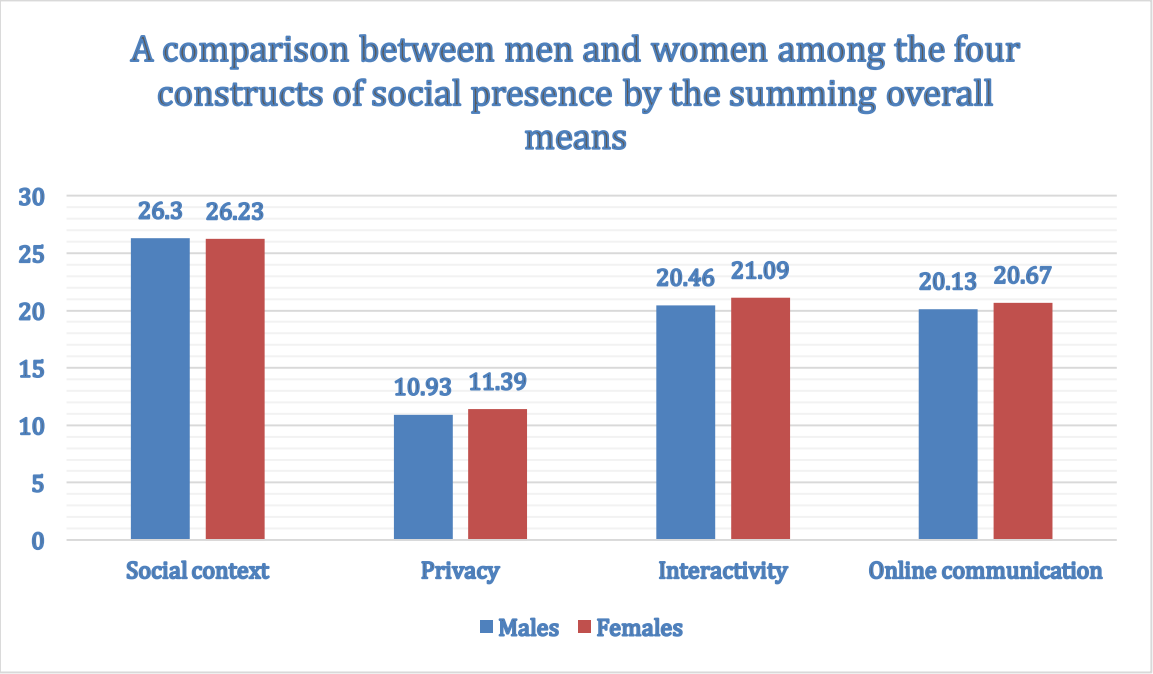


Figure 4.14

Comparison between men and women among the four constructs of social presence by averaging the overall means

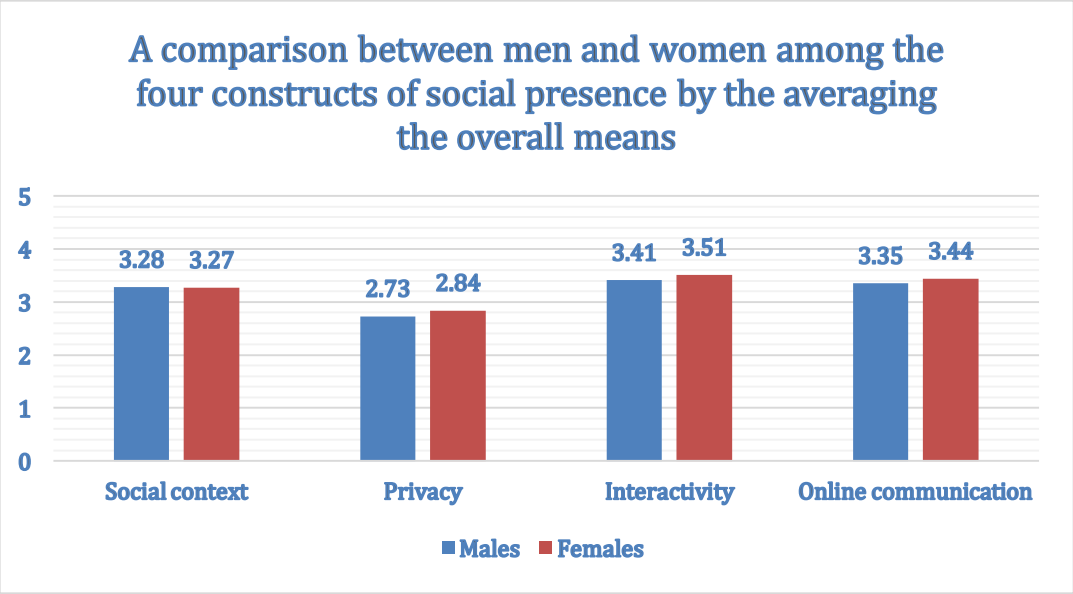


Figure 4.15

Social Context

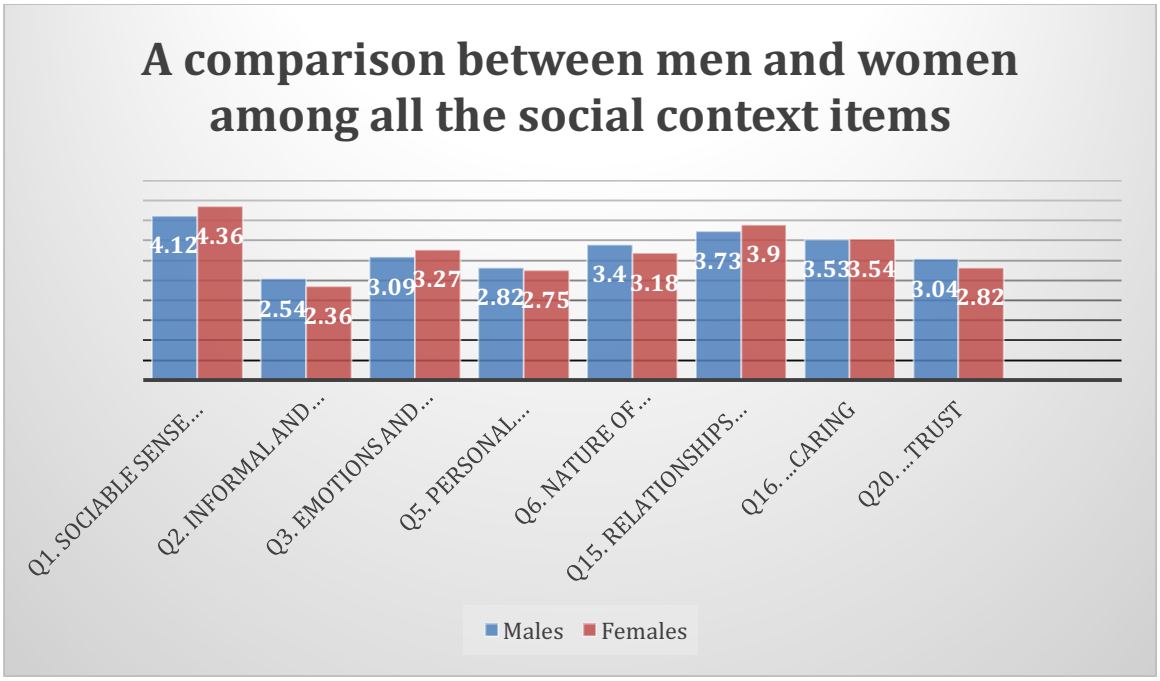


Figure 4.16

Privacy

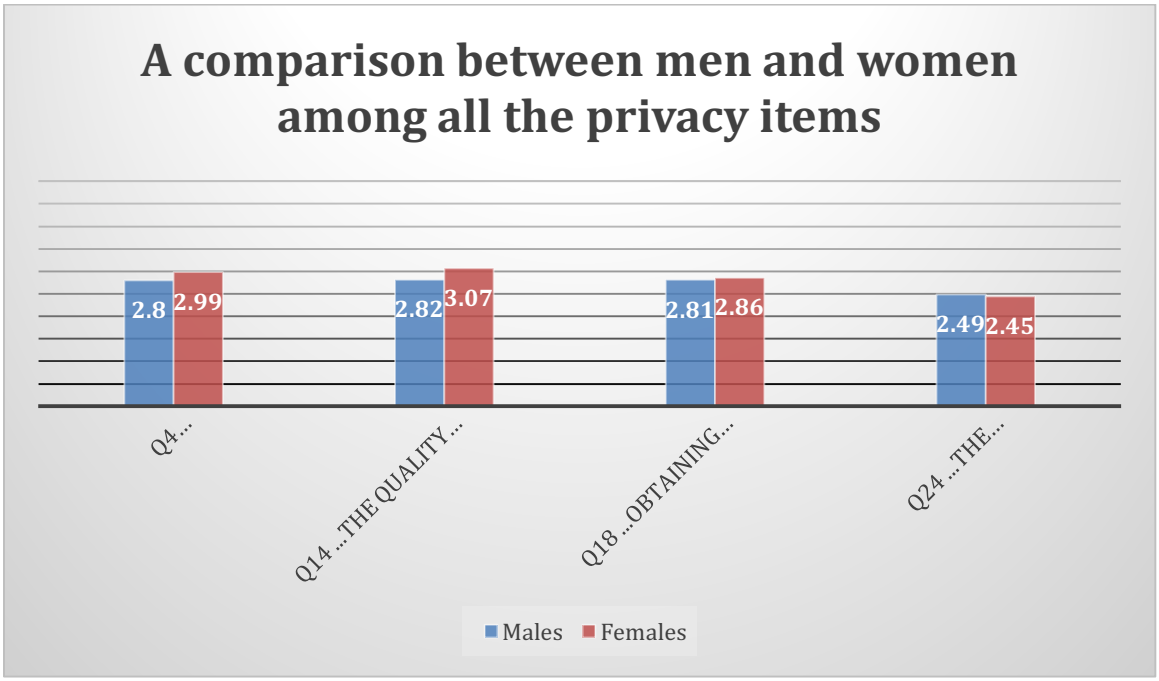


Figure 4.17

Interactivity

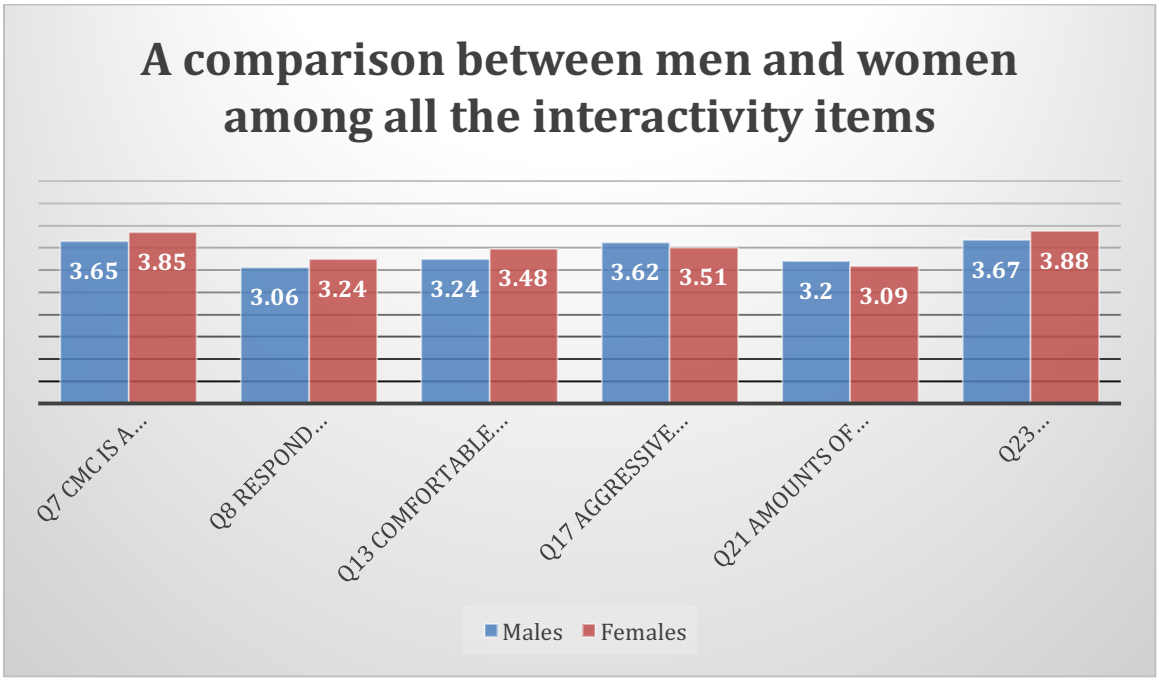
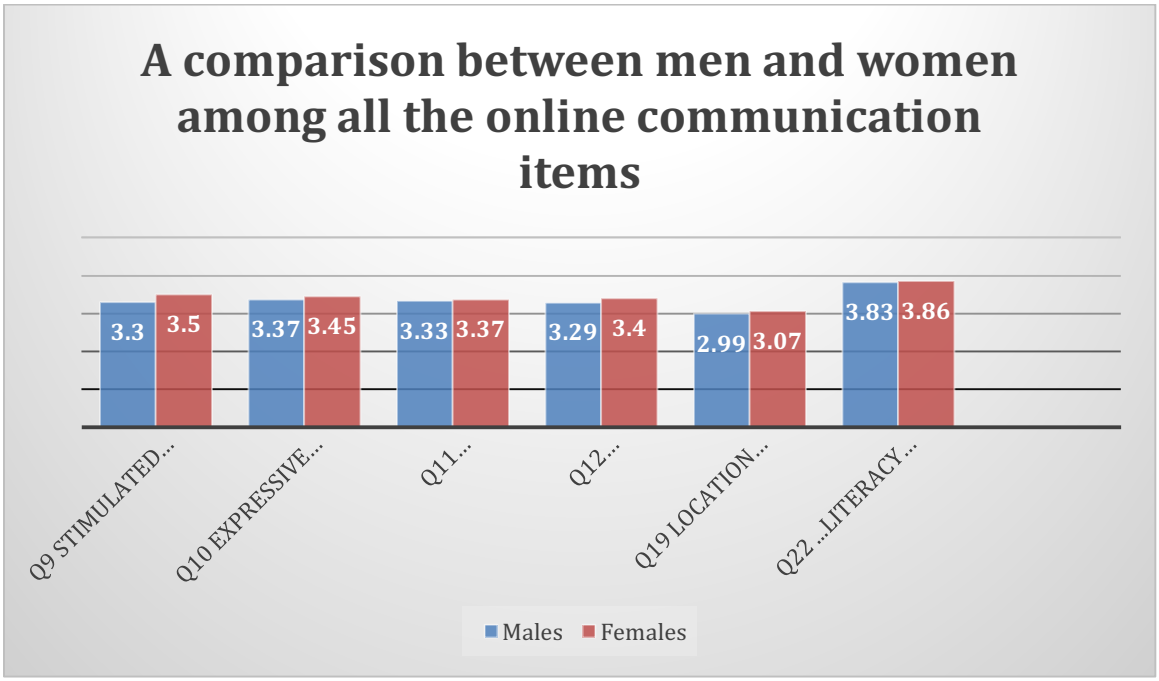


Figure 4.18

Online Communication



Results of *t*-test

As discussed earlier, the research question of this study was: Does gender impact Saudi students' perceptions of social presence in an online portion of a hybrid learning environments? directional alternative hypothesis was that gender will influence the degree of perceived social presence in an online portion of a hybrid learning environment for Saudi Arabian students at King Saud University (KSU) in favor of Saudi female students. The overall means of social presence levels for males' group (n= 123) was M = 77.83 (SD = 12.238). In contrast, the overall means of social presence levels for females' group (n=194) was M = 79.39 (SD = 9.976). To put it differently, by averaging means and standard deviations, females' levels of social presence M =3.31 out of 5 (SD = 0.41) were slightly larger than their male peers, who had levels of social presence M =3.24 out of 5 (SD = 0.51). An independent samples *t*-test was conducted to test the directional alternative hypothesis that states that gender will influence the degree of perceived

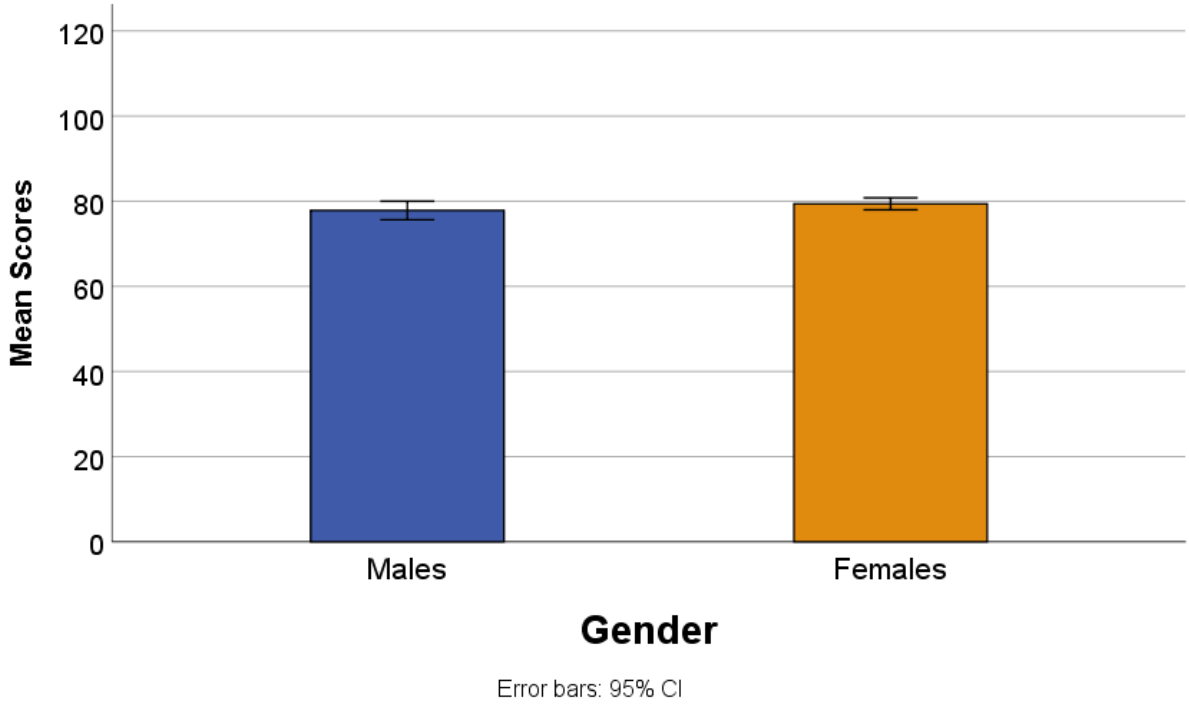
social presence in an online portion of a blended learning environment for Saudi Arabian students at KSU in favor of Saudi female students.

The assumption of normality was tested for the intent to perform a *t*-test, even though it is less critical with large sample size (Gravetter & Wallnau, 2013). As can be shown in Table 4-5, the results of the normality test (skew < |2.0|, and kurtosis < |7.0|; Kim, 2013) were in the acceptable levels for approximately symmetric distribution shape. Furthermore, the assumption of homogeneity of variances was assessed (by default via SPSS, using Levene´s test) and the results were satisfied, $F(315) = 2.831$, $p = .093$. With an alpha level that was set at $p < 0.05$, the independent samples t-test was not statistically significant, $t(315) = -1.239$, $p = .108$, one tailed. Cohen's *d* was estimated to be at 0.13, which is a small effect size (Gravetter & Wallnau, 2013; Warner, 2013). In other words, the independent variable (gender) had an insignificant impact on dependent variable (social presence levels) in single gender segregated and blended learning environments. Moreover, gender was not related either to any of social presence four constructs (social context, privacy, interactivity, and online communication). To put it more clearly, independent samples t-test was also performed on all four foregoing constructs, and the results were as follow: social context was not statistically significant, $t(315) = .155$, $p = .435$, one tailed. Privacy was not statistically significant, $t(315) = -1.342$, $p = .090$, one tailed. Interactivity was also not statistically significant, $t(315) = -1.561$, $p = .006$, one tailed. Lastly, online communication was also not statistically significant, $t(315) = -1.097$, $p = .136$, one tailed. A graph that displays the 95% confidence intervals for means is shown in Figure 4.19.

Table 4.5
Descriptive statistics associated with gender

	n	*M*	*SD*	Skewness	Kurtosis
Males	123	77.83	12.238	-.743	2.357
Females	194	79.39	9.976	.204	.695

Figure 4.19
Confidence Intervals



As shown in Table 2, the correlation matrix was analyzed to demonstrate what dependent variables; that are associated with social presence, are correlated with gender. A correlation for the data revealed a significant relationship between gender and computer expertise r= +0.146, n=315, p<0.01, two-tailed. In other words, there is inequality between men and women in computer expertise, which is a fundamental component of online communication. Therefore, it should be a difference between males and females in online communication construct as the literature suggested (Alkhalaf, et al., 2013; Li & Kirkup, 2007; Yau & Cheng, 2012). There are also other significant correlations among some dependent variables that are found in Table 4.6.

Table 4.6
Correlations matrix for social presence and all demographic information (N=317)

	SP	SC	P	IN	OC	G	A	CE	LA	EL
Social presence (SP)	-	.770**	.541**	.809**	.809**	.070	-.021	.090	-.080	.005
Social Context (SC)		-	.257**	.548**	.440**	-.009	-.007	.009	-.109*	-.010
Privacy (P)				.270**	.238**	.075	.038	.011	.026	.020
Interactivity (IN)					.617**	.088	-.065	.084	-.122*	.013
Online Communication (OC)						.062	-.020	.144**	-.025	-.004

Gender (G)	.031	.146**	-.117*	.123*
Age (A)		.073	.157**	.653**
Level of Computer Expertise (CE)			0.15	.114*
Location of Access (LA)				-.036
Education Level (EL				

Note. ** correlation is significant at the 0.01 level (2-tailed).
* correlation is significant at the 0.05 level (2-tailed).

Summary

Chapter Four reported the results based on the directional alternative hypothesis. Both descriptive and inferential statistical findings were used to answer the research question of the study. Also, this chapter provided detailed information about the population and the sample characteristics, demographic information, and the participants' knowledge and experiences in using technologies. An independent *t*-test was performed to analyze data. The main result of this study indicated that there is no significant difference between females and males in terms of social presence levels across all four constructs. The discussion of the findings is presented in Chapter Five.

CHAPTER V

DISCUSSION

Overview

As indicated in Chapter One, the Crown Prince of Saudi Arabia, Mohammad bin Salman bin Abdulaziz Al Saud, announced on April 25, 2016 the blueprint of what he called "Saudi Arabia's Vision for 2030", which is a plan that aims to change the country in all areas of life, such as economic, education, military, health, tourism, and so forth. One broad goal of Saudi Vision 2030 is to ensure social equality among all Saudi citizens and residents, including equality between men and women, who are mostly segregated in all aspects of life, including education (Saudi Vision 2030, 2019). More specifically, the first general educational goal mentioned in the Saudi National Transformation Program 2020 (one of the Saudi Vision 2030 programs) aims to improve the quality of teaching approaches and learning outcomes, as well as assert equality among students in all educational institutions, both in K-12 and higher education (Ministry of Education, 2019).

Distance education is relatively new in Saudi Arabia. According to the Saudi National Center for E-learning and Distance Learning (NCeLDL), the first eight out of twenty-nine Saudi public universities started launching e-learning systems (e.g., Blackboard) into their programs in 2010. Moreover, the shift from traditional to e-learning teaching methods has been slow, because NCeLDL needed time to train faculty members to efficiently use these new e-learning systems (NCeLDL, 2019). Therefore, the Ministry of Education and NCeLDL in Saudi Arabia should

avail from the experiences of those countries, who preceded them in the domain of e-learning and distance education, such as the United States, Canada, and the United Kingdom.

One major challenge that affects students' learning in online environments (e.g., learning management system, LMS) is the lack of social interaction among online learners, because of low levels of social presence (Hung et al., 2015; Kear, 2010). High degrees of social presence among distant students are crucial in online learning context (Garrison et al., 2000; Tu, 2000a) because, without it, learners are unable to benefit from the activities of collaborative learning. Collaboration is a key principle of social constructivist andragogy that is vital to improving students' learning experiences, as well as one of fundamental 21st century learning skills (Vygotsky, 1978; Harasim, 2017), along with exchanging viewpoints, providing support, seeking for assistance, and building positive relationship with their fellows (Gunawardena, 1995; Kreijns et al., 2003; Anderson, 2008; Johnson & Johnson, 2008). Additionally, past research found that gender is a critical factor that influences learners in some aspects of their interaction, such as communication patterns (Christen et al., 2015), computer literacy skills (Yau & Cheng, 2012), sharing personal information (Thornthwaite, Balnave, & Barnes, 2018), and so on.

Therefore, the purpose of this quantitative study was to examine the relationship between gender and the students' perception of social presence, to determine the existing level of equality the men and women in terms of engaging in respectful, trustful, comfortable, and secure learning experiences (Garrison, 2017), as well as diminish the gender gap in using technology in online learning settings (Messmer & Schmitz, 2004; Von Prummer, 2004). This study aimed to answer the research question: Does gender impact Saudi students' perceptions of social presence in an online portion of a hybrid learning environments? Online social presence was operationalized by self-report items that ask distant learners about their perceptions toward the four constructs of social presence: social context, online communication, interactivity, and privacy. Based on the

results of past studies, the directional alternative hypothesis was that gender will influence the degree of perceived social presence in an online portion of a hybrid learning environment for Saudi Arabian students at King Saud University (KSU) in favor of Saudi female students.

Nonetheless, the key findings of this study showed that social presence levels were not statistically significantly greater among female students, as compared to male students. As a result, the alternative hypothesis was not supported by the study, and the null hypothesis was not rejected. However, the results did suggest that female students had slightly higher levels of social presence than males in three constructs (privacy, interactivity, and online communication), while males had slightly higher levels of social presence only in social context construct. Also, the results showed that both males and females had moderate levels of social presence (see Table 4.5 & Figure 4.12 in Chapter IV). This chapter includes the following sections: discussion of the key findings, implication for theory and practice, limitations, recommendations for future research, and conclusion.

Discussion of Findings

The results of this study are similar to other studies that found that both genders have nearly equal perception levels of social presence in the CMC learning environments (Almasi et al., 2018; Cho et al., 2015; Elcicek et al., 2018; Felnhofer et al., 2014; Gibson et al., 2012; Horzum, 2015; Kim et al., 2011; Sorden & Munene, 2013; Tu et al., 2011). Thus, this study showed that gender has no significant impact on the students' perception of social presence, as well as to any of its four constructs (social context, privacy, interactivity, and online communication) in the online portion of blended learning environments (see Figure 4.12 in Chapter IV). These findings are aligned with Tu et al.'s (2011) study; however, those findings were in mixed-gender environments, while this study took place in single-gender learning environments.

Moreover, the results of this study are inconsistent with studies that found differences between the two genders regarding social presence (Angelaki & Mavroidis, 2013; Christen et al., 2015; Cobb, 2009; 2011; Johnson, 2011; Lowden & Hostetter, 2012; Kim 2011). More specifically, the results of this study are converse to past studies that suggested a difference between males and females existed in all the four constructs of social presence, which are *social context* (e.g., Burleson et al., 2009; Derntl et al., 2010, Rodriguez-Ardura & Meseguer-Artola, 2016; Wade et al., 2011), *privacy* (e.g., Flanagin et al., 2002; Fogel & Nehmad, 2009; Koch et al., 2005; Thornthwaite et al., 2018), *interactivity* (Christen et al., 2015; Morante et al., 2017; Murphrey et al., 2012, Thayalan & Shanthi, 2011), and *online communication* (Alkhalaf et al., 2013; Cubukcu & Kutlu, 2013; Yau & Cheng, 2012). The results of this study highlighted important aspects about gender communication in single-gender and blended learning environments in the Middle Eastern context, especially in Saudi Arabia. These unanticipated results could be explained by the following two general reasons: The COVID-19 pandemic and the technologies evolution in the last decade.

The COVID-19 Pandemic

The stressful events that the world has been living through right now with the COVID-19 pandemic led to the lockdown and closure of all schools, universities, and educational institutions across the kingdom of Saudi Arabia. The first case diagnosed with COVID-19 in Saudi Arabia was on March 2nd, 2020 (Saudi Minstiray of Health, 2020). As a reault, there were recommendations from the Saudi Health Ministry to socially distance and self-quarantine during the pandemic. Therefore, few days later, the Minister of Education in Saudi Arabia announced on March 8th, 2020, the shift from traditional learning/blended learning to emergency remote learning within one day (Hodges, Moore, Lockee, Trust & Bond, 2020; Moawad, 2020; Ministry of Education, 2020; Okaz, 2020). This shift was sudden and unplanned, because of the

pandemic, which might have impacted the results of this study that were gathered in the period from July 13th to October 1st, 2020. In other words, the participants of this study, who are from the College of Education at KSU, have been taking remote courses, not blended, since Monday, March 9th, 2020. To put it more clearly, as explained before in chapter two, Face-to-Face learning environments have the most levels of social presence (Kehrwald, 2008; Hung et al., 2015; Garrison, 2017); followed by blended learning environments, and the remote/fully online learning environments have the least degrees of social presence (Akyol et al., 2009). That is because blended learning environments have Face-to-Face meetings, so learners can build interpersonal relationships during these sessions that increase the sense of group identity and cohesion, which is absent in the remote/fully online learning environments case (Akyol et al., 2009). This should explain the low/moderate levels of social presence that were gathered from these results.

Moreover, this sudden change of course delivery could explain the lack of differences between male and female participants in their levels of social presence. According to Simonson et al., (2012), the process of designing affective online courses requires, from the instructors or instructional designers, between three – five months. This includes creating a clear plan (Using ISD model) to analyze all the major aspects/components of the learning process such as instructors' roles, the characteristics of the learners, and selecting the appropriate materials and technologies to ensure that these components work together in a harmony way as a system (Simonson et al., 2012). Without a clear plan, or a sudden move from FtF to remote/fully online learning, one or more elements inside forgoing components may be lost. In other words, social presence probably has not been taken into account when designing these courses, which may explain both the low/moderate levels of social presence among both male and female participants, which caused a lack of differences between them.

Furthermore, the remote courses during the COVID-19 pandemic were originally designed for face-to-face settings. In other words, these remote courses were not initially developed for computer-mediated communication (CMC) environments, and they were not prepared for online learning settings (Zia, 2020). For instance, it is difficult for some practical learning activities (e.g., labs, physical education, art education, etc.) to be implemented and assessed via CMC (Rovai & Downey, 2010; Zia, 2020), which may reduce students' satisfaction and diminish social presence. This unexpected shift of learning modality from face-to-face to remote could explain why the levels of social presence were moderate and not high during the COVID-19 pandemic. It also demonstrates that enhancing social presence is critical in remote/online learning and must be taken into consideration when designing blended or remote courses even in pandemic situations.

In summary, what has been done in Saudi Arabia during the COVID-19 pandemic, it can be called emergency remote learning instead of online learning because the purposeful principles of online learning design that are typically created in advance are missing (Hodges et al., 2020; Simonson et al., 2012). It is also essential to indicate that the COVID-19 pandemic affected Saudi students' learning in terms of their mental health (Alkhamees, Alrashed, Alzunaydi, Almohimeed, & Aljohani, 2020; Khoshaim, Al-Sukayt, Chinna, Nurunnabi, Sundarasen, Kamaludin, Baloch, & Hossain, 2020; O'Keefe, Dellinger, Mathes, Holland, & Knott, 2020), lack of internet access (O'Keefe et al., 2020; Tanveer, Bhaumik, Hassan, & Ul Haq, 2020), engagement in the learning process (Alshehri, Mordhah, Alsibiani, Alsobhi, Alnazzawi, 2020; O'Keefe et al., 2020), concern about the final grades and instructors' capabilities of using technology (Alshehri et al., 2020), and economic status (Tanveer et al., 2020). In contrast, the COVID-19 pandemic also affected instructors from keeping their students on track even though they struggled with the stay-home policy during the pandemic (Alshehri et al., 2020).

Furthermore, instructors need to be aware of using proper assessment methods, teaching active and collaborative learning, and utilizing recent technologies effectively (Alshehri et al., 2020).

Technology Evolution in the Last Decade

Lastly, before the COVID-19 pandemic, Saudi national academic platforms, Massive Open Online Courses (MOOCS), had been spreading since 2013. Examples include Rwaq, the first platform in Saudi Arabia and the Arab world (Badi and Ali, 2016), Noon, Doroob, iEN, Madrasati, and others. The spread of these Saudi national academic platforms contributed to the increased enrollment in online courses by both genders, which could minimize the gap between male and female students in their perceptions of social presence. Also, the evolution usage of communication technologies in Saudi Arabia (e.g., Twitter, YouTube, blogs, etc.), in the last decade, contributed to the equal access for technologies for both men and women, which may reflect on their perceptions of social presence to be almost the same in this study. For example, both genders have equal opportunities to use asynchronous and synchronous communication apps (e.g., WhatsApp) to contact each other in real time (interactivity construct), convey feeling and emotions by using emoji (social context construct), comprehend the anonymity and confidentiality in the technology space (privacy construct), and develop their computer literacy skills (online communication construct; Alharbi & Alturki, 2018). Likewise, one goal of the Saudi National Transformation Program 2020 (part of Saudi Vision 2030) is the digital transformation of the Kingdom of Saudi Arabia from 2018 until 2020. The national digital transformation aims to launch projects and programs across priority sectors (e.g., industry, education, and smart cities, etc.), in addition to launching training programs for male and female students and employees to keep pace with the national digital transformation (Saudi Vision 2030, 2020). This transformation could lead to equal opportunities for both genders in learning,

engaging, and interacting with each other through technologies, as well as explain the approximately equal levels of social presence in men and women in this study.

Social Context

As previously mentioned, the core of social context is the intimacy or closeness among interactants, in terms of their social relationships, trust, caring, exchanging emotions and feelings, sociable sense, informal communication, personal conversation, and the nature of the communication topics (Tu & Yen, 2006; Yen & Tu, 2008). Theoretically, women were expected to have greater social context levels than men, because women generally have a more social-oriented nature of communication (Johnson, 2011; Tu et al., 2011), while men have a task-oriented nature of communication (Tu et al., 2011). For example, women tend to reveal more support, emotions, and intimacy behaviors to build positive relationship with their peers than men (Burleson et al., 2009; Derntl et al., 2010; Rodriguez-Ardura & Meseguer-Artola, 2016; Wade et al., 2011).

Nevertheless, the results of this study showed that men and women were relatively equal across all the eight items of social context. Overall, women scored slightly and insignificantly higher than men in Items (1 "CMC messages are social forms of communication", 3 "CMC messages convey feeling and emotion", 15 "CMC allow relationships to be established based upon sharing and exchanging information", 16 "CMC allows me to build more caring social relationship with others", while men scored insignificantly higher than women in items (2 "CMC messages are an informal and casual way to communicate", 5 "CMC messages are impersonal", 6 "CMC is a sensitive means of communicating with others", and "CMC permits the building of trust relationships". These results are consistent with Tu et al. (2011), who found that women are relatively equal to their men peers in the social context construct (see Figure 4.14). This similarity could be explained by the effect of the Saudi culture and the strict social boundaries on

males and females' interactions. For instance, Saudi males and females were found to be equal in terms of their feeling expression and building interposal relationships through social media networks (Alghamdi, Algarni, Qutob, 2018). Namely, both genders overcome the strict social boundaries by using technology as an open window to the outside world, so they can exchange intimacy behaviors through it.

Privacy

As aforementioned, privacy is the users' feeling about the security and the confidentiality of the CMC to control others' access to use their personal information (Lowry et al., 2011, Yen & Tu, 2008). Therefore, privacy should be viewed as a sensitive, dynamic, and subjective variable that fluctuates among users and CMC technologies as well (Tu, 2002b; Tu, 2002c; Yen & Tu, 2008). Privacy is needed to build an intimate online communication environment (Tu et al., 2011). Otherwise stated, users in a private and confidential learning environment tend to be more open to sharing their feelings, concerns, and personal information (Chen, 2004; Tu, 2001; Tu, 2002a; Tu & McIsaac, 2002; Wang et al., 2015); thus, their levels of social presence increase (Tu, 2000a; Tu & Yen, 2006). The construct of privacy involves the following factors: feeling of confidentiality (item four), reliability and security of CMC (item 14), obtaining personal information (item 18), accidental forwarding of messages (item 24; Yen & Tu, 2008).

According to the literature review that was presented in Chapter Two, women were less likely to share their personal information than men (Flanagin et al., 2002; Fogel & Nehmad, 2009; Jaffe et al., 1995; Koch et al., 2005; Thornthwaite et al., 2018). Alternatively stated, women were expected to have less social presence with regard to privacy construct. For instance, females (in the western context) prefer to use pseudonymous to be anonymous as well as to disguise their gender identities than males (Jaffe et al., 1995; Koch et al., 2005). However, the findings of this study imply that women have statistically equal privacy levels with men, which

is also consistent with Tu et al., (2011). As shown in Figure 4.15, women were slightly numerically higher than men on Items 4 “CMC is private/confidential”, 14 “CMC is technically reliable (e.g., free of system or software errors that might compromise the reliability of your online messages reaching ONLY the target destination)”, while men were slightly numerically higher than women only on Item 24.

In this study, the privacy construct had the lowest levels of social presence, compared to other social presence constructs. It also appeared that the strict social boundaries in Saudi Arabia influenced sharing personal information for both genders, especially for Saudi females. In the Saudi culture, most Saudi females and males are cautious about sharing their or using other personal information (e.g., real names, photos, videos, etc.) on social media due to the potential misuse by others or the risks of the consequences of such behavior (Alghamdi et al. 2018; Alruwaili & Ku, 2019). However, similary to the western females, Saudi females are more likely to use anonymous names (pseudonyms) and symbolic photos than Saudi males due to the cultural restrictions (Aljasir, 2015; Alruwaili & Ku, 2019). Alghamdi et al. (2018) indicated that both Saudi genders believe that personal information should be only shared with people in real life, not on the internet. Also, the type of technology (e.g., many-to-many communication such as discussion in bulletin boards) might reduce the levels of privacy, because of their awareness of the consequences of sharing their personal information in virtual public space (Tu, 2001; Tu, 2002a). This cultural effect may explain why Item 24, “It is unlikely that someone else might redirect your messages” has the lowest scores among all items; it is probably because students perceived CMC systems as unsecure (Tu, 2002b). In a nutshell, Saudi people (both males and females) have been taught about safeguard their reputation throughout their lifetime, which leads to be extremely careful about how they present themselves on the internet. Such practice is seen

in both males and females, and therefore, may explain the non-significant differences results that was found in this study.

Interactivity

As discussed, interactivity emphasizes behavioral reaction, engagements, and connectedness between interactants (Tu & McIsaac, 2002; Tu & Yen; 2006). When there are high levels of interactivity, there is generally immediate feedback, active interaction, and collaborative activities (Tu & Yen; 2006). When these factors are present, learners can exchange awareness, create meaning, and build knowledge with each other (Anderson, 2008). Therefore, the construct of interactivity is very important, and it involves factors of communication styles, familiarity with the discussion topics, enjoyableness, responsive time, messages load, and hostility during conversation (Tu & Yen, 2006; Yen & Tu, 2008).

With regard to gender and interactivity, reviewing the literature review showed that women post more interactive messages (Christen et al., 2015; Thayalan & Shanthi, 2011), use more friendly and agreement contributions (Atai & Chahkandi, 2012; Burleson et al., 2009; Chang, 2016; Guiller & Durndell, 2006), and have different communication styles than men (Lawlor, 2006; Prinsen et al. 2007). Therefore, it was expected that women would have higher levels of interactivity than men. However, the findings of this study suggest that women have similar level of interactivity as men have, which is also consistent with Tu et al., (2011). Nevertheless, as shown in Figure 4.16, women were slightly numerically higher than men in interactivity on Items (7 “Using CMC is a pleasant way to communicate with others,” 8 “Users of CMC normally respond to messages immediately,” 13 “I am comfortable participating, even I am not familiar with the topics,” 23 “I am comfortable with the communication styles employed by CMC users,” while men were slightly numerically higher than women only in Items (17 “The

aggressive over-participation of others in CMC may cause me to participate less in CMC," and 21 "I am comfortable with the communication styles employed by CMC users."

It seems that the equal levels of interactivity among Saudi men and women is related to Saudi culture where single-gender environment is dominant in most aspects of life, including education. It appears that interacting with the same gender in formal online discussions (e.g., Blackboard bulletin boards) has an impact on the users' interactions. For instance, when the initiator in a chat thread is a male, females' responses to the male initiator tend to be double the responses provided by his male peers. However, when the initiator in chat thread is a female, her female peers' responses tend to be almost the same as males' responses. In other words, women tend to be more responsive to a male chatter rather than a female chatter in Turkish context (Cubukcu & Kutlu, 2013), which is not the case in Saudi Arabia. This phenomenon could explain the approximately equal levels of interactivity among Saudi males and females. In other words, the result could be significantly different if the study was conducted in a mixed-gender learning environment where Saudi women prefer to interact with the other gender while Saudi males prefer interacting with the same gender (Mirza, 2008).

Online Communication

As indicated earlier, online communication primarily emphasizes the use of language and attributes of the CMC technology (Tu, 2002b; Tu & Corry, 2001). Simply put, online communication is about the CMC users' ability to perceive technologies in terms of their features (e.g., synchronous & asynchronous) and usage (e.g., written language skills; Cui, et al., 2012; Tu & Yen, 2006; Yen & Tu, 2008). Therefore, the importance of online communication construct resides in the use of the written symbol language system in a virtual learning environment that delivers thoughts and immediacy behaviors (Tu, 2000a; Vygotsky, 1978; Wells, 2000). The online communication construct involves factors of the accessibility of the

CMC system, computer literacy skills, expressive, stimulated, meaningful and understandable language (Tu & Yen, 2006; Yen & Tu, 2008).

The literature review showed that men revealed more confidence in using technology than females (Alkhalaf, et al., 2013; Li & Kirkup, 2007; Yau & Cheng, 2012). In addition, gender was found to impact the linguistic choices of learners (Cubukcu & Kutlu, 2013). Also, it was found that males used different style and posted more emoticons than females (Huffaker & Calvert, 2005). To put it in another way, it was expected that men would have higher levels of online communication than women; especially in items 9 and 22. However, the results of this study showed that men have almost the same levels of online communication as the women have, which is also consistent with Tu et al., (2011). Nonetheless, as shown in Figure 5.4, men were slightly numerically lower than women in all online communication Items (9 "The language people use to express themselves in online communication is stimulating," 10 "It is easy to express what I want to communicate through CMC," 11 "The language used to express oneself in CMC is meaningful," 12 "The language used to express oneself in online communication is easily understood," 19 "Where I access CMC (home, office, computer labs, public areas, etc.) does not affect my ability/desire to participate," and 22 "My computer keyboard skills allow me to be comfortable while participating in CMC." This result is surprising and unexpected, because all of the aforementioned research indicated that men are more skillful in using technology than women; however, Saudi Arabia is a young society. According to the Saudi general authority for statistics (2019), 67% of Saudi people are under 34 years old, who spend most of their time surfing on the internet and social media (Alghamdi et al., 2018). Some studies in Saudi Arabia context were found that both men and women (faculty members or students) have an adequate knowledge of technology as well as a positive view toward e-learning in general (e.g., Alahmari & Amirault, 2017; Aldosemani, Shepherd, &

Bolliger, 2019; Al Meajel & Sharadgah, 2018; Khalil, Mansour, Fadda, Almisnid, Aldamegh, Al-Nafeesah, Alkhalifah, and Al-Wutayd, 2020), which is consistent with the results of this study, which showed that KSU students have adequate computer literacy skills (see Figure 4.17). These demographics could partially explain the equal levels of online communication among Saudi men and women. In a nutshell, the approximately equal technology expertise among Saudi women and men was surprising, because that is usually not the case in Western or Asian countries where men generally score higher on technology expertise than women (Li & Kirkup, 2007; Yau & Cheng, 2012).

It is also important to indicate that the self-report method could influence the results of the current study. For instance, the credibility and the inaccuracy of participants' responses are issues innate in self-report studies. According to Paulhus and Vazire (2007), "Even when respondents are doing their best to be forthright and insightful, their self-reports are subject to various sources of inaccuracy" (p. 228). Also, respondents, whether in their conscious or unconscious, are subject to some forms of self-deception such as faking, lying, exaggeration, and self-favoring bias (Paulhus & Vazire, 2007).

Implications for Practice

Even though women scored as high as men in social presence, the results of this study suggested that levels of social presence were moderate in three constructs and low in one construct. Fostering social presence in blended and online learning environments is a challenge. According to Tu (2004), "without effective designs and activities to engage learners in active learning, they frequently feel that they work in isolation" (p. 4). Therefore, as online educators, we must maximize the levels of social presence in the online portion of blended learning environments to be as equal as possible to the levels in traditional learning environments. To do so, online educators must pay attention to all four constructs (social context, privacy,

interactivity, and online communication) proposed by Yen & Tu (2004), Tu & Yen (2006), and Yen & Tu (2008). The results of this study suggested that privacy was the lowest construct, as compared to the other three constructs of social presence (social context, interactivity, online communication), which were moderate. Therefore, it is critical to support all the four constructs of social presence, especially privacy, in the context of Saudi culture.

To achieve full support of social presence, faculty members and instructional designers at the education college of KSU must promote both the feeling of privacy and the system of privacy (Tu & Yen, 2006). The feeling of the privacy is important because it is a prerequisite to any collaboration (Anwar, 2020). Therefore, CMC instructors should inform their students of the ethical rules in-class discussion such as avoiding posting personal or unethical content, resending others' messages without gaining permission, cautiousness of the impulsive use of the reply feature, prohibiting the use/copy of the material outside the class (Anderson & Dron, 2012; Tu, 2001; Williams, 2005). In addition, students must be informed that their content will be deleted at the end of the course or protected by secure passwords to be inaccessible. Therefore, it is not allowed for both the faculty members and students to copy or distribute it outside the class. These assurances can elevate the levels of privacy for students (Anderson & Dron, 2012).

Alternatively stated, there must be professional development for both faculty members and students about the guidelines of the copyright polices to ensure that these copyright regulations will not be violated. Moreover, the CMC should be allowed to use multiple identities or adopt new pseudonyms, so that users can increase their anonymization when needed (Anwar, 2020). For example, the CMC users can use this feature in informal discussion (e.g., discussion Café) if they are hesitant to ask some unintelligent questions regarding the class (Cleveland-Innes & Garrison, 2010; Tu & Corry, 2003b). Also, the CMC users should be given the control to delete/edit their messages (Anwar, 2020), so they can have more sense of privacy. It is also

important that the system of privacy is secure and reliable, so the personal information of the users is protected from any misuse (Tu, 2002a). Furthermore, the findings of this study support the single-gender learning environment because there is equality between both genders, which is one of the broad goals of Saudi Arabia Vision 2030. Thus, the researcher suggests that the privacy policies to be unified for both genders even in a single-gendered segregated environment.

With regard to the other three constructs (social context, interactivity, online communication), online educators and instructional designers should create a rich social environment for their students. For that purpose, they must increase collaborators' sense of community by establishing high levels of interpersonal relationships that can be accomplished by building trust and caring, encouraging informal conversation, and enabling the exchange of feeling and emotions (Hughes, Wickersham, Ryan-Jones, & Smith, 2002, Yen & Tu, 2008). Also, they should build an active-learning environment in which students engaged in interactive collaborative learning activities. To do so, the instructors should create and facilitate collaborative learning opportunities by establishing group works, online discussions, real-time chat, or synchronous online seminars that enhance students' learning outcomes (Rovai & Downey, 2010).

On the other hand, one challenge that the results showed is that 9.46% of the participants use the computer outside of their homes (e.g., library, lab, classroom, office, etc.). One solution to this matter could be offering a cheap and high-speed internet for all students to support connectivity and immediate feedback by using their mobile phone devices (mobile learning). In other words, mobile learning can support the principle of communicating anytime and everywhere, which in turn promote the levels of social presence (Alahmari & Amirault, 2017; Al Meajel & Sharadgah, 2018; Anderson, 2008; Khalil et al.,2020; Moawad, 2020). Furthermore,

according to the Saudi Communications and Information Technology Commission (CITC, 2019), Saudi Arabia has a high-speed mobile internet that is ranked 13th among the most speed Mobil internet across the world. Therefore, the researcher recommends using mobile learning because it is more personal as well as it is accessible anytime and anywhere, which will promote interactivity (Alasmari, 2020; Alkhaldi & Abualkishik, 2019).

Finally, the results also showed that 6.31% of the participants were novice or they have no experiences at all in using CMC technologies. Also, 5.05% of the participants mentioned that they are below average in using email, 13.88% of the participants were below average in using threaded discussion, and 5.68% of the participants were below average in real-time chat. Even though these percentages are not high, but online educators and instructional designers should make sure that their students know how to use the medium efficiently. That is because media alone does not establish social presence. Therefore, instructors, for them to be not only comfortable with using the technology, but also engaging in the interactions enhanced by the appropriate instructional activities, such as online discussions, real-time chat or synchronous online seminars aforementioned. To put differently, the way of using CMC technologies matter in creating social presence rather than the media alone (Lowenthal & Mulder, 2017). To illustrate that more clearly, it is known from chapter two that video has more capabilities to convey visual cues than any other mediums. However, in some situations, contexts, and learners' characteristics (e.g., teaching blind learners), audio alone can be very personal and equal to video. Also, people perceive and establish social presence differently, and each person has different needs. For instance, some people may need or perceive intimacy than immediacy behaviors and vice versa (Lowenthal & Mulder, 2017). Therefore, multiple strategies must be used to fulfill all learners' needs (Dick, Carey, & Carey, 2009; Lowenthal & Mulder, 2017; Smith & Ragan 2005). Also, professional development/training must be provided to students, as

well as their instructors, to be comfortable and skillful in using and delivering online learning (Aldosemani, et al., 2019; Al Meajel & Sharadgah, 2018; Moawad, 2020; Rovai & Downey, 2010).

Limitations

Similar to all research studies, this research study is not free of limitations. First, this study was conducted not only in a single public university, but in a single college that applies only blended and single-gender segregated environments. Therefore, it is limited in eighter geographic and academic context. Second, due to time constraints of the researcher, the sample size of the study was 317 participants, which is not a small sample size, but it did not reach the ideal sample size that was set to be between (N~346-357). Therefore, based on what has been written so far in this section, it would be cautious to generalize the results of this study to the target population or to the whole Saudi Arabian educational context.

Third, this study was limited to only quantitative method, because of time constraints. Fourth, similar to most other online social presence studies, this study used a self-report items to gather the data. The problem with this collecting data technique is it is primarily based on the respondents' mood (Paulhus & Vazire, 2007). According to a recent study by Moawad (2020), high percentage of fears, worries, and stresses were found among students at the college of education at KSU (the participants of this study) due to the sudden COVID-19 pandemic. These could be other hidden factors that affected the results of this study. Lastly, the examination of the independent variables that may impact social presence in this study was limited to gender only. Moreover, it is critical to indicate that gender studies involve a great deal of generalizations. In other words, researchers should be cautious that the gender tendency varies tremendously not only due to culture factor but also due to other factors such as societal influences, values, age, expectations, and so on.

Future Research

Future research should attempt to resolve the limitations of this study. First, future studies should try to include a larger sample size from many universities (both public and private universities), as well as multiple disciplines across the country instead of one college or one location. Also, the influence of gender on social presence should be examined in co-education learning environments (e.g., King Abdullah University of Science and Technology KAUST) and in fully online learning environments (e.g., King Faisal University) in Saudi Arabian context. Additionally, it would be prudent for future researchers to compare the levels of social presence among both genders between KSU (single-gender education) and KAUST (co-education), because there is a discussion about mixed-gender education in Saudi higher education concerning the Saudi Vision 2030.

Second, it would be advisable to extend and explain the findings of this study with a follow-up qualitative method research design or replicate the study with a mixed method research design (Creswell & Clark, 2011). For example, it is important to know the factors that affect the 58% of students who have never taken any blended learning courses before. Also, it is important to know the factors affecting the low level of privacy, as well as the moderate levels for the other social presence constructs (social context, online communication, interactivity), among both genders, so the stakeholders and decision makers can issue the academic legislations that contribute to the increase of social presence levels. Lastly, future research should extend the examination to other independent variables that may impact social presence in the Saudi Arabian context such as computer expertise, experience with online learning or the number of distance learning courses taken before, the level of education, flipping classroom, mobile learning are rich research topics to examine. All of the forgoing suggestions should be conducted after the COVID-19 pandemic era.

Conclusion

Results from this study concluded that gender has insignificant effects on all the four constructs of social presence (social context, privacy, interactivity, online communication). This study also uncovered that social context, interactivity, online communication had moderate levels of social presence while privacy had a low level of social presence in all of its four items. These moderate and low levels of social are surely affected by the COVID-19 pandemic that changed the classes from a blended learning modality to fully online modality. Seemingly, the online portion of blended learning environments should have high levels social presence, compared to solely online learning environments. According to Hughes et al. (2002), "an initial face-to-face meeting will expedite trust, familiarity, and a willingness to collaborate" (p. 87). These findings suggested that social presence must be promoted in blended learning environments in the education college of the KSU in Saudi Arabia.

The most surprising result in this study is that 58% (438 respondents) of the participants indicated that they never have taken any blended learning before even though the LMS has been used in KSU since 2011 (Al Meajel & Sharadgah, 2018). King Saud University (KSU) conducted ongoing training packages/workshops to train faculty members in how to use the LMS (Blackboard) efficiently (KSU, 2020); however, it seems that large number of faculty members in the College of Education at KSU resisted using the LMS, or they used it basically as communication tool for posting the syllabus, grading, and announcements. Some studies note that there are still issues in applying the LMS at KSU in general (Al Meajel & Sharadgah, 2018), and more specifically in the College of Education (Moawad, 2020).

Overall, more research is needed to ensure that both students and faculty members understand the importance of social presence in the online portion of their blended learning courses among both genders. Social presence is an essential component in online learning

communities, and without it, learners cannot benefit fully from the activities of collaborative learning (Anderson, 2008; Johnson & Johnson, 2008). Online educators in Saudi Arabia should pay attention to the words of the Minister of Education in April 2020, stating that online learning would be a strategic choice after the current COVID-19 pandemic era in Saudi Arabia (Al Arabiya, 2020). Additionally, with the rapid expansion of digital technology, the protection of privacy will be a challenge that will require more research, particularly related to fostering social presence (Anwar, 2020). Finally, gender equality in education is still an important topic in Saudi Arabia, where more privileges are given to male students over female students, and gender segregated environments impact learning opportunities for female students (Alasmari, 2020).

APPENDICES

Appendix A

Permission of using a figure and table from (Tu & McIsaac, 2002).

Abdullah,

Good to hear from you. Yes, you have my permission to reprint and update the figure. Just be sure to include the credit and explanations on two different figures.

OK?! :-)

Best Regards,
Chih

From: "Alotaibi, Abdullah" <abdullah.e.alotaibi@und.edu>
Date: Tuesday, October 8, 2019 at 5:07 AM
To: Chih-Hsiung Tu <Chih-Hsiung.Tu@nau.edu>
Subject: Abdullah Alotaibi - A permission request to use your figure

Greetings Dr. Tu,

This is Abdullah Alotaibi. I am a doctoral student in the Teaching and Learning program at the University of North Dakota. I have already gained permission from you to use your CMCQ instrument last year. I would be grateful if you could also authorize me to use/modify (reprint) your figure (number one) from (Tu & McIsaac, 2002, p. 132). Based on the results of your studies (Tu & Yen 2006; Yen & Tu, 2008), I slightly modified the figure of the theoretical framework. Please, see the attached file (the reprinted figure). Also, I would like to permit me to use/adjust/reprint your (Table 2, Tu & McIsaac, 2002, p. 141). Thank you so much, Dr. Tu, in advance.

Sincerely,
Abdullah Alotaibi

Appendix B

Permission of using the instrument from (Tu & Yen, 2008).

Friday, July 20, 2018 at 6:11:30 AM Central Daylight Time

Subject: Re: Abdullah Alotaibi - A permission request to use/modify your survey instrument
Date: Friday, March 23, 2018 at 12:40:24 PM Central Daylight Time
From: Chih-Hsiung Tu
To: Alotaibi, Abdullah

Dear Abdullah Alotaibi,

Thanks for writing me and expressing our interests in CMCQ.

You have my permission to administrate the instrument. Be sure to provide relevant reference when you administrate your this instrument.
You have my permission to modify the instrument to fit your study.

You can obtain a copy of:
• https://drive.google.com/open?id=0B02hmofyxKPkRnlkYVdHT2FMTGs

Best wishes to your study.

Regards,
Chih
****
Chih-Hsiung Tu, Ph.D., Professor, Educational Technology
College of Education, Northern Arizona University
PO Box 5774, Flagstaff, AZ 86011
Phone: 928-523-0671 Fax: 928-523-1929 E-Mail: Chih.Tu@NAU.EDU
****

From: "Alotaibi, Abdullah" <abdullah.e.alotaibi@und.edu>
Date: Monday, March 19, 2018 at 4:04 AM
To: Chih Tu <Chih-Hsiung.Tu@nau.edu>
Subject: Abdullah Alotaibi - A permission request to use/modify your survey instrument

Hello Dr. Tu,

My name is Abdullah Alotaibi. I am a doctoral student in the Teaching and Learning program at the University of North Dakota. My proposal will be about the relationship between gender and social presence in a Saudi Arabian context. Therefore, I would be grateful if you could send me the questionnaire/survey that you used in your study "A Study of the Relationship between Gender and Online Social Presence." as well as your permission to use or modify some items from your survey instrument. Please let me know if you have any questions. Thank you so much in advance for your help.

Sincerely,
Abdullah Alotaibi

Appendix C
Some form of agreement

#	Field	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree	Total
1	1. I perceived CMC messages as social forms of communication.	1.58% 5	2.52% 8	6.31% 20	44.79% 142	44.79% 142	317
2	2. I perceived that CMC messages as informal and casual way to communicate.	22.40% 71	42.27% 134	12.62% 40	15.46% 49	7.26% 23	317
3	3. I perceived that CMC messages convey feeling and emotion.	8.52% 27	20.82% 66	24.29% 77	35.02% 111	11.36% 36	317
4	4. I perceived that CMC is private/confidential.	12.30% 39	22.40% 71	34.70% 110	22.71% 72	7.89% 25	317
5	5. I perceived that CMC messages are impersonal.	15.46% 49	29.65% 94	24.61% 78	22.40% 71	7.89% 25	317
6	6. I perceived that CMC is a sensitive means of communicating with others.	6.62% 21	17.35% 55	26.81% 85	41.01% 130	8.20% 26	317
7	7. I perceived that using CMC is a pleasant way to communicate with others.	2.52% 8	13.88% 44	12.30% 39	46.06% 146	25.24% 80	317
8	8. I perceived that users of CMC normally respond to messages immediately.	4.73% 15	26.81% 85	23.66% 75	35.65% 113	9.15% 29	317

#	Field	Strongly Disagree		Disagree		Uncertain		Agree		Strongly Agree		Total
9	9. I perceived that the language people use to express themselves in online communication is stimulating.	2.21%	7	14.20%	45	32.81%	104	40.38%	128	10.41%	33	317
10	10. I perceived that it is easy to express what I want to communicate through CMC.	4.73%	15	23.03%	73	15.46%	49	38.80%	123	17.98%	57	317
11	11. I perceived that the language used to express oneself in CMC is meaningful.	3.15%	10	21.14%	67	23.97%	76	40.38%	128	11.36%	36	317
12	12. I perceived that the language used to express oneself in online communication is easily understood.	2.52%	8	22.08%	70	27.13%	86	33.44%	106	14.83%	47	317
13	13. I perceived that I was comfortable participating, even I am not familiar with the topics.	5.68%	18	18.30%	58	19.87%	63	42.90%	136	13.25%	42	317
14	14. I perceived that CMC is technically reliable (e.g., free of system or software errors that might compromise the reliability of your online messages reaching ONLY the target destination).	11.99%	38	26.50%	84	23.34%	74	28.39%	90	9.78%	31	317
15	15. I perceived that CMC allow relationships to be established based upon sharing and exchanging information.	2.21%	7	9.15%	29	14.20%	45	51.42%	163	23.03%	73	317
16	16. I perceived that CMC allows me to build more caring social relationship with others.	6.62%	21	15.14%	48	18.93%	60	35.96%	114	23.34%	74	317
17	17. I perceived that the aggressive over-participation of others in CMC may cause me to participate less in CMC.	5.36%	17	11.36%	36	23.03%	73	42.90%	136	17.35%	55	317
18	18. I perceived that it is unlikely that someone might obtain personal information about you from the CMC messages.	13.25%	42	28.39%	90	26.50%	84	24.29%	77	7.57%	24	317
19	19. I perceived that where I access CMC (home, office, computer labs, public areas, etc.) does not affect my ability/desire to participate.	11.04%	35	30.91%	98	14.20%	45	30.60%	97	13.25%	42	317
20	20. I perceived that CMC permits the building of trust relationships.	9.15%	29	25.55%	81	33.75%	107	28.08%	89	3.47%	11	317
21	21. I perceived that the large amounts of CMC messages (numbers of messages and length of messages) do not inhibit my ability to communicate.	8.83%	28	23.03%	73	23.97%	76	33.75%	107	10.41%	33	317
22	22. I perceived that my computer keyboarding skills allow me to be comfortable while participating in CMC.	2.21%	7	11.36%	36	12.30%	39	47.00%	149	27.13%	86	317
23	23. I perceived that I am comfortable with the communication styles employed by CMC users.	1.89%	6	9.15%	29	15.77%	50	53.00%	168	20.19%	64	317
24	24. I perceived that it is unlikely that someone else might redirect your messages.	21.14%	67	32.81%	104	28.71%	91	12.30%	39	5.05%	16	317

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