

8-1-2013

Participation in Online and Face-To-Face Discussions: Perceptions of Female Saudi Students in the United States

Manal M. Alanazy

Follow this and additional works at: <http://digscholarship.unco.edu/dissertations>

Recommended Citation

Alanazy, Manal M., "Participation in Online and Face-To-Face Discussions: Perceptions of Female Saudi Students in the United States" (2013). *Dissertations*. Paper 66.

This Text is brought to you for free and open access by the Student Research at Scholarship & Creative Works @ Digital UNC. It has been accepted for inclusion in Dissertations by an authorized administrator of Scholarship & Creative Works @ Digital UNC. For more information, please contact Jane.Monson@unco.edu.

UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

PARTICIPATION IN ONLINE AND FACE-TO-FACE DISCUSSIONS:
PERCEPTIONS OF FEMALE SAUDI STUDENTS
IN THE UNITED STATES

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

Manal M. Alanazy

College of Education and Behavioral Sciences
Department of Educational Technology

August, 2013

This Dissertation by: Manal M. Alanazy

Entitled: *Participation in Online and Face-to-Face Discussions: Perceptions of Female Saudi Students in the United States*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy
in College of Education and Behavioral Sciences in Department of Educational
Technology

Accepted by the Doctoral Committee

Jeffrey W. Bauer, Ph.D., Co-Research Advisor

James E. Gall, Ph.D., Co-Research Advisor

David Kendrick, Ed.D., Committee Member

Anna Ursyn, Ph.D., Faculty Representative

Date of Dissertation Defense _____

Accepted by the Graduate School

Linda L. Black, Ed.D., LPC
Acting Dean of the Graduate School and International Admissions

ABSTRACT

Alanazy, Manal M. *Participation in Online and Face-to-Face Discussions: Perceptions of Female Saudi Students in the United States*. Published Doctor of Philosophy dissertation, University of Northern Colorado, 2013.

In 2005, the Saudi government started a new scholarship program that sent many female and male students to some Western countries including the United States of America. When Saudi female students enroll in universities in the United States and register for mixed-gender (face-to-face and online) classes, they have to participate in the classroom. Saudi female students do not have experience in participating in mixed-gender classes because single-sex education is provided in the education system in Saudi Arabia. This study investigated the perceptions toward online and face-to-face discussions of Saudi female students studying in the United States. A total of 277 Saudi female students participated in an electronic survey developed by the researcher. Among the results, it was found that the students' marital status affected their level of comfort when participating in face-to-face learning discussions and attitudes toward technology affected level of comfort in online learning discussions. Factors affecting social interaction, language skills, and learning environment were also identified. Implications for instructional designers and teachers who might have Saudi female students in their classes were discussed.

ACKNOWLEDGEMENTS

First of all, I thank God for making my dream come true in earning my Ph.D. degree.

Second, I want to thank my mom and dad who were the first people who believed in me and supported me in my education even after I became a mom. I would like also to thank my brothers and sisters for the encouragement and care they showed during my study. Additionally, I would like to gratefully acknowledge my husband, Dr. Salim Alanazy, who was always by my side to make this journey easier for me, and my awesome kids, Ranka, Bisan, and Celine who were good kids all the time.

It is important for me to express my appreciation to my advisor, Dr. Jeffery Bauer, for his wisdom, awareness, advice, and guidance, all of which greatly impacted my work toward my Ph.D. degree. Also, I want to thank my dissertation co-chair Dr. James Gall for his help, encouragement, and support.

I would like to thank my dissertation committee members, Dr. Anna Ursyn and Dr. David Kendrick, for their help and support during my study.

I would like to sincerely thank my professors, Dr. Heng-Yu Ku and Dr. Linda Lohr, who helped me go beyond all the challenges I faced while working toward my Ph.D. Special thanks also go to Dr. Diane Wilson, my professor at the University of Central Missouri, whose encouragement and dependable belief in me encouraged my desire to take a further step toward my Ph.D.

Finally, I would like to thank all my friends who were helpful and supportive during this journey: Stefanie Howe, Amelia Williams, Cady Wagdy, Christina Wilkening, Constance Beard (Connie), Kalya Juarez, Krista Fiedler, Reem Alresayes, and Sandy Callen.

TABLE OF CONTENTS

CHAPTER I. INTRODUCTION.....	1
Purpose of the Study	4
Significance of the Study	5
Definition of Terms.....	5
Delimitations.....	7
CHAPTER II. LITERATURE REVIEW	8
Higher Education in Saudi Arabia	8
Saudi Arabian Students in the United States	11
Discussion as a Learning Strategy	15
The Medium of Discussions	19
Gender Effects in Discussions	24
Saudi Female Perceptions Toward Participating in Online Learning.....	29
CHAPTER III. METHODOLOGY	34
Participants.....	35
Instrument	35
Data Analysis	38
Procedure	40
CHAPTER IV. RESULTS.....	42
CHAPTER V. CONCLUSION AND DISCUSSION	75
Purpose of the Study	75
Discussion of Research Findings	76
Summary	96
Recommendations.....	98
Implications.....	98
REFERENCES	101
APPENDIX A. RECRUITMENT EMAIL AND SURVEY INSTRUMENT	114

APPENDIX B. SAUDI ARABIAN CULTURAL MISSION APPROVAL.....	130
APPENDIX C. INSTITUTIONAL REVIEW BOARD APPROVAL.....	133

LIST OF TABLES

1.	Summary of Research Questions, Survey Questions, and Data Analysis Techniques	39
2.	Frequencies and Percentages of Participant Characteristics	43
3.	Descriptive Statistics for the Level of Comfort	45
4.	Multivariate Tests on Demographics	46
5.	Descriptive Statistics for Level of Comfort and Attitude Toward Technology	48
6.	Multivariate Test on Attitude Toward Technology	48
7.	Paired Samples Test for Level of Comfort	49
8.	Descriptive Statistics for Levels of Inhibition	52
9.	Tests of the Within Factors for Demographic Variables	54
10.	Tests of the Between Factors for Demographic Variables	55
11.	Descriptive Statistics for Levels of Inhibition and Attitude Toward Technology	61
12.	Tests of Between Factors for Type of Male and Attitude Toward Technology	61
13.	Tests of Within Factors for Attitude Toward Technology.....	62
14.	Descriptive Statistics for Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment for Central, Eastern, and Western Regions.....	64
15.	Multivariate Tests of Demographic Variables	65
16.	Tests of Between Factors for Social Interaction, Language Skills, and Learning Environment	66

17.	Descriptive Statistics for the Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment on Marital Status	67
18.	Descriptive Statistics for the Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment on Attitude Toward Technology	72
19.	Multivariate Test on Effect of Attitude Toward Technology	72
20.	Tests of Within Factors for Attitude Toward Technology.....	73
21.	Test of Significance of Student Perceived Level of Comfort in Participation and Listed Online Tool Discussion Value.....	74

LIST OF FIGURES

1.	Interactions of type of male and medium	56
2.	Interactions of type of male and marital status	57
3.	Interactions of type of male, marital status, and region.....	59
4.	Interactions of marital status and region—social interaction	68
5.	Interactions of marital status and region—language skills	69
6.	Interactions of marital status and region—learning environment.....	70

CHAPTER I

INTRODUCTION

Single-sex education is the only form of education provided in Saudi Arabia. As a result, male and female students are separated through all levels of education including higher education (Rugh, 2002). In 2005, the Saudi government started a new scholarship program that sent many female and male students to Western countries including the United States of America (USA). When Saudi students decide to enroll in universities in the United States, they register for mixed-gender, face-to-face, and online classes. Most of these classes require the students to participate in planned learning discussions. Learning discussions are also an essential part of some advanced learning strategies such as collaborative learning. These interactions and collaborations among students are a key element for successful learning outcomes (Anderson, 2003; Kanoka & Anderson, 1999; Laurillard, 2002; Moore, 1989).

Traditionally, learning discussions have depended upon face-to-face dialogue between students and teachers. However, due to the growth of online learning technologies, an alternative form of discussion is used when students do not meet in a traditional face-to-face classroom. Instructors and students are now able to use the Internet to interact in a virtual manner while in different places and are able to respond at different times of the day. These online learning discussions are conducted either *asynchronously* or *synchronously* (Hrastinski, 2008).

In asynchronous online discussions, undirected communication takes place among students and their instructors using web-based tools such as email, blogs, forums, and more sophisticated Learning Management Systems (LMS) specifically developed to deliver comprehensive online courses and programs. Using these systems of communication, students can decide when to send and open messages or discussion responses based on their own time schedules. Synchronous online learning discussions refer to real-time communications that take place among students and their instructors using web-based communication tools such as text chat, voice chat, and videoconference often embedded within learning management systems (Hrastinski, 2008). The present study focused only on asynchronous online discussions. Asynchronous communication is more common in online instruction when an LMS such as Desire2Learn (D2L; 2013) or Blackboard is used. Most universities in North America have adopted these learning management systems. Paterson, Brewer and Stamler (2012) reported that asynchronous communication is more popular than synchronous communication for involving reading and replying to messages at the user's convenience. Also, Parsad and Lewis (2008) described asynchronous discussion as the most approved delivery technique for online education. An asynchronous discussion forum is the most advanced and broadly used platform in online education where students and instructors communicate with each other irrespective of time and place. It is also the most ideal form of discussion in collaborative learning (Huang & Hsiao, 2012; Liu & Yang, 2012; Nandi, Hamilton, & Harland, 2012) because "asynchronous communication is more popular than synchronous communication, using e-mail, or a bulletin board as the means of communication.

Participants in an asynchronous group can read and respond to messages at their convenience” (Perron, 2002, pp. 71-72).

While the face-to-face learning environment can provide an opportunity for learning discussions where individuals can read body language, receive immediate feedback, and clarify misunderstandings (Tiene, 2000; Wang & Woo, 2007), online learning environments have other advantages for student participation such as having substantial time to prepare for the discussion and relief from the stress that often comes with in-class participation (Card & Horton, 2000; Meyer, 2003; Walther, 1996).

Both face-to-face and online participation also have limitations. The most significant limitation of face-to-face discussion is time. Due to limited class time, students usually do not have enough time to think deeply about the topic in order to facilitate high quality discussions (Card & Horton, 2000; Meyer, 2003; Walther, 1996). Conversely, the absence of real-time interaction that allows students to use body language to understand and participate in the discussion is considered one of the most significant limitations in asynchronous online discussions (Tiene, 2000; Wang & Woo, 2007). These limitations of learning discussion affect students’ perception and participation in each environment. As a result, student perceptions toward both types of learning discussion and factors that affect student perceptions warrant examination.

Previous studies show that female students have more positive attitudes toward online discussion than their male peers (Bouras, 2009). Studies also show that Saudi females have positive perceptions toward online learning (Alarfaj, 2001; Alaugab, 2007). However, a review of literature found no studies that investigate Saudi female students’ perceptions of online discussion versus face-to-face discussion in the United States. This

study focused specifically on this area. Students' perceptions toward their participation in each environment and factors influencing them were investigated.

Purpose of the Study

The purpose of this quantitative study was to explore the perceptions toward online and face-to-face discussions of Saudi female students who are studying in the United States. The following research questions guided this study:

- Q1 For female Saudi students, do marital status, region, or previous experience with online courses influence learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q2 For female Saudi students, is there a relationship between attitude toward technology and learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q3 Do female Saudi students report greater comfort in participating in face-to-face or online discussions?
- Q4 For female Saudi students, do marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?
- Q5 For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender face-to-face and online discussions?
- Q6 For female Saudi students, do marital status, region, or previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?
- Q7 For female Saudi students, is there a relationship between attitude toward technology and benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?
- Q8 Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?

Significance of the Study

Results of this study can be used by instructors to better understand how Saudi female students in the United States perceive their participation in online and face-to-face learning discussions. It can aid in adapting learning discussions to fit students' needs. This study can also provide valuable information for instructional designers in the process of learner analysis. Instructional designers would be provided with some principles related to creating effective learning discussions for Saudi female students and an understanding regarding the motives and inhibitions that affect Saudi female students' participation in both online and face-to-face discussions.

Definition of Terms

Asynchronous communication (online discussion). Occurs in an educational situation when the instructor and learner do not have direct interaction at the same time or location via the Internet and a computer (Phipps & Merisotis, 1999).

Blackboard. Computer-mediated software used as a course management system to develop and deliver educational course content via the Internet (Crump, 2010).

Comfortable. Feel free from stress or tension in participating in a learning environment, especially face-to-face and in an asynchronous discussion forum.

Discussion learning. The process where students discuss a topic in a forum or dialog that takes place among students or between students and an instructor.

Face-to-face discussion. An educational environment where the instructor and the learners meet on a regular basis in a classroom at a designated time. They communicate and interact directly. This environment is also referred to as a face-to-face-

classroom (Russo & Campbell, 2004). This study focused on a specific type of face-to-face discussion that is planned, instructor-led, formal, semi-structured, and goal-oriented.

Face-to-face learning. A course that meets in the classroom with the instructor and the student physically present in the same location (Elbaum, McIntyre, & Smith, 2002).

Learning management system (LMS). A software system exclusively designed for students and instructors to use in education such as email, blogs, or forums (Bongey, 2012).

Online learning community. When put into a learning context, discussion boards and chat rooms are used to develop a sense of community among students. The community is used as a medium for connecting students that may result in accelerated learning and sharing of knowledge (Klein, 2007). It includes courses in which students and their professors share a purposeful, coherent, and integrated learning environment in two linked or interdisciplinary courses (Klein, 2007).

Participation. Provide written or oral comments, ask questions, engage in dialog, actively speak, or write during class discussions whether online or face-to-face.

Perception. Perception theory stems from the Gestalt theory, which is premised on the concept that things are affected by where they are and by what surrounds them, so that things are better described as more than the sum of their parts” (Engelmann, 2008, p. 90).

Regions. Governmental divisions in Saudi Arabia: North, South, East, West, and Center.

Students' perceptions. In this study, perceptions were students' views or opinions of the level of comfort they experienced when participating in learning discussions.

Limitations

This study gathered data through a self-report survey. Although it is reasonable to believe they were able to answer the questions truthfully, it was still a self-report and might not fully represent actual behaviors or past attitudes.

A second limitation was that multiple variables were measured with one survey. It is possible participants' answers on one part of the survey were influenced by other questions or they were all influenced by the method of measurement. The relationships discussed were done so with this limitation in mind.

A third limitation was that only Saudi female students at one particular point in time were questioned. The results might not generalize to other students from gender segregated educational systems. As cultural and educational conditions change, they could likely affect many of these factors, requiring further study.

CHAPTER II

LITERATURE REVIEW

Higher Education in Saudi Arabia

In 1954, the Ministry of Education was established in Saudi Arabia. At the time the Ministry of Education was created, there were few schools and universities (Alamri, 2011). The schools that did exist provided education free of charge for Saudi male citizens only. Two types of institutions existed when the Ministry of Education came into being: traditionally-oriented Islamic colleges and modern, Western-type colleges. Admission requirements for these schools included completion of secondary school as well as proficiency in the English language for those students in technical and scientific studies. Due to the lack of educational institutions in Saudi Arabia, the government provided scholarships to those who sought higher education so students could study in other countries, such as Egypt. According to Saleh (1986), by 1982, the country had sent 11,921 students to study abroad through provision of scholarships.

The Ministry of Education worked to develop the education system in Saudi Arabia. In 1957, it established Riyadh University in the capital of Saudi Arabia. Riyadh University is known today as Saud University. This school was created to educate students in the country instead of sending them abroad. The Ministry of Education continued to improve education in Saudi Arabia. In 1982, seven universities existed across the country in all major cities including Islamic University in Medina, the

University of Petroleum and Minerals in Dhahran, King Abdulaziz University in Jeddah, Imam Muhammad Bin Saud Islamic University in Riyadh, King Faisal University in Dammam, and Umm Al-Qura University in Mecca (Al-Mouhandis, 1986; Saleh, 1986). Although the number of schools had grown, all schools only educated Saudi males. According to Alamri (2011), King Saud had discussed the issue of woman's education and the importance it would add to the growth of the country as far back as 1959. As a result, the first primary school for girls was established in 1960. Many female students attended the school and gained a high school degree, which led to the government feeling pressured to allow women to enroll in a university. As stated in research by Al-Mouhandis (1986), in 1964 the government of Saudi Arabia approved the right for girls to attend college. The first Saudi females went to study at universities in the United States. In 1970, the first College of Education for women was established in Riyadh. This college still exists and offers four-year undergraduate programs in seven specialties of study (Al-Mouhandis, 1986). By the end of 1980, 10 similar schools had been established (Al-Banawi & Yusuf, 2011). Additionally, in 1972, King Saud University began to use closed-circuit television to broadcast lectures and question-and-answer sessions to female students. In 1980, a limited number of doctoral programs were created specifically for female students. As of 2010, female students comprise the largest portion of students in higher education with 60% of students enrolled in public and private universities being female (Ministry of Higher Education, 2010).

Due to the growth in the number of universities and colleges, the Ministry of Higher Education was created in 1975 as a separate entity from the Ministry of Education. The Ministry of Higher Education is in charge of higher education

development and policy (Al-Mouhandis, 1986). Female students have since continued to work toward their university degrees. Education is free at all levels including higher education to both female and male students according to the educational policy of the country (The Higher Committee for Education Policy, 1970).

Recently, the Saudi Ministry of Education (2011) reported 2,180,738 Saudi female students in K-12 education. The report also showed 17,695 all-female schools were established in Saudi Arabia compared to only 15,291 all-male schools. Nevertheless, educating Saudi females is still a challenge due to Saudi Arabia being a developing country and its social regulations. For example, the number of female professors is still low compared to that of male professors. In 2010, there were only 2,109 female professors out of 8,397 total university professors working in 27 public universities in Saudi Arabia (Ministry of Higher Education, 2011). As a result, Saudi universities rely upon instructional television for male professors to teach female students since Saudi males are not allowed to teach female students face-to-face. This approach limits student-teacher interactions (Mackey, 2002).

The effect of the steps the Saudi government has taken to develop higher education in Saudi Arabia can be compared to a seemingly dormant volcano that has suddenly exploded. Like the underground pressure that builds within a volcano, the gradual increases in educational opportunities have culminated in a recent series of expansive opportunities. These steps came as royal decrees. One step was to increase the number of institutions of higher learning. This caused the number of universities to jump from seven government universities to 57 private and government universities and colleges in less than 10 years (British Broadcasting Corporation [BBC]Worldwide

Monitoring, 2011). Consequently, the increase in the number of universities led to an increase in the number of Saudi females attending higher education to pursue master and doctoral degrees (Al-Banawi & Yusuf, 2011). Another step was to grant students who were seeking higher education and willing to travel abroad with the King Abdullah Scholarship Program (KASH). This program provides support for students to study at approved institutions outside of Saudi Arabia.

A main goal of the Saudi government has been to make sure that all citizens have the same right to education free of charge without any discrimination (Al-Banawi & Yusuf, 2011). There are more than 38 educational institutions and eight universities for women in the country directly under the Ministry of Higher Education. Women represent more than 58% of the total number of Saudi university students. Saudi government statistics reveal that the total number of female students seeking a bachelor's degree has tripled from 93,486 in 1995–1996 to 340,857 in 2005–2006 (Al-Munajjed, 2008). Just as in other countries, Saudi women are graduating from universities at higher rates than men (Al-Banawi & Yusuf, 2011).

Saudi Arabian Students in the United States

In 2005, the Saudi Ministry of Higher Education established a new scholarship program, the King Abdullah Scholarship Program (KASP) which has allowed thousands of students, both male and female, to receive higher education in different countries such as the United States, the United Kingdom (UK), France, and Japan. According to Dr. Almousa (2011), former director of KASP, the number of Saudi students studying abroad in 2011 was approximately 80,000 and this number will reach 140,000 in the next five years. According to the Saudi Arabia Cultural Mission (SACM), there are around 47,000

Saudi students in the United States with female students making up 30% of this population (SACM, 2011). This percentage is low because female Saudi students are required to “have a legally acceptable male companion, who will be required to travel with her and remain with her until the completion of her scholarship study” (Ministry of Higher Education, 2010, p. 31).

The King Abdullah Scholarship Program created new opportunities for Saudi females to receive high quality education and enroll in some areas of study not currently available for females in universities in Saudi Arabia such as engineering. Also, Saudi females studying in foreign countries are able to interact face-to-face with their male peers and professors, which is not permissible in Saudi Arabia. These interactions take place in either traditional face-to-face courses or as part of online courses. However, research on Saudi female students’ perceptions toward their face-to-face participation in learning discussions is lacking. Research in this area could lead to a better understanding of the needs of female Saudi students in education and provide these students with a better learning environment to meet those needs.

Saudi students carry their culture and social norms with them to the country in which they study; being in a foreign country does not force them to lose or change their culture and social norms. Studying abroad provides an opportunity to learn some of the culture and social norms of the host country; nevertheless, some Saudi students do not feel comfortable interacting with host country students. According to Hayes and Lin (1994), when international students come to the United States, they might experience the feeling of loss that could lead them to feel less confident, feel unremitting tension, and experience confusion. This mix of emotions affects them by leading them to avoid

interactions with other students. In a study by Trice (2004), the research showed that Middle Eastern and African students interacted the least with Americans than any other international students. Trice explained that these findings were due to significant cultural differences between Saudi Arabia and America (Alreshoud & Koeske, 1997; Pruitt, 1978).

Another important factor that sometimes impacts Saudi students is discrimination (Heikenheimo & Shute, 1986; Trice, 2004). According to Heikenheimo's and Shute's (1986) study, 91% of the international students who had been interviewed believed that there was racial discrimination. The international students stated that that people who worked in cafes were less polite and teachers were less helpful, sometimes used pejorative examples in class, or appeared to favor national students in grading.

Marital status is considered another factor that plays an important role in students' interactions. Married students interacted less with Americans than did single students and, therefore, had less need to find or build new friendships from different cultures (Trice, 2004). In addition, for those whose partners lived with them in the United States, it might have been one of their high priorities to create a supportive community with other families from the same culture or country, especially if the partner was not a student (Alreshoud & Koeske, 1997).

Hewitt and Alqahtani's research (2003) showed that Saudi participants have different principles about a suitable distance when interacting with others that changes according to the gender composition of the partner. Saudi people are more comfortable being close during interactions of female-female and male-male than with male-female. As a result, Hewitt and Alqahtani suggested in their experimental research that when

instructors have Saudi students in their classrooms, they should keep a distance between the two genders as is typical in conservative Muslim countries and should not be averse to public displays of male-male intimacy just because it is not appropriate in the United States and European cultures. However, this act should not be generalized to other cultures.

Alreshoud and Koeske (1997) studied Saudi students attending an American university to understand the relationship between attitudes toward American students and social contact with Americans. Seventy-four Saudi students completed their questionnaire. Their data analysis showed that Saudi students who participated in this study were somewhat favorable when it came to their attitudes toward American students. However, they lacked some understanding of Americans and did not have a high degree of desire to engage in more activities with Americans. As a result, Alreshoud and Koeske suggested that practitioners and program designers might provide appropriate contact, such as engaging the Saudi students in activities with American students, in an environment to induce constructive attitudes toward a host people in some situations.

Ibrahim (1970) studied the relationship between interaction, perception, and attitude formation. He stated that Arab students who intermingled with Americans on a daily basis reported more sympathetic attitudes toward them than did students with less contact.

In his research, Al-Amrani (2011) described an Arabic school and its activity in the United States:

The school, which teaches Arabic and holds the community's meetings and social gatherings, consists of two apartments: one for boys' schooling and men's gatherings, and the other for girls and women. It teaches the Saudi Arabian elementary school curriculum, having the books shipped to the United States.

Teachers use some chapters of the Holy Quran to teach the students reading and memorization, along with some basics of praying and worshipping. Some of the Saudi graduates are selected for the school administration work: a president, a vice-president, and a treasurer. The faculty includes male Saudi graduates teaching the boys, and their spouses or other Saudi women teaching the girls, particularly the wives who are not taking classes at the University. Faculty and administration staffs are paid for their work by the Saudi Embassy. Students in each classroom do not exceed four or five students (in many cases, a parent teaches his or her own children.) The school is used for prayers and social gatherings as well. Because of its location near their homes, graduates who live in the same area perform most of the prayers at the school (except the Friday prayer where everyone comes to the Mosque). They often gather, inviting other Arab students to big dinners. These students have many meetings and parties, especially when a new student comes, graduates, or leaves the United States. All schooling and socializing in this site are performed in Arabic. (pp. 41-44)

A number of Saudi Arabian academies in America teach Saudi students (boys and girls) the same curriculum as in Saudi Arabia. These academies have the same policies in education as in Saudi Arabia, e.g., gender separation with female teachers working exclusively with girls and male teachers working exclusively with boys. Arabic is the spoken language in class and they also teach religion. Many Saudi students prefer to send their children to these academies to help them retain their cultural norms and language.

Discussion as a Learning Strategy

Learning discussion is considered one of the important elements of today's instruction. However, learning discussion has been known throughout history. The Socratic method was the earliest form of learning discussion in class and it has been used widely throughout the years in a variety of circumstances. The Socratic method is described as a continued series of questions and answers that lead learners to draw a conclusion of the knowledge they need to adopt (Overholser, 1992). During this discussion, learners are forced to critique others' points of view and question their own

beliefs. Socrates industrialized this method as a means to examine, refute, or put to shame and gradually cultured a school of young Athenians including Plato, Xenophon, and Aristophanes (Overholser, 1992).

The Socratic method helps students to develop their critical-thinking skills, build learner confidence, and increase the instructor's own awareness. Socrates did not teach; he defined teaching as “engaging would-be learners in ... argument to make them aware of their own ignorance and enable them to discover for themselves the truth the teacher had held back” (Tucker, 2007, p. 84). Socrates's function in teaching was not to force the learners to follow his train of thought or logic but only to examine the learner's declaration (Roshwald, 1999).

In the field of education, three main learning theories affect our understanding as professionals in the field of educational technology and how learning takes place: behaviorism, cognitivism, and constructivism. Each theory provides an explanation of how people learn and is followed by applications on how to apply it in learning experiences.

Behaviorism was an early theory used to lead educational technology research and practice. Based on this theory, learning takes place only when a behavioral change happens. This theory started with the work of Thorndike's connection theory and Pavlov's classical conditioning theory (Bitterman, 2006). However, behaviorism did not make any serious impact on the field until Skinner (1938) published his work of operant conditioning. Skinner's work continued to affect practice in the field when he created some instructional applications of his theory on human learning and developed the idea of programmed instruction--his Teaching Machine (Skinner, 1958). Based on this

strategy, instruction is divided into small segments that students need to go through in a specific sequence where they receive immediate feedback that either reinforces their answers or asks them to retry. Some other applications of behavioral theory in instructional design include direct instruction, individualized instruction, and mastery learning. The basic idea of these applications was to predetermine behavioral objectives and lead the learner to reach these objectives. Therefore, learners were always under the teacher's control and had no control over their own learning. Gagne's (1968) task analysis was also a technique under behavioral theory used to identify prerequisite behaviors and take learners step-by-step to master a complex behavior. Based on behaviorist theory, criterion-referenced tests were created to assess student learning.

In the 1960s, many people in the field were not satisfied about behaviorism's lack of insight into internal processes of learning. Such thoughts led to a new view of learning called cognitivism that focused on studying what is happening in the human mind. Based on this theory, learning takes place when changes accrue in a student's internal mental structure. Cognitivism has also made a large impact in the field of education technology research and practice, especially in the area of instructional design. The focus was on how to help learners remember and understand new information. The theory of information processing (Atkinson & Shiffrin, 1968) became a major focus of cognitive theory and Bruner's (1966) discovery learning also became very popular. Many instructional strategies such as concept mapping, highlighting, and chunking were also emphasized to help students organize, remember, and understand new information while also building new schemata and mental models. Bloom's (1956) taxonomy was adapted and became a very useful tool that helped teachers and instructional designers write

cognitive objectives. Cognitivism has also reinforced a lot of media research. Even though he started as a behaviorist, Gagne (1968) was one of the most influential people in the movement toward cognitivism.

More recently, constructivism recently has become an important theory in education. According to learning theories such as social constructivism, students learn when they interact with each other (Vygotsky, 1978). As a result, one of the characteristics of a constructivist learning environment is to provide students with an opportunity to interact and work collaboratively (Jonassen, 1999). Learning discussions are also supported by other learning theories such as behaviorism. While some perspectives and opinions reinforce students' existing knowledge, opposite perspectives and opinions work as negative feedback that requires students to convert their existing knowledge. From the cognitive view, cooperative learning helps students build new mental models and reinforces or modifies existing mental models. When working as a team, learners are exposed to similar and/or divergent views of team members. Similar views reinforce the existing mental models, whereas different views can challenge a learner to modify existing mental models or build new ones (Glaser & Bassok, as cited in Chen, Wu, & Yang, 2006).

According to Dallimore, Hertenstein, and Platt (2008), discussions help develop students' oral communication skills. It also improves learning (Bender, 2003; Davis & Murrell, 1993; Huerta, 2007). Learning discussions are also used as an active learning technique that promotes critical thinking and higher-order deep learning.

The effect of discussions on student learning has been the focus of many studies. After their review of literature on discussion as a learning and teaching tool, Ellis, Calvo,

Levy, and Tan (2004) concluded that discussions enhanced student learning, especially for developing critical thinking skills. Brookfield and Preskill (2005) mentioned a number of benefits of using discussions for learning:

- Helping students explore different perspectives toward the topic.
- Increasing students' awareness of ambiguity or complexity.
- Helping students investigate their assumptions.
- Encouraging students to value attentive, respectful listening.
- Encouraging students to accept and appreciate continuing differences.
- Developing intellectual agility by thinking on other's feet.
- Helping students become affectively connected to the topic.
- Helping students work collaboratively and learn the processes and habits of democratic discourse.
- Affirms students as co-creators of knowledge (new insights are students' responsibility).
- Improve students' ability of clear communication skills.
- Increases breadth and makes students more empathic to others' views and feelings.
- Developing skills of synthesis and integration.

The Medium of Discussions

While a face-to-face learning environment can provide an opportunity for learning discussions with advantages such as reading body language, providing immediate feedback, and clarification (Tiene, 2000; Wang & Woo, 2007), online learning environments have other advantages for student participation, e.g., having more than

enough time to prepare for discussion and relieving the stress of participating in class (Card & Horton, 2000; Meyer, 2003; Walther, 1996).

Both face-to-face and online participation also have limitations. One limitation of face-to-face discussion is the element of time. Due to limited class time, students' participation in higher quality discussion is often limited (Card & Horton, 2000; Meyer, 2003; Walther, 1996). On the other hand, the absence of real-time interactions that enable students to use body language to understand and participate in the discussion is considered one of major limitations in online discussions (Tiene, 2000; Wang & Woo, 2007).

While face-to-face discussions are always in real-time, two types of discussions can take place in online learning settings: synchronous and asynchronous. In asynchronous discussions, teacher-student and student-student communications can happen when the individuals are in different places and responses can occur at different times through tools such as email, forums, and blogs. On the other hand, in synchronous discussions, teacher-learner and learner-learner communication happen in real-time through text-chat, voice-chat, and videoconference. Online teachers and instructional designers provide both types of online discussions to create more interactive online learning environments (Hrastinski, 2008).

In a study that compared face-to-face discussions and asynchronous online discussions, Wang and Woo (2007) observed the behaviors of participants in both face-to-face and online discussions and reviewed the students' reflection essays on their perceptions of the major differences between asynchronous online discussions and face-to-face discussions. Twenty-four post-graduate students participated in the study. The

study concluded that there were five major differences between the two types: atmosphere, responses, efficiency, interactivity, and communication. According to Wang and Woo, face-to-face discussions are more real and authentic than online discussions because students are able to talk to each other in real time, see facial expressions, and clarify matters immediately. Conversely, online discussions are more comfortable, less aggressive, and offer equal opportunities for group members to voice their opinions. Therefore, online discussions seem to be more appropriate for a group that consists of a mix of introvert, extrovert, passive, and dominant personalities. Online discussions also seem to be more helpful if the discussions intend to create more equal opportunity for all group members or avoid aggression.

In terms of responses, Wang and Woo (2007) stated, “Responses in face-to-face discussions are more prompt than in online discussions” (p. 282). The lack of immediate feedback was a commonly reported drawback of asynchronous online discussions. Face-to-face discussions were also found to be more efficient than online discussions in terms of time and ease of making conclusions. “Online discussions need a longer time frame to complete because participants in online discussions normally spend more time in articulating their ideas and writing in words” (Wang & Woo, 2007, p. 283). In terms of interactivity, face-to-face discussions seemed to involve more interaction than online discussions. In face-to-face discussions, students were able to make complementary remarks, comments, or clarify when their peers were expressing thoughts regarding a topic. Finally, communication seemed to be easier and more natural in face-to-face discussions than in online discussions. This might be due to the fact that students use

multiple verbal and nonverbal channels of communication (Johnson, Sutton, & Poon, 2000).

A study conducted by Tiene (2000) identified four major differences between face-to-face and online asynchronous discussions: access, timing, mode of expressions, and visual cues. Tiene's survey study was conducted with 66 students from five graduate classes who were asked to discuss a set of topics that been chosen for face-to-face and online discussions. The researcher used a listserv as an online discussion tool to communicate with the participants. The instructor tracked the number of student contributions and replied when he needed to clarify a response. A survey was developed and used over a period of two years.

According to Tiene (2000), due to the involvement of some technical components such as computers, discussion forums, and Internet connection, online discussions were more likely to have access problems than face-to-face discussions. In terms of timing, online discussions required a longer time frame than face-to-face discussions. In online discussions, participants needed more time to read, reflect, prepare responses, and type responses in discussion boards. In addition, responses in online discussions were provided only in written format, which might not favor those who were more inclined to vocalize. Finally, visual cues were largely missing in online discussions.

On the other hand, Walther (1996) found that online discussions were more task-oriented and focused compared to face-to-face discussions. In online discussions, participants were more likely to focus on the topic rather than spend time on unimportant issues. The advantage of time and space convenience could also help students to be more critical and insightful. According to Card and Horton (2000), while students in face-to-

face discussions relied more on their own experiences to offer opinions, students in online discussions tended to cite more literature and incorporated the author's beliefs with their own experiences.

Meyer (2003) also compared graduate level students' experiences in face-to-face discussions with online discussions. The researcher conducted two ethnographic studies for three reasons--the small sample size, the evaluated data brought from two courses, and the absence of a statistical test--to answer two research questions. The first question --"What are the differences between face-to-face versus online discussions and which setting might be better for which learning objective?"--was answered by asking 22 students the difference they noticed between online and face-to-face discussions at the end of the course. To answer the second research question--"What evidence exists that higher-level thinking occurs in online discussions?" the analysis used Garrison's model on threaded online discussion and placed each student's contribution into one of four categories: (a) triggering, (b) exploration, (c) integration, (d) resolution, (e) other (social). The study concluded that students in online discussions exhibited more higher-order thinking such as contributing more exploratory and integrative comments.

Female student perception toward online and face-to-face participation has been a subject of many previous studies (e.g., Alarfaj, 2001; Bouras, 2009). An important study conducted by Bouras (2009) concluded that males perceived deep learning only in the presence of instructors in online discussions, whereas female students perceived more deep learning in online discussions when interacting with their peers. The female participants perceived that interactions with their peers allowed them to apply life

experiences to learning, solve real-life problems, and initiate their own learning while maintaining a degree of social interaction with other learners. According to Bouras,

This may be due to the inherent female desire to socialize. Females are historically more social than males and seek interaction from their peer group. When this transfers to the classroom, it follows that male students will perceive they have learned if the instructor is present, while female students will perceive they have learned from interacting with the instructor as well as with fellow students. (p. 105)

Gender Effects in Discussions

Many studies conducted on gender differences when participating in different learning environments showed that females preferred to participate in online discussions. According to Thompson (1998), female students enroll in online courses at a higher rate than male students. Anderson and Haddad (2005) suggested that female students have stronger voices to express their thoughts online than face-to-face. Arbaugh (2000) indicated that female students participated at a higher number at the beginning, decreased in the middle of the course, and then increased again at the end. Jaffe, Lee, Huang, and Oshagan (1999) reported that female students showed a high level of social interdependence in asynchronous discussions.

In a quantitative study, Caspi, Chajut, and Saporta (2008) investigated the differences between the traditional university classroom and the web-based instructional environment (WBIE), and their effects on the rate of participation by gender. The researchers looked at factors that seemed to affect the different volumes of participation between female and male students in each environment. The influential factors included “chilly climate” in the classroom, perception of environment, gender, and environment preference. The term “chilly climate” referred to numerous types of systematic discrimination that weakened female students in a learning environment such as sexist

use of language, presentation of stereotypic views of women, and instructors favoring male students (Crombie, Pyke, Silverthorn, Jones, & Piccinin, 2003).

During the study by Caspi et al. (2008), students received course materials, a course schedule, and a set of assignments when they registered for the Research Methods course. Three common methods were used to measure participation in the learning environment including counting the number of students who took part in the discussion and comparing the number of men to the number of women, counting the number of times each participant in the class spoke or posted a message, and comparing the actual participation by gender to the gender distribution baseline.

The students were free to choose the environment to participate in: face-to-face sessions took place near their residence and online environment where they logged in and posted for participation. A total of 1,368 students enrolled in the course: 775 were women (56.7%) and 593 were men (43.3%). A chi-square test was used to analyze the data and the results showed that there were no differences between female and male students who attended face-to-face discussion, logged into online discussion, and total enrollment in the course.

This study found differences regarding the quantity of participation for each gender in each environment. It was found that female students preferred to participate in an online environment. Caspi et al. (2008) concluded that female students preferred written communication to spoken communication and they preferred web-based communication more than did men. The second assumption was supported by research of Boneva, Kraut, and Frohlich (2001), Bostock and Lizhi (2005), and Leung (2001) who stated that female students preferred online communication more than did men.

However, not enough studies supported the assumption that women preferred written communication to spoken communication. According to Byrne and Findlay (2004), women preferred to send a short message service (SMS) to a man to originate a date rather than making a call. This situation, however, was not restricted to the idea of taking the first step in a date. Ling (2005) also stated that age might affect the women's preference toward writing a SMS or speaking on the phone.

Nevertheless, Bostock and Lizhi (2005) stated that female students posted more messages online than did male students in mixed-gender groups but less than in female-only groups. These results might not apply to Saudi female students due to the culture and background from whence they came. Instead, the presence of male students in the course would be a factor that affected the participation of Saudi female students.

Some studies compared interaction in an online learning program with face-to-face learning programs and found that online programs encouraged student-centered learning, wider student participation, and produced more in-depth and reasoned discussions (Karayan & Crowe, 1997; Smith & Hardaker, 2000). Nevertheless, studies showed students experienced feelings of isolation and stress because of the lack of immediate interaction (Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000).

Davis and Graff (2005) examined the frequency of online interactions of college students and compared it to the students' end-of-year grades. The study looked at whether online interactions had any concrete benefits in terms of improving student learning as measured by final grades on a course. The study participants were 122 undergraduate students (70 male and 52 female). For 12 months, the students participated in online discussions using the Blackboard discussion board and their usage

of Blackboard discussion was compared with their grades. The findings showed that students with high or medium passing grades interacted more effectively within the course when they accessed Blackboard than did those with lower grades. Thus, students with lower grades tended to engage less in online environments, whereas students with high or medium passing grades tended to engage more in online environments. However, this observed difference was not statistically significant. The study concluded that students who interacted and participated in online discussions did not necessarily get a higher passing grade on an achievement scale. Therefore, encouragement was an important factor to make students become involved in online activities.

The differences between females and males in their learning styles and behaviors have been a topic for many studies. Level and quality of participation in learning discussion was one of the characteristics identified between the two genders. According to Anderson and Haddad (2005),

In mixed gender face-to-face classrooms, female students may speak out less frequently and confidently than their male counterparts due to role socialization that encourages girls to be polite and restrained and boys to be assertive and vocal. In addition, even when female students do express their views frequently and with conviction, either they may internally filter their comments or their voices are not heard by others in the class in the same way that male student voices are. (p. 4)

Anderson and Haddad explained muted group theory that claimed women generally felt less able to participate in public dialogue.

However, in their study that included 109 online students at a Midwestern university, Anderson and Haddad (2005) came to a different conclusion:

We have observed a different dynamic in online as opposed to face-to-face courses: in online courses with required participation in discussion, female students appear less hesitant to engage in dialogue, and this holds true regardless of age or national origin.... It is our belief that online courses can, with small

class sizes and requirements for Internet-based discussion, promote greater peer and student- instructor interaction and dialogue, an outcome that female students prefer. (p. 4)

Anderson and Haddad explained their results by well-supported arguments that online courses provided an opportunity for all students to participate, not just vocal students. They also used two learning style theories to support their conclusion: Witkin, Moore, Goodenough, and Cox's (1977) theory of field independence and dependence, and ways of knowing theory.

Witkin et al.'s (1977) theory of field independence and dependence is one learning style theory used to explain female participation in learning discussions. According to Witkin et al.'s theory, there are two types of learners: field independent learners and field dependent learners. While field independent learners tend to be more autonomous and prefer to work alone, field dependent learners tend to use their interpersonal skills and work in groups. Murphy, Casey, and Young (1997) suggested:

Instructors may wish to broaden their teaching strategies perhaps including more group work or more opportunities for face-to-face, one-on-one interaction with the instructor. These interpersonal strategies may be more appealing and helpful to those students who are more field dependent. (p. 43)

Males tended to be more field independent than females, i.e., females favored learning modes that focused on context and emphasize interpersonal interaction (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962; Witkin, Oltman, Raskin, & Karp, 1971).

Ways of knowing is another theory that helps to understand female behavior in learning discussions. According to Belenky, Clinchy, Goldberger, and Tarule (1986), there are two types of knowers in terms of approaching knowledge: separate and connected. Separate knowers tend to approach knowledge objectively by reducing it to understandable parts. Conversely, connected knowers tend to relate new knowledge to

experience in the context of relationships in order to approach knowledge. Women tend to be "connected" knowers who need effective learning environments to help them see themselves as creators of knowledge and builders of theory based on experience (Hayes, 1989). Caffarella (1992) suggested the use of small group and panel discussions as instructional strategies that are related to the literature on women's development.

Saudi Female Perceptions Toward Participating in Online Learning

Currently, the literature on Saudi female students' perceptions toward online learning reveals Saudi female students have positive perceptions toward online learning. For example, a study by Alarfaj (2001) examined the perception of undergraduate students toward online learning at a Saudi university. The researcher designed a questionnaire for this purpose since no appropriate instrument met study criteria. A 5-point Likert-type scale survey was used to measure the perception of college students toward distance web-based instruction (WBI). The questionnaire was written in English and then translated to Arabic language. A total of 492 Saudi students from three different colleges participated in this study; 204 of them were female Saudi students. The data analysis method used to answer the research questions was a two-way analysis of covariance (ANCOVA). While controlling the effect of computer experience, the researcher investigated the effect of the interaction between gender and college of study on the perception toward distance WBI.

The study concluded that students had a positive perception toward online instruction. A significant difference was found between the perceptions of male and female students toward online instruction. Female students showed a more positive perception toward online instruction. They also believed that with online courses, they

would not feel shy when communicating with male teachers. Female students who agreed to enroll in online courses also believed that online instruction provided a better opportunity to get a higher education while overcoming many social and cultural barriers.

Alaugab (2007) examined Saudi female faculty and student attitudes toward online instruction. The researcher used a descriptive research method to conduct his study. A 4-point Likert-type scale survey was used. The survey also included open-ended questions to determine the advantages and disadvantages of implementing online instruction in Saudi Arabia from students' perspectives. Different statistical analysis methods were conducted to answer the study questions. These procedures included descriptive statistics, multiple regression analysis, a correlation coefficient, and an independent sample *t*-test. Content analysis was also used to analyze responses to the open-ended questions. A total of 130 female faculty and 500 female college students were randomly selected from two female higher education institutions to participate in this study. The study concluded that female students showed a positive attitude toward online instruction. The results also indicated that Saudi females believed that online instruction facilitated the learning process for students, increased their achievement level, and facilitated communication and discussion between students and instructors.

An important study was conducted by Alanazy (2011) that focused on student attitudes toward learning in a mixed-gender, online cooperative learning environment. The study also examined the students' beliefs regarding the general application of mixed-gender, online cooperative learning environments in Saudi Arabia and student preference in terms of online communication tools to be used when learning in such an environment. The study participants were Saudi students studying in the United States; 709 students

from both genders participated in the study. A web-based survey was sent to the participants by email. Three main statistical analysis techniques (*t*-test, ANOVA, and chi-square) were used to examine the data and answer the research questions. The results of the study showed that both Saudi males and females had positive attitudes toward learning in a mixed-gender, online learning environment that included cooperative learning. In addition, both genders believed that applying such an environment in Saudi Arabia was possible, appropriate, and effective.

An interesting result of this study was that marital status and region of residence in Saudi Arabia were the only factors that seemed to affect student attitudes and beliefs toward mixed-gender, online cooperative learning environments. According to Alanazy (2011), unmarried students reported a significantly more positive attitude toward online cooperative learning than did married students. In addition, results found no significant differences between male and female students in their attitudes toward learning in mixed-gender, online cooperative learning environments.

The largest difference was between students in the north region ($M = 3.89$, $SD = 0.91$) and the central region ($M = 3.53$, $SD = 0.92$). However, the difference in means among regional groups was not significant ($t = 2.207$, $p = 0.067$). Bachelor's degree students reported a more positive attitude ($M = 3.7$, $SD = 0.87$) than did master's degree students ($M = 3.61$, $SD = 0.88$) and doctoral students ($M = 3.54$, $SD = 0.79$).

The data also showed that the oldest group reported the most positive attitudes and the youngest groups reported the least positive attitudes; however, no significant differences were found among the age groups. Finally, experience with online courses did not show any significant difference on students' attitudes.

On the other hand, a student's region was the only demographic factor that had a significant effect on student belief regarding applying mixed-gender cooperative learning in Saudi Arabia ($F = 2.602, p = 0.035$). According to the study, western region students reported the most positive beliefs ($M = 3.62, SD = 1.22$), whereas students from the central region showed the least positive beliefs ($M = 3.28, SD = 1.31$) toward applying mixed-gender, online cooperative learning in Saudi Arabia. When explaining this result, the researcher stated,

It was not surprising to see students from the west and east reporting the highest positive beliefs toward applying coeducational online cooperative learning in Saudi Arabia due to the open culture that exists in the west and east compared to other regions. People in the west and east regions are typically recognized by Saudi society as open-minded people due to their exposure to different cultures. Each year, millions of people from all over the world visit the western region of Saudi Arabia of Omra and Hajj. The east region was also the location where western oil first came to Saudi Arabia and provided the people of this region with an opportunity to be exposed to western culture. In addition, the eastern region has a variety of Islamic faiths; therefore, some people in this region have different beliefs and perspectives toward some of the Islamic rules that are applied in other regions. This exposure to different cultures gave western and eastern region inhabitants a wider perspective when considering social issues in Saudi Arabia. It was also expected that students from the center region have the lowest number of positive beliefs. The center region of Saudi Arabia is considered to be the base for the radical believers who typically resist social change. (Alanazy, 2011, pp. 115-116)

In addition, although there was no significant difference between male and female students in their beliefs with respect to applying mixed gender online cooperative learning in Saudi Arabia, female students showed significantly more positive beliefs than did male students since learning in a mixed-gender, online cooperative learning environment did not conflict with their social values or with their religious principles.

In conclusion, face-to-face and online learning environments are the main categories of education. Both categories of the learning environment provide students

with opportunities to interact with each other. Each learning environment has its advantages and disadvantages in terms of learning discussion. Previous studies showed that female students seemed to be more positive toward online discussion than their male peers. However, there is an absence of studies that examine the perception of Saudi female students toward online discussion compared to face-to-face discussions. In this study, the focus was on perceptions of Saudi females at United States universities toward their participation in both face-to-face and online discussions.

CHAPTER III

METHODOLOGY

The purpose of the current study was to explore Saudi female students' perceptions toward online and face-to-face discussions. The following research questions guided the study:

- Q1 For female Saudi students, do marital status, region, or previous experience with online courses influence learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q2 For female Saudi students, is there a relationship between attitude toward technology and learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q3 Do female Saudi students report greater comfort in participating in face-to-face or online discussions?
- Q4 For female Saudi students, do marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?
- Q5 For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender face-to-face and online discussions?
- Q6 For female Saudi students, do marital status, region, or previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?
- Q7 For female Saudi students, is there a relationship between attitude toward technology and benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?

- Q8 Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?

Participants

Saudi female students studying in U.S. universities were the population of interest. The participants were from different degree levels, years of study, and majors. In 2005, the Saudi government started a scholarship program to send Saudi students of both genders to the United States. Since then, the government sends around 4,000 students every year. According to the Saudi Arabia Culture Mission (SACM) Information Technology General Director, there are 14,145 Saudi female students currently studying in the United States (Y. M. Aleissa, personal communication, April 1, 2013). All Saudi female students registered with the SACM were invited to participate in an online survey. All participants had experience with both face-to-face and online learning environments. The online survey was available for four weeks. There were 277 participants who met the study criteria and completed the survey.

Instrument

One survey was created for the purpose of this study. Survey questions were in English in all variables in this study (see Appendix A). An initial version of the survey was created after the completion of an exploratory, qualitative study with four Saudi female students to identify what affected their participation in online and face-to-face discussions. The qualitative study was conducted by this researcher and served as a primary motivation for this study. That study concluded that two main issues affected their participation in online discussion: time for preparation and the instructor's level of expectations. The qualitative study also identified six issues that influenced their participation in face-to-face discussion: language, time for preparation, the presence of

Saudi males, the level of the instructor's expectation, the formality of the discussion, and students' personalities.

A pilot study of the survey was conducted with 10 Saudi female students at one institution. An electronic survey was created and sent by email to the students. Participants in the pilot study had one week to finish the online survey. Parallel forms reliability was used in the development of the survey. This reliability measurement was obtained by using two different versions of the survey. These versions contained the same concept, skill, knowledge base, etc., and were administered to the same population (Phelan & Wren, 2006). The pilot study survey included some additional questions to elicit comments regarding the clarity of the instructions and questions of the instrument, the time participants spent to complete the survey, and other relevant comments. The survey was then reviewed by three instructional technology experts so they could provide their evaluations of the survey. Changes were made based on their feedback.

The questionnaire included the following six major sections:

1. Personal information. The personal section contained eight questions covering marital status, age, region, number of online courses, level of education, and major.
2. Attitude toward using technology. In this section, participants were asked to indicate their attitudes toward technology. The three questions in this section were answered using a 4-point Likert-type (from *strongly disagree* to *strongly agree*).
3. Student level of comfort regarding the two learning discussions environments (online and face-to-face). In this section, participants were

asked to rate how they felt about their level of comfort in each learning discussion environment (online and face-to-face) by using a 4-point Likert-type (from *Strongly Disagree* to *Strongly Agree*).

4. Saudi female students' perception toward the levels of inhibition to participate in mixed gender in face-to-face and online discussions.
Participants were asked to indicate their perceptions toward participation in online and face-to-face discussions. These six items were answered using a 4-point Likert-type (from *Strongly Disagree* to *Strongly Agree*).
5. Student perceptions toward benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment.
Participants were asked to compare the two media according to their own previous experiences with online and face-to-face discussions. The 15 questions were answered using a 4-point Likert-type (*Face-to-Face is Definitely Better*, *Face-to-Face is Slightly Better*, *Online is Slightly Better*, and *Online is Definitely Better*).
6. Features of online discussion boards. Participants were asked to rate the value of their use of various online discussion board features. Eight questions in this section were answered using a 5-point Likert scale (from *Highly Valuable* to *Not Valuable*).

Three open-ended questions were used to elicit comments related to class discussions: (a) Do you think using a photo or graphic representation of yourself in online discussions helped you to participate comfortably and without hesitation? Why? (b) Is there anything you would like to share about face-to-face discussions that was not been

addressed by this survey? and (c) Is there anything you would like to share about online discussions that was not been addressed by this survey?

Data Analysis

The statistical techniques used to analyze the data in answering the research questions are presented in Table 1. Many studies arbitrarily set the level of significance (α) of statistical tests at .05. by convention. In the case of this study, an alpha level of 0.10 was chosen. This provided greater statistic power, although at the cost of a higher Type I error rate. In this case, the consequences of falsely claiming differences in participants' attitudes when none existed were not severe.

In terms of multivariate tests, Stevens (1986) makes the following suggestions for improving power: (a) adopt a more lenient alpha level--0.10 was selected), (b) reduce within-group variability--a relatively homogeneous sample was selected and repeated measures were used when possible, and (c) make sure there is a strong linkage between independent and dependent variables--factors were selected based on past research.

Table 1

Summary of Research Questions, Survey Questions, and Data Analysis Techniques

Research Questions	Data Analysis Techniques
1. For female Saudi students, do marital status, region, or previous experience with online courses influence learner's level of comfort toward each learning discussions (face-to-face and online) environment?	MANOVA
2. For female Saudi students, is there a relationship between attitude toward technology and learner's level of comfort toward each learning discussion (face-to-face and online) environment?	One-way MANOVA
3. Do female Saudi students report greater comfort in participating in face-to-face or online discussions?	Paired-samples <i>t</i> -test
4. For female Saudi students, do marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?	Repeated measures two-way MANOVA
5. For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender face-to-face and online discussions?	Repeated-measures two-way MANOVA
6. For female Saudi students, do marital status, region, and previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?	MANOVA
7. For female Saudi students, is there a relationship between attitude toward technology and benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?	MANOVA
8. Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?	Correlation

Procedure

This study utilized an electronic survey that included personal information queries, questions about technology use and attitude, and Likert-type items related to class discussions. A recruitment email including a hyperlink to a cover letter, informed consent, and the online survey were sent to the Saudi Arabian Cultural Mission, which they forwarded to female Saudi students in the United States. The participants had four weeks to complete the survey. A reminder email was sent one week prior to the closing of the survey.

The online questionnaire began with two inclusion criteria:

1. What is your gender? (in case the survey was mistakenly sent to male students)
2. Have you had at least one online course that included learning discussions (i.e., using the discussion board in LMS)?

The survey web page allowed only participants who reported they were female and had used online discussion tools to complete the questionnaire. Although the SACM was only sending the link to female students, the first question regarding gender was included in the event male students unintentionally received the email.

At the end of the questionnaire, participants were asked to click on a “Submit” button that sent the completed questionnaire to the researcher’s data folder. Once the participants began the survey, they needed to complete the entire instrument. They could not go back to previous questions or sections of the survey and they were not able to proceed if they skipped or missed an item or question. If they decided to quit before they were finished, their questionnaires were excluded and they were not able to go back to

where they left off. If, at a later time, participants returned to the survey, they had to start again from the beginning. The survey website did not allow more than one completed survey from the same IP address.

After the survey was closed, the data were downloaded for analysis. All data analysis was conducted with SPSS program version 21.

CHAPTER IV

RESULTS

Of the 14,145 female Saudi students in the United States who received the electronic survey, 277 met the participation criteria and participated in the study. Table 2 provides a summary of the personal information gathered.

Married students were a slight majority of the sample (55.6%). Participants between 20 and 29 years old (69.7%) represented the largest age group. The largest groups of participants were from the Western region of Saudi Arabia (42.6%), while the Northern Region had the least with only five participants (1.8%). Education (32.9%) was the most common field of study.

A majority of the participants were master's degree students (56%). Graduate students (both master's and doctoral) comprised 73.3% of the sample compared with undergraduates who accounted for 24.5%. A majority of the participants (68.9%) had had one or two online courses.

Table 2

Frequencies and Percentages of Participant Characteristics

Variables		Frequency	Percent
Marital Status ¹	Unmarried	123	44.4
	Married	154	55.6
Age	Under 20	5	1.8
	20 – 29	193	69.7
	30 – 39	72	25.9
	40 – Older	7	2.6
Region of Saudi Arabia Residency	Center	66	23.8
	North	5	1.8
	East	71	25.6
	South	17	6.1
	West	118	42.6
Field of Study	Art	19	6.9
	Business	35	12.6
	Education	91	32.9
	Engineering	10	3.6
	Political science	4	1.4
	Medicine	27	9.7
	Law	41	14.8
	Science	13	4.7
	Other	37	13.4
Academic Level	Bachelor's	68	24.5
	Master's	155	56.0
	Doctoral	48	17.3
	Other	6	2.2
Experience with online course	1 course	120	43.3
	2 courses	71	25.6
	3 courses	34	12.3
	More than 3 courses	52	18.8

¹ Four groups comprised marital status: unmarried, engaged, married, and divorced. However, due to the low number of engaged (8) and divorced participants (10), these groups were combined with the unmarried group. The reason of putting these groups with the unmarried was because the Saudi culture treats engaged and divorced women as unmarried.

Q1 For female Saudi students, does marital status, region, or previous experience with online courses influence their level of comfort toward each learning discussion environment (face-to-face and online)?

To answer this research question, a 2 x 3 x 4 MANOVA was used. Level of comfort in face-to-face and level of comfort in online discussion environments were the two dependent variables. There were two levels of marital status--married and unmarried. For this research question, only three regions were analyzed (Central, Eastern, and Western). There were not enough total responses from the other two regions for them to be included in this analysis (five from the Northern and 17 from the Southern). There were four levels of previous experience in online courses: one, two, three, and more than three.

Prior to performing a MANOVA test, the following assumptions must be examined: the observations were independent, the dependent variables followed a multivariate normal distribution in each group, and the population covariance matrices for the dependent variables in each group were equal (Stevens, 1986). Given that the surveys were distributed electronically to individuals across the United States, it was reasonable to assume that each participant's submission was independent of the others. Multivariate normality is difficult to characterize but univariate normality is a necessary condition. Using the Shapiro-Wilk test, level of comfort in face-to-face and level of comfort in online were non-normally distributed ($p < .001$ for both). In each case, the dependent variables were negatively skewed. According to Stevens (1986), deviations from multivariate normality have only a small effect on Type I error. Because of the deviations from normality, Box's test of the homogeneity of covariance matrices could not be used. Rummel (1970) suggested various transformations for left-skewed

distributions. However, these were ineffective due to the compressed scale of the data.

The MANOVA test was used with this noted limitation.

The descriptive statistics for level of comfort in face-to-face and online learning discussion environments are presented in Table 3. The MANOVA procedure was used to assist in controlling the inflation of error rate. A general guideline in the use of MANOVA is that there should be a broadly equitable distribution of cases among the cells (Hand & Taylor, 1987).

Table 3

Descriptive Statistics for the Level of Comfort

		Central		Eastern		Western	
		N = 13		N=14		N= 25	
One Course	Unmarried	F2F 3.31(.630)	OL 3.15(2.83)	F2F 3.36(.842)	OL 3.07(.917)	F2F 3.24(.723)	OL 3.04(.935)
	Married	F2F 3.41(.712)	OL 2.82(.728)	F2F 3.35(.786)	OL 2.94(.827)	F2F 3.08(.845)	OL 3.15(.881)
Two Courses	Unmarried	F2F 3.33(.816)	OL 2.83(.753)	F2F 3.30(.949)	OL 3.30(.675)	F2F 3.33(.724)	OL 3.00(.655)
	Married	F2F 3.00(.866)	OL 2.89(1.27)	F2F 2.73(.905)	OL 3.27(1.01)	F2F 3.38(.506)	OL 3.38(.506)
Three Courses	Unmarried	F2F 3.33(.577)	OL 3.00(1.00)	F2F 3.67(.577)	OL 3.00(1.00)	F2F 3.40(.894)	OL 3.00(.707)
	Married	F2F 3.43(.535)	OL 3.00(.577)	F2F 2.50(1.00)	OL 3.00(.816)	F2F 3.40(.699)	OL 3.40(.966)
More Than Three Courses	Unmarried	F2F 3.50(.629)	OL 3.50(.577)	F2F 3.38(.916)	OL 3.13(.991)	F2F 3.11(.928)	OL 3.33(1.00)
	Married	F2F 2.86(1.22)	OL 2.57(.976)	F2F 3.00(1.16)	OL 3.25(.957)	F2F 3.20(.561)	OL 3.13(.640)

Note. F2F = Face-to-Face. OL = Online

The results of the MANOVA are shown in Table 4. The only significant result was a main effect for marital status ($p = .100$). The follow-up one-way ANOVA testing the effect of marital status on level of comfort in face-to-face learning discussion environments was significant ($p = .041$). Unmarried women ($M = 3.31$, $SD = .754$) were significantly more comfortable than married women ($M = 3.17$, $SD = .795$) in face-to-face environments. The ANOVA testing the effect of marital status on level of comfort in online learning discussion environments was not significant ($p = .726$).

Table 4

Multivariate Tests on Demographics

Effect	Hotelling's Trace	<i>F</i>	Hypothesis df	Error df	<i>p</i> -Value
Marital Status	.980	2.326	2	230	.100*
Region	.012	.675	4	458	.610
Previous Experience	.007	.272	6	458	.950
Marital Status x Region	.029	1.647	4	458	.161
Marital Status x Previous Experience	.018	.673	6	458	.671
Region x Previous Experience	.026	.503	12	458	.913
Marital Status x Region x Previous Experience	.034	.647	12	458	.802

*Significant at the $\alpha = .10$ level.

- Q2 For female Saudi students, is there a relationship between attitude toward technology and their level of comfort toward each learning discussion environment (face-to-face and online)?

To answer this research question, a one-way MANOVA was used. Level of comfort in face-to-face and level of comfort in online discussion environments were the two dependent variables. A median split procedure was used on the attitude toward technology variable to produce the high and low levels of the independent variable. The group with higher attitudes toward technology consisted of 150 participants. Their mean attitude toward technology was 3.86 with a standard deviation of .165. The group with lower attitudes toward technology consisted of 127 participants. Their mean attitude toward technology was 3.03 with a standard deviation of .405. More equal group membership could not be achieved due to a lack of precision in the underlying data.

Prior to performing a MANOVA test, the following assumptions must be examined: the observations were independent, the dependent variables followed a multivariate normal distribution in each group, and the population covariance matrices for the dependent variables in each group were equal (Stevens, 1986). The independence assumption was described in the previous research question as was the normality of the dependent variables. As with the first research question, deviations from normality prevented the use of Box's test of the homogeneity of covariances in this case. This MANOVA test was used with this noted limitation.

The descriptive statistics for level of inhibition in online learning discussion environments and attitude toward technology are presented in Table 5.

Table 5

Descriptive Statistics for Level of Comfort and Attitude Toward Technology

Level of Comfort	Level of Attitude Toward Technology	N	Mean	Std. Deviation
Face-to-face learning discussion environment	Low	127	3.20	.867
	High	150	3.21	.717
Online learning discussion environment	Low	127	2.85	.855
	High	150	3.32	.754

The results of the one-way MANOVA are shown in Table 6. The overall MANOVA result was significant ($p < .001$). The follow-up univariate ANOVA test on the effect of attitude toward technology on level of comfort in online learning discussion environments was significant ($p < .001$). The participants with high attitudes toward technology had higher levels of comfort in online learning discussion environments ($M = 3.32$, $SD = .754$) than those with low attitudes toward technology ($M = 2.85$, $SD = .855$). The ANOVA test on the effect of attitude toward technology on level of comfort in face-to-face learning discussion environments was not significant ($p = .984$). Participants with high attitudes toward technology ($M = 3.21$, $SD = .717$) did not differ significantly from those with low attitudes toward technology ($M = 3.20$, $SD = .867$) in terms of level of comfort in face-to-face learning discussion environments.

Table 6

Multivariate Test on Attitude Toward Technology

Effect	Hotelling's Trace	F	Hypothesis df	Error df	p-Value
Attitude toward technology	.088	12.082	2	274	.000*

* Significant at the $\alpha = .10$ level.

Q3 Do female Saudi students report greater comfort in participating in face-to-face or online discussions?

To answer this research question, a paired-samples t -test was conducted to compare the level of comfort in face-to-face with the level of comfort in online.

Prior to performing a t -test, the following assumptions must be examined: the observations were independent, the dependent variables were normally distributed, and the population variances for the dependent variable were equal. The independence assumption was described in the first research question as was the normality of the dependent variables. Because a paired samples t -test was being used, the number of observations in each group was equal and the test was robust with respect to the assumption of homogeneity of variance (Glass & Hopkins, 1996).

The paired samples t -test was not significant, $t(276) = 1.365$, $p = .173$ (see Table 7). There was no significant difference between Saudi female students' level of comfort for face-to-face learning discussion environments ($M = 3.21$, $SD = .788$) and online learning discussion environments ($M = 3.10$, $SD = .834$).

Table 7

Paired Samples Test for Level of Comfort

Pair	N	Mean	Std. Deviation	t - Value	P - Value
Level of Comfort in Face-to-Face and Level of Comfort in Online	277	.101	1.232	1.365	.173

Q4 For female Saudi students, does marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?

To answer this research question, a $2 \times 3 \times 4 \times (3 \times 2)$ MANOVA was used with level of inhibition to participate in mixed gender discussions as the repeated dependent variable. There were two levels of marital status--married and unmarried. For this research question, only three regions were analyzed (Central, Eastern, and Western). There were not enough total responses from the other two regions for them to be included in this analysis (five from the Northern and 17 from the Southern). There were four levels of previous experience in online courses: one, two, three, and more than three. Level of inhibition to participate in mixed gender discussions was asked six times of each individual (resulting in the repeated dependent measure). It was asked with regard to the presence of non-Muslim males, non-Saudi males, and Saudi males. Also, it was asked with regard to face-to-face and online environments. For example, the first item of the repeated measure would be an individual's level of inhibition to participate in mixed gender discussions in the presence of non-Muslim males in a face-to-face environment.

Prior to performing a repeated measure MANOVA test, the following assumptions must be examined: the observations were independent, the dependent variables followed a multivariate normal distribution in each group, and the population covariance matrices for the dependent variables in each group were equal (Stevens, 1986). Stevens (1986) also indicated that the multivariate repeated measures test should be robust to violations of sphericity. Given that the surveys were distributed electronically to individuals across the United States, it was reasonable to assume that each participant's submission was independent of the others. Multivariate normality is difficult to characterize but univariate normality is a necessary condition. Using the Shapiro-Wilk test, level of inhibition in mixed gender discussion under all six conditions

was non-normally distributed ($p < .001$ for all). In each case, the distributions were highly positively skewed. According to Stevens, deviations from multivariate normality have only a small effect on Type I error. Because of the deviations from normality, Box's test of the homogeneity of covariance matrices could not be used. Rummel (1970) suggested various transformations for right-skewed distributions. However, these were ineffective due to the compressed scale of the data. The repeated measures MANOVA test was used with this noted limitation.

The descriptive statistics for level of inhibition in face-to-face and online learning discussion environments are presented in Table 8. The MANOVA procedure was used to assist in controlling the inflation of error rate. A general guideline in the use of MANOVA is that there should be a broadly equitable distribution of cases among the cells (Hand & Taylor, 1987).

Table 8

Descriptive Statistics for Levels of Inhibition

			Central		Eastern		Western			
			N = 13		N = 14		N = 25			
			F2F	OL	F2F	OL	F2F	OL		
One Course	Unmarried	NM	1.62 (.768)	1.31 (.480)	NM	1.50 (.760)	1.50 (.650)	NM	1.52 (.586)	1.44 (.507)
		NS	1.54 (.776)	1.31 (.480)	NS	1.57 (.646)	1.57 (.756)	NS	1.68 (.690)	1.56 (.651)
		S	1.92 (.954)	1.69 (.751)	S	1.64 (.745)	1.71 (.825)	S	1.96 (.790)	1.64 (.638)
	Married	NM	1.71 (1.11)	1.65 (1.06)	NM	2.06 (.966)	2.06 (.899)	NM	1.65 (.846)	1.46 (.761)
		NS	1.76 (1.09)	1.76 (1.03)	NS	2.00 (.935)	1.94 (.899)	NS	1.65 (.797)	1.50 (.762)
		S	2.24 (1.09)	2.24 (1.09)	S	2.24 (1.03)	1.94 (.899)	S	2.12 (.864)	1.73 (.827)
Two Courses	Unmarried	NM	1.67 (.516)	1.50 (.548)	NM	1.20 (.422)	1.10 (.316)	NM	1.40 (.632)	1.40 (.632)
		NS	1.67 (.516)	1.50 (.548)	NS	1.20 (.422)	1.20 (.422)	NS	1.60 (.737)	1.47 (.640)
		S	2.17 (.983)	2.17 (.983)	S	1.50 (.850)	1.10 (.316)	S	2.00 (.926)	1.47 (.640)
	Married	NM	1.89 (.782)	1.78 (.667)	NM	1.73 (1.01)	1.55 (.934)	NM	2.00 (1.00)	1.92 (1.04)
		NS	2.00 (.866)	1.67 (.500)	NS	1.55 (.934)	1.55 (.934)	NS	2.15 (.987)	1.92 (1.04)
		S	2.44 (.527)	1.89 (.601)	S	2.09 (1.04)	1.82 (.982)	S	2.31 (.855)	2.00 (1.08)
Three Courses	Unmarried	NM	2.00 (1.73)	2.00 (1.73)	NM	3.00 (1.73)	3.00 (1.73)	NM	1.20 (.447)	1.20 (.447)
		NS	2.00 (1.73)	2.00 (1.73)	NS	3.00 (1.73)	2.67 (1.53)	NS	1.20 (.447)	1.20 (.447)
		S	2.33 (1.53)	2.00 (1.73)	S	2.00 (1.00)	2.00 (1.00)	S	1.20 (.447)	1.20 (.447)
	Married	NM	1.14 (.378)	1.29 (.756)	NM	2.00 (1.41)	1.25 (.500)	NM	1.60 (.966)	1.60 (.966)
		NS	1.29 (.756)	1.29 (.756)	NS	2.25 (1.26)	1.25 (.500)	NS	1.80 (1.03)	1.60 (1.07)
		S	1.43 (.787)	1.29 (.756)	S	3.00 (.816)	1.75 (.957)	S	2.20 (1.13)	1.90 (1.10)

Table 8 continued

		Central		Eastern		Western	
		N = 4		N = 8		N = 9	
		F2F	OL	F2F	OL	F2F	OL
More Than Three Courses	Unmarried	NM	1.25 (.500)	NM	1.25 (.707)	NM	1.00 (.000)
		NS	1.25 (.500)	NS	1.38 (.744)	NS	1.00 (.000)
		S	1.25 (.500)	S	1.38 (.744)	S	1.00 (.000)
		N = 7		N = 4		N = 15	
		F2F	OL	F2F	OL	F2F	OL
		NM	1.86 (1.07)	NM	1.25 (.500)	NM	1.47 (.640)
		NS	1.86 (1.07)	NS	1.00 (.000)	NS	1.47 (.640)
		S	2.14 (1.07)	S	2.25 (1.26)	S	1.67 (.900)
			1.86 (1.07)		1.75 (.957)		1.40 (.632)

Note. NM= Non-Muslim, NS= Non-Saudi, S= Saudi.

The results of the repeated measures MANOVA are shown in Tables 9 and 10.

Several significant results were found.

1. There were significant main effects for two repeated factors: type of male ($p < .001$) and type of medium ($p < .001$).
2. There was a main effect for marital status ($p = .074$).
3. The interaction between the two repeated factors (type of male and type of medium) was also significant ($p < .001$).
4. There was a significant two-way interaction of type of male and marital status ($p = .038$).
5. There was a significant three-way interaction of type of male, marital status, and region ($p = .032$).

Table 9

Tests of the Within Factors for Demographic Variables

Effect	Hotelling's Trace	F	Hypothesis df	Error df	p-Value
Type of Male	.123	14.133	2	230	.000*
Type of Male x Marital Status	.029	3.309	2	230	.038*
Type of Male x Region	.024	1.397	4	458	.234
Type of Male x Marital Status x Region	.047	2.664	4	458	.032*
Type of Male x Marital Status x Prev. Experience	.046	1.743	6	458	.109
Type of Male x Region x Prev. Experience	.038	.722	12	458	.730
Type of Male x Marital Status x Region x Prev. Experience	.066	1.268	12	458	.234
Type of Medium	.118	27.200	1	231	.000*
Type of Medium x Marital Status	.009	1.986	1	231	.160
Type of Medium x Region	.003	.329	2	231	.720
Type of Medium x Prev. Experience	.017	1.323	3	231	.268
Type of Medium x Marital Status x Region	.010	1.158	2	231	.316
Type of Medium x Marital Status x Prev. Experience	.017	1.297	3	231	.276
Type of Medium x Region x Prev. Experience	.046	1.786	6	231	.103
Type of Medium x Marital Status x Region x Prev. Experience	.042	1.607	6	231	.146
Type of Male x Type of Medium	.084	9.629	2	230	.000*
Type of Male x Type of Medium x Marital Status	.011	1.296	2	230	.276
Type of Male x Type of Medium x Region	.003	.145	4	458	.965
Type of Male x Type of Medium x Prev. Experience	.033	1.262	6	458	.274
Type of Male x Type of Medium x Marital Status x Region	.021	1.210	4	458	.306
Type of Male x Type of Medium x Marital Status x Prev. Experience	.012	.467	6	458	.833
Type of Male x Type of Medium x Region x Prev. Experience	.045	.865	12	460	.583
Type of Male x Type of Medium x Marital Status x Region x Prev. Experience	.038	.734	12	458	.719

*Significant at the $\alpha = .10$ level.

Table 10

Tests of the Between Factors for Demographic Variables

	Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i> -Value
Marital Status	10.284	1	10.284	3.23	.074*
Region	9.187	2	4.593	1.44	.238
Previous Experience	19.039	3	6.346	1.99	.116
Marital Status x Region	6.057	2	3.029	.951	.338
Marital Status x Previous Experience	15.035	3	5.012	1.57	.196
Region x Previous Experience	31.239	6	5.207	1.635	.138
Marital Status x Region x Previous Experience	26.233	6	4.372	1.373	.226

After the significant main effect for type of male ($p < .001$), simple contrasts were tested on that factor of the repeated measure. An individual's level of inhibition to participate in mixed gender discussions in the presence of Saudi males ($M = 1.84$, $SD = .822$) was significantly higher than in the presence of non-Muslims ($M = 1.57$, $SD = .787$, $p < .001$) than in the presence of non-Saudis ($M = 1.60$, $SD = .779$, $p < .001$). Level of inhibition to participate in the presence of the last two groups did not differ significantly.

There was also a significant main effect for type of medium ($p < .001$). An individual's level of inhibition to participate in mixed gender discussions in the presence of males was significantly higher for the face-to-face learning discussion environment ($M = 1.74$, $SD = .794$) than for the online learning discussion environment ($M = 1.59$, $SD = .758$).

There was a main effect for marital status ($p = .074$). Married Saudi female students ($M = 1.78$, $SD = .793$) were significantly more inhibited than unmarried Saudi female students ($M = 1.54$, $SD = .656$) regardless of the type of male and type of medium.

There was a significant interaction between type of male and type of medium ($p < .001$). This required additional tests of significance on the contrasts. The relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Muslim males and type of medium was a significant ordinal interaction ($p < .001$). Likewise, the relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Saudi males and type of medium was a significant ordinal interaction ($p < .001$). There was no significant interaction between level of inhibition for non-Muslim and non-Saudi males and type of medium. These relationships are shown in Figure 1.

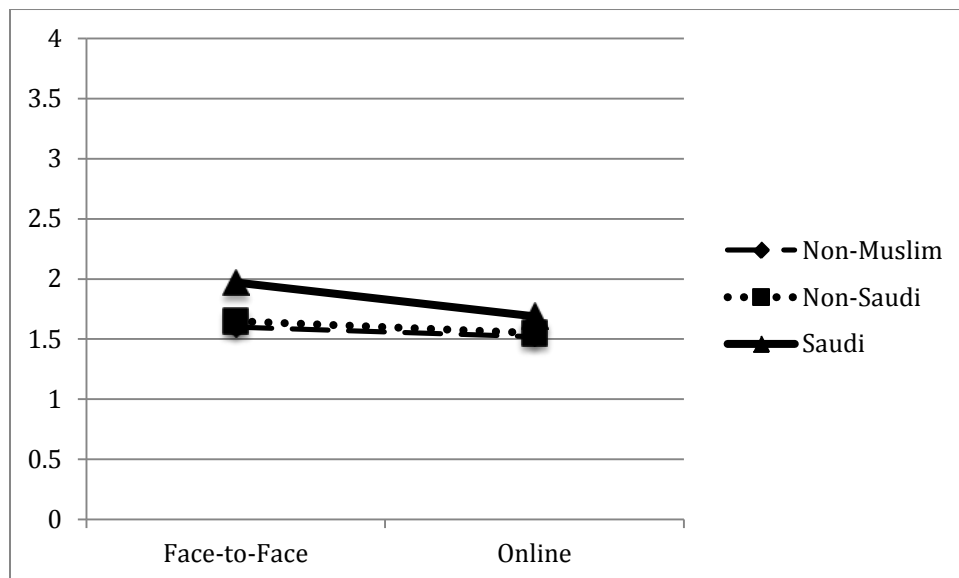


Figure 1. Interactions of type of male and medium.

There was a significant two-way interaction of type of male and marital status ($p = .038$). This required additional tests of significance on the contrasts. The relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Muslim males and marital status was a significant ordinal interaction ($p = .016$). Likewise, the relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Saudi males and marital status was a significant ordinal interaction ($p = .011$). There was no significant interaction between level of inhibition for non-Muslim and non-Saudi males and marital status. These relationships are shown in Figure 2.

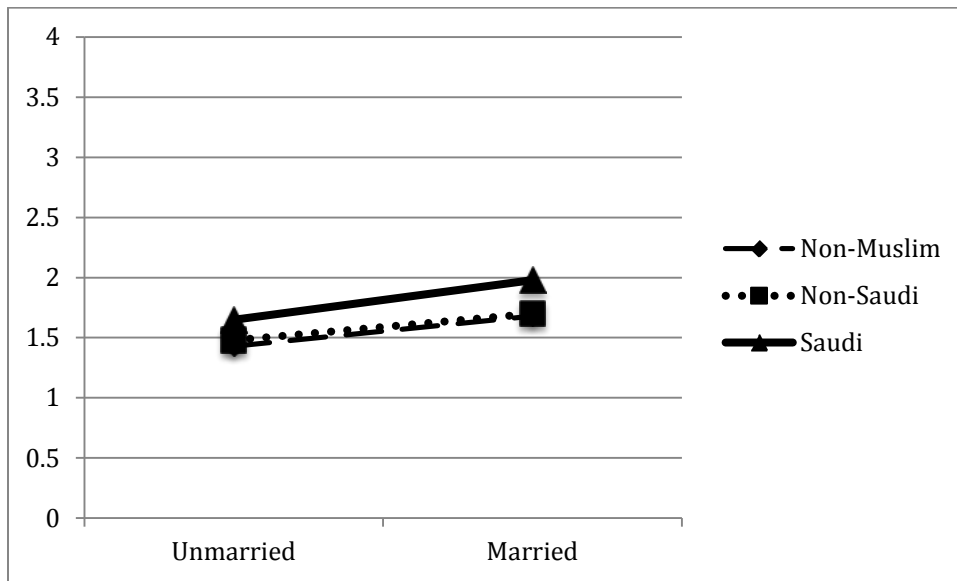


Figure 2. Interactions of type of male and marital status.

There was also a significant three-way interaction of type of male, marital status, and region ($p = .032$). This required additional tests of significance on the contrasts. The relationship between an individual's level of inhibition to participate in mixed gender

discussion with Saudi and non-Muslim males, marital status, and region was a significant interaction ($p = .033$). Likewise, the relationship between an individual's level of inhibition to participate in mixed gender discussions with Saudi and non-Saudi males, marital status, and region was a significant interaction ($p = .007$). There was no significant interaction between level of inhibition for non-Muslim and non-Saudi males, marital status, and region. These relationships are shown in Figure 3.

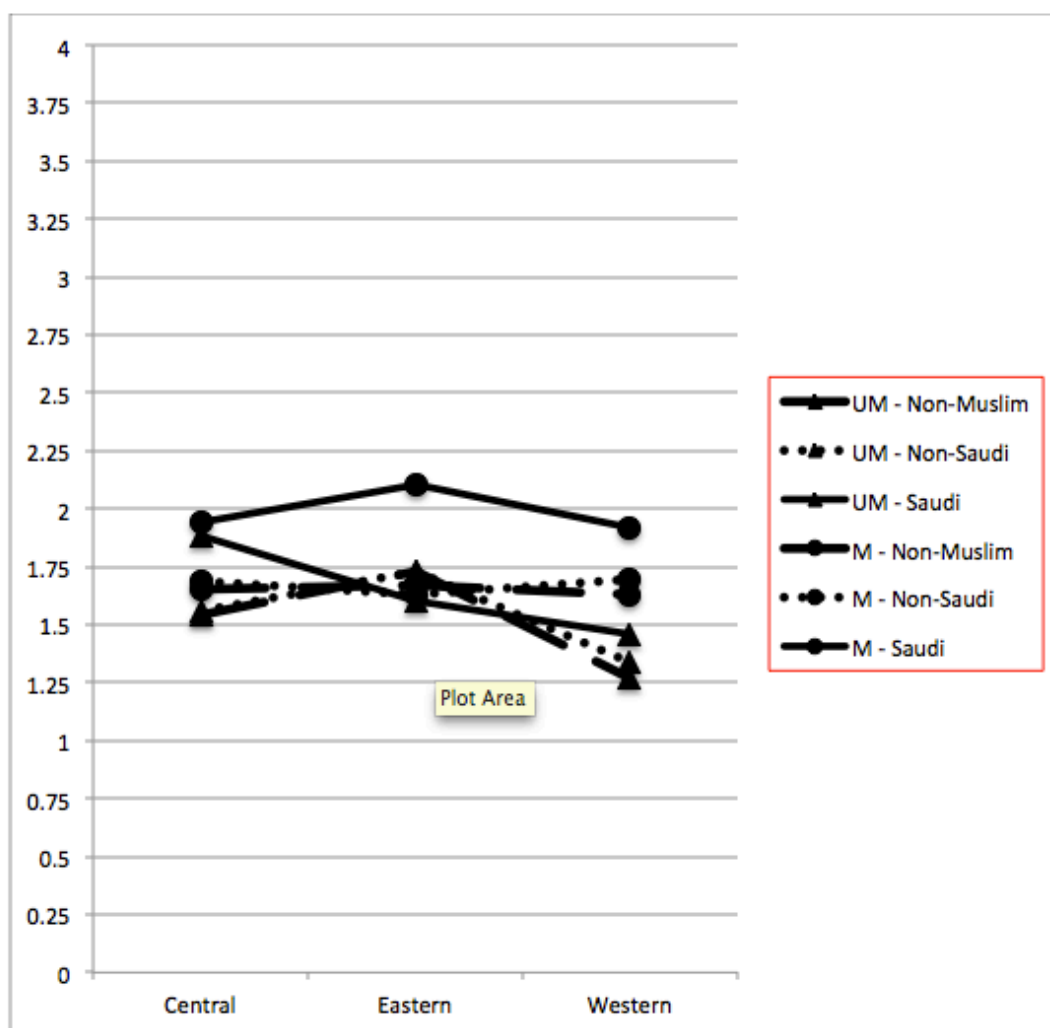


Figure 3. Interactions of type of male, marital status, and region.

Q5 For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender online discussions?

To answer this research question, a 2 x (3) MANOVA was used with level of inhibition to participate in mixed gender discussions as the repeated dependent variable. As described earlier, a median split procedure was used on the attitude toward technology variable to produce the high and low levels of the independent variable. The group with

higher attitudes toward technology consisted of 150 participants. Their mean attitude toward technology was 3.86 with a standard deviation of .165. The group with lower attitudes toward technology consisted of 127 participants. Their mean attitude toward technology was 3.03 with a standard deviation of .405. More equal group membership could not be achieved because of a lack of precision in the underlying data. For this question, the three questions regarding level of inhibition to participate in mixed gender online discussions were used as a repeated measure. The types of males present (non-Muslim, non-Saudi, and Saudi) provided the levels of the measure.

This MANOVA test used a different independent variable and a subset of the repeated measures of the analysis provided in the previous question. Therefore, the preceding discussion of test assumptions also applied to this case.

The descriptive statistics for level of inhibition in online learning discussion environments and attitude toward technology are presented in Table 11.

Table 11

Descriptive Statistics for Levels of Inhibition and Attitude Toward Technology

	Attitude Level	<i>N</i>	Mean	Std. Deviation
Presence of Non-Muslim in Online	Low	127	1.60	.848
	High	150	1.48	.748
Presence of Non-Saudi in Online	Low	127	1.58	.791
	High	150	1.53	.775
Presence of Saudi in Online	Low	127	1.72	.872
	High	150	1.68	.814

The results of the repeated measures MANOVA are shown in Tables 12 and 13.

As shown in the previous analysis, type of male was significant ($p < .001$). There was no main effect for attitude toward technology ($p = .441$) nor was there a significant interaction of type of male and attitude toward technology ($p = .171$). Because the type of male result was fully explored in the previous question, it was not revisited here.

Table 12

Tests of Between Factors for Type of Male and Attitude Toward Technology

Effect	Hotelling's Trace	<i>F</i>	Hypothesis df	Error df	<i>p</i> -Value
Type of Male	.081	11.035	2	274	.000*
Type of Male x Attitude toward technology	.013	1.775	2	274	.171

* Significant at the $\alpha = .10$ level.

Table 13

Tests of Within Factors for Attitude Toward Technology

	Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i> -Value
Attitude toward Technology	.340	1	.340	.596	.441

- Q6 For female Saudi students, does marital status, region, or previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?

To answer this research question, a 2 x 3 x 4 MANOVA was used with the perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment as the three dependent variables. There were two levels of marital status--married and unmarried. For this research question, only three regions were analyzed (Central, Eastern, and Western). There were not enough total responses from the other two regions for them to be included in this analysis (five from the Northern and 17 from the Southern). There were four levels of previous experience in online courses: one, two, three, and more than three.

Prior to performing a MANOVA test, the following assumptions must be examined: the observations were independent, the dependent variables followed a multivariate normal distribution in each group, and the population covariance matrices for the dependent variables in each group were equal (Stevens, 1986). Independence was previously discussed. Multivariate normality is difficult to characterize but univariate normality is a necessary condition. Using the Shapiro-Wilk test, social interaction, language skills, and learning environment were all non-normally distributed ($p < .001$ for

each). In each case, the dependent variables were platykurtic. According to Stevens (1986), deviations from multivariate normality have only a small effect on Type I error. Because of the deviations from normality, Box's test of the homogeneity of covariance matrices could not be used. Rummel (1970) suggested various transformations for distributions. However, these were ineffective due to the compressed scale of the data. The MANOVA test was used with this noted limitation.

The descriptive statistics for the perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment are presented in Table 14. The MANOVA procedure was used to assist in controlling the inflation of error rate. A general guideline in the use of MANOVA is that there should be a broadly equitable distribution of cases among the cells (Hand & Taylor, 1987).

Table 14

Descriptive Statistics for Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment for Central, Eastern, and Western Regions

			Central		Eastern		Western
			N = 13		N = 14		N = 25
One Course	Unmarried	SI	2.18 (.520)	SI	2.13 (.877)	SI	2.20 (.550)
		LS	1.96 (.721)	LS	1.98 (.600)	LS	2.11 (.645)
		LE	1.86 (.568)	LE	2.08 (.833)	LE	1.804 (.432)
	Married	SI	N = 17 2.23 (.800)	SI	N = 17 2.16 (.688)	SI	N = 26 2.22 (.661)
		LS	2.31 (.615)	LS	2.09 (.673)	LS	2.24 (.585)
		LE	2.14 (.761)	LE	1.80 (.824)	LE	2.02 (.613)
Two Courses	Unmarried	SI	N = 6 2.00 (.810)	SI	N = 10 1.80 (.572)	SI	N = 15 2.22 (.670)
		LS	2.04 (.557)	LS	1.85 (.580)	LS	2.30 (.493)
		LE	1.67 (.804)	LE	1.68 (.700)	LE	1.95 (.731)
	Married	SI	N = 9 1.98 (.620)	SI	N = 11 2.38 (.810)	SI	N = 13 2.35 (.851)
		LS	2.03 (.620)	LS	2.45 (.781)	LS	2.35 (.711)
		LE	1.84 (.811)	LE	2.50 (.943)	LE	2.01 (.700)
Three Courses	Unmarried	SI	N = 3 2.61 (.536)	SI	N = 3 1.44 (.192)	SI	N = 5 1.96 (.520)
		LS	2.25 (.433)	LS	1.33 (.577)	LS	2.30 (.597)
		LE	2.53 (.305)	LE	1.26 (.231)	LE	2.04 (.410)
	Married	SI	N = 7 2.14 (.434)	SI	N = 4 2.38 (.810)	SI	N = 10 2.47 (.587)
		LS	2.32 (.572)	LS	2.56 (.826)	LS	2.30 (.524)
		LE	2.17 (.752)	LE	2.55 (.700)	LE	2.34 (.462)
More Than Three Courses	Unmarried	SI	N = 4 2.40 (.930)	SI	N = 8 1.90 (.740)	SI	N = 9 2.33 (.700)
		LS	2.56 (.315)	LS	1.93 (.741)	LS	2.33 (.545)
		LE	2.40 (.516)	LE	1.67 (.800)	LE	2.38 (.696)
	Married	SI	N = 7 2.26 (.775)	SI	N = 4 2.12 (.763)	SI	N = 15 2.11 (.573)
		LS	2.57 (.689)	LS	2.44 (.125)	LS	2.28 (.525)
		LE	2.11 (.871)	LE	2.30 (.740)	LE	2.12 (.600)

*SI= Social Interaction, LS= Learning Skills, LE= Learning Environment

The results of the MANOVA are shown in Table 15. There were two significant MANOVA results: a significant main effect for marital status ($p = .061$) and a significant interaction of marital status and region ($p = .044$).

Table 15

Multivariate Tests of Demographic Variables

Effect	Hotelling's Trace	<i>F</i>	Hypothesis df	Error df	<i>p</i> -Value
Marital Status	.033	2.487	3	229	.061*
Region	.020	.763	6	456	.600
Previous Experience	.035	.892	9	683	.532
Marital Status x Region	.057	2.177	6	456	.044*
Marital Status x Previous Experience	.022	.546	9	683	.841
Region x Previous Experience	.072	.917	18	683	.558
Marital Status x Region x Previous Experience	.096	1.215	18	683	.242

* Significant at the $\alpha = .10$ level.

In follow-up testing with one-way ANOVA procedures, significant effects were found for the impact of marital status on social interaction ($p = .032$), language skills ($p = .008$), and learning environment ($p = .074$; see Table 16). In all three cases, married Saudi female students reported a slight but significant difference toward the online end of the scale (see Table 17).

Table 16

Tests of Between Factors for Social Interaction, Language Skills, and Learning Environment

		Type III Sum of Squares	df	Mean Square	F	p- Value
Marital Status	Social Interaction	2.220	1	2.220	4.650	.032*
	Language Skills	2.723	1	2.723	7.100	.008*
	Learning Environment	1.535	1	1.535	3.220	.074*
Region	Social Interaction	.154	2	.077	.161	.851
	Language Skills	1.327	2	.664	1.731	.179
	Learning Environment	.599	2	.300	.629	.534
Previous Experience	Social Interaction	1.052	3	.351	.735	.532
	Language Skills	1.598	3	.533	1.389	.247
	Learning Environment	1.686	3	.562	1.179	.318
Marital Status x Region	Social Interaction	4.842	2	2.421	5.071	.007*
	Language Skills	2.866	2	1.433	3.737	.025*
	Learning Environment	3.681	2	1.840	3.861	.022*
Marital Status x Prev. Experience	Social Interaction	1.054	3	.351	.736	.532
	Language Skills	.362	3	.121	.315	.815
	Learning Environment	.950	3	.317	.667	.575
Region x Prev. Experience	Social Interaction	1.754	6	.292	.612	.720
	Language Skills	1.535	6	.256	.667	.676
	Learning Environment	1.530	6	.255	.535	.781
Marital Status x Region x Prev. Experience	Social Interaction	4.352	6	.724	1.516	.174
	Language Skills	2.458	6	.410	1.068	.382
	Learning Environment	6.971	6	1.162	2.437	.026

* Significant at the $\alpha = .10$ level

Table 17

Descriptive Statistics for the Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment on Marital Status

	Marital Status	Mean	Std. Deviation
Social Integration	Unmarried (n= 115)	2.12	.660
	Married (n= 140)	2.25	.711
Language Skills	Unmarried (n= 115)	2.09	.615
	Married (n= 140)	2.29	.620
Learning Environments	Unmarried (n= 115)	1.94	.659
	Married (n= 140)	2.10	.725

There was a significant two-way interaction of marital status and region ($p = .044$). A follow-up ANOVA procedure was conducted on each of the three dependent variables. The follow-up ANOVA revealed a significant interaction of marital status and region for the social interaction variable ($p = .007$). Individual test comparisons revealed that unmarried Saudi female students from the Eastern region ($M = 1.92$, $SD = .735$) rated social interaction significantly more toward the face-to-face end of the scale than students from the Central ($M = 2.22$, $SD = .649$) and Western regions ($M = 2.21$, $SD = .595$), $t(135) = 3.245$, $p > .10$ and $t(187) = 2.944$, $p > .10$, respectively.

With regard to married Saudi students, there were significant differences between the women from all three regions on the ratings of social interaction. Those from the Central region ($M = 2.16$, $SD = .688$) rated social interaction more toward the face-to-face end of the scale, followed by those from the Western region ($M = 2.26$, $SD = .669$) and then the Eastern region ($M = 2.38$, $SD = .809$). The differences between the Central and Western regions, $t(182) = 1.288$, and the Western and Eastern regions, $t(187) =$

2.026, were both significant at the .10 level. With regard to social interaction, there was a disordinal interaction of marital status and region when looking at the Eastern and Western regions and when looking at the Eastern and Central regions. There was also an ordinal interaction when looking at the Western and Central regions (see Figure 4).

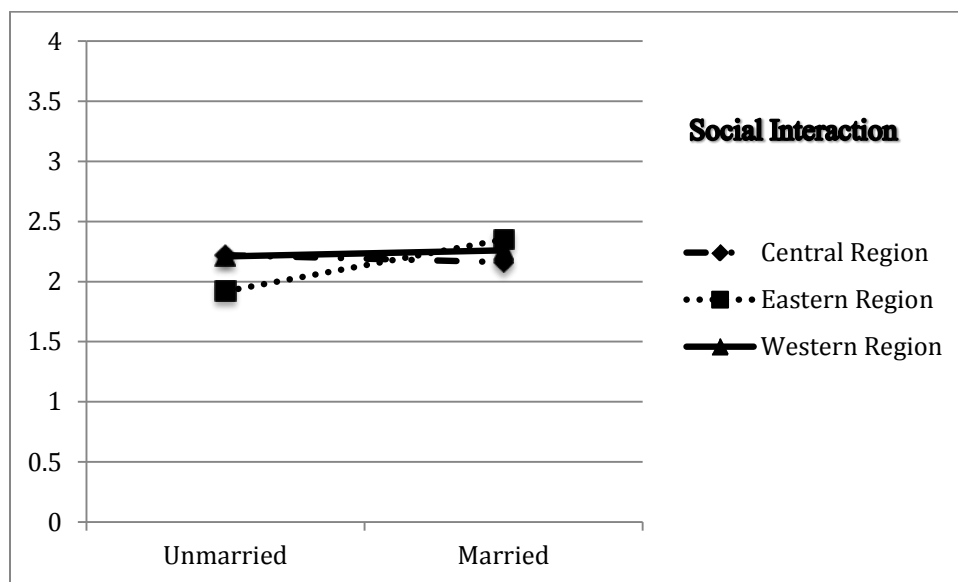


Figure 4. Interactions of marital status and region—social interaction.

The follow-up ANOVA revealed a significant interaction of marital status and region for the language skills variable ($p = .025$). Individual test comparisons revealed that unmarried Saudi female students from the Eastern region ($M = 1.88$, $SD = .625$) rated language skills significantly more toward the face-to-face end of the scale than students from the Central ($M = 2.11$, $SD = .621$) and Western regions ($M = 2.22$, $SD = .579$), $t(135) = 4.333$, $p > .10$ and $t(187) = 4.369$, $p > .10$, respectively. With regard to married Saudi students, there were no significant differences among the women from the three regions. With regard to language skills, there was an ordinal interaction of marital status

and region when looking at the Eastern and Western regions and when looking at the Eastern and Central regions. There was no interaction when looking at the Western and Central regions (see Figure 5).

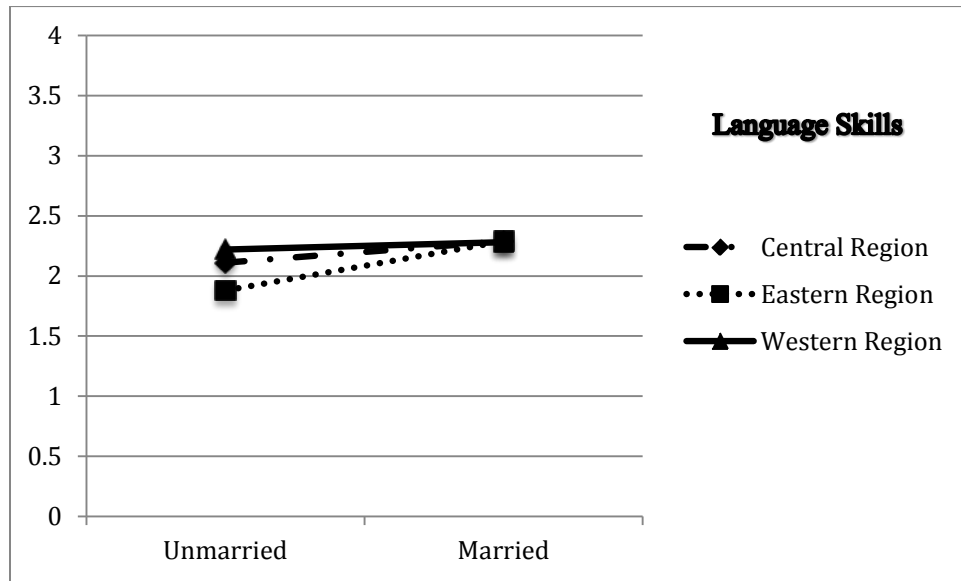


Figure 5. Interactions of marital status and region—language skills.

The follow-up ANOVA revealed a significant interaction of marital status and region for the learning environment variable ($p = .022$). Individual test comparisons revealed that unmarried Saudi female students from the Eastern region ($M = 1.81$, $SD = .772$) rated learning environment significantly more toward the face-to-face end of the scale than students from the Central ($M = 2.04$, $SD = .626$) and Western regions ($M = 1.98$, $SD = .590$), $t(135) = 3.490$, $p > .10$ and $t(187) = 3.016$, $p > .10$, respectively. For married Saudi female students, those from the Eastern region ($M = 2.15$, $SD = .878$) rated learning environment significantly more toward the online end of the scale than students from the Central ($M = 2.07$, $SD = .770$) and Western regions ($M = 2.09$, $SD = .604$),

$t(135) = 3.490, p > .10$ and $t(187) = 3.016, p > .10$, respectively. With regard to learning environment, there was a disordinal interaction of marital status and region when looking at the Eastern and Western regions and when looking at the Eastern and Central regions. There was no interaction when looking at the Western and Central regions (see Figure 6).

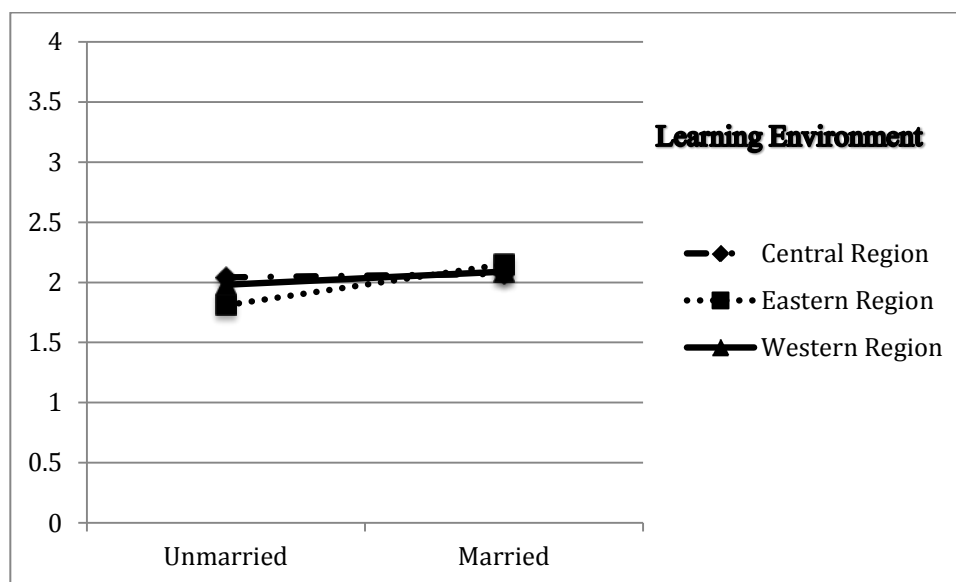


Figure 6. Interactions of marital status and region—learning environment.

Q7 For female Saudi students, is there a relationship between attitude toward technology and benefits of the medium (face-to-face or online) in the areas of social interaction, language skills, and learning environment?

To answer this research question, a one-way MANOVA was used with the perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment as the three dependent variables. As described earlier, a median split procedure was used on the attitude toward technology variable to produce the high and low levels of the independent variable. The group with higher

attitudes toward technology consisted of 150 participants. Their mean attitude toward technology was 3.86 with a standard deviation of .165. The group with lower attitudes toward technology consisted of 127 participants. Their mean attitude toward technology was 3.03 with a standard deviation of .405. More equal group membership could not be achieved due to a lack of precision in the underlying data.

Prior to performing a MANOVA test, the following assumptions must be examined: the observations were independent, the dependent variables followed a multivariate normal distribution in each group, and the population covariance matrices for the dependent variables in each group were equal (Stevens, 1986). Independence was previously discussed. Multivariate normality is difficult to characterize but univariate normality is a necessary condition. Using the Shapiro-Wilk test, social interaction, language skills, and learning environment were all non-normally distributed ($p < .001$ for each). In each case, the dependent variables were platykurtic. According to Stevens (1986), deviations from multivariate normality have only a small effect on Type I error. Because of the deviations from normality, Box's test of the homogeneity of covariance matrices could not be used. Rummel (1970) suggested various transformations for distributions. However, these were ineffective due to the compressed scale of the data. The MANOVA test was used with this noted limitation.

The descriptive statistics for social interaction, language skills, and learning environment and attitude toward technology are presented in Table 18.

Table 18

Descriptive Statistics for the Perceived Benefits of the Face-to-Face or Online Medium in the Areas of Social Interaction, Language Skills, and Learning Environment on Attitude Toward Technology

	Attitude Level	<i>N</i>	Mean	Std. Deviation
Social Interaction	Low	127	2.05	.693
	High	150	2.33	.673
Language Skills	Low	127	2.10	.630
	High	150	2.20	.582
Learning Environment	Low	127	1.90	.718
	High	150	2.16	.668

The results of the MANOVA are shown in Table 19. There was a significant effect for attitude toward technology ($p = .005$). In follow-up testing with one-way ANOVA procedures, significant effects were found for the impact of attitude toward technology on the perceived benefits of the face-to-face or online medium in the areas of social interaction ($p = .001$), language skills ($p = .005$), and learning environment ($p = .002$; see Table 20). For all three variables, those with better attitudes toward technology rated the online environment more favorably than did those with lower attitudes.

Table 19

Multivariate Test on Effect of Attitude Toward Technology

Effect	Hotelling's Trace	<i>F</i>	Hypothesis df	Error df	<i>p</i> -Value
Attitude toward technology	.048	4.356	3	273	.005*

* Significant at the $\alpha = .10$ level.

Table 20

Tests of Within Factors for Attitude Toward Technology

		Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i> - Value
Attitude toward Technology	Social Interaction	5.405	1	5.405	11.601	.001 [*]
	Language Skills	2.888	1	2.888	7.904	.005 [*]
	Learning Environment	4.879	1	4.879	10.203	.002 [*]

^{*}Significant at the $\alpha = .10$ level

Q8 Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?

To answer this question, bivariate correlations were used. The eight online discussion board features were rated on a 5-point scale and correlated with a question on comfort in participating in online discussions rated on a 4-point scale. The scales used limited the heterogeneity of the data and this had the potential to affect the size of the correlation coefficient (Hinkle, Wiersma, & Jurs, 1994). The results are shown in Table 21. Three of the correlations were significant, meaning that the relationships found in the sample were also likely to exist in the population. However, they were all less than .20 and represented very weak relationships. The first significant feature that correlated with comfort was “The ability to save drafts of my written comments before I post them” ($r = .172$). The second feature was “The ability to revise my written comments even after I post them” ($r = .141$). The third feature was “The ability to attach documents and hyperlinks that support my written comments” ($r = .127$).

Table 21

Test of Significance of Student Perceived Level of Comfort in Participation and Listed Online Tool Discussion Value

Variables	N	Mean	Std. Deviation	Pearson Correlation (r)
The ability to revise my written comments even after I post them.	277	4.13	1.088	.141 [*]
The ability to save drafts of my written comments before I post them.	277	4.26	.998	.172 ^{**}
The ability to upload images and diagrams that support my written comments.	277	4.17	1.081	.105
The ability to attach documents and hyperlinks that support my written comments.	277	4.31	.991	.127 [*]
The ability to modify the font type, size and color.	277	3.96	1.209	.112
The ability to view all posts separate or in one page.	277	4.13	1.074	.111
The ability to correct what I have posted.	277	4.26	1.068	.084
The ability to share what I have posted in social networks.	277	3.95	1.246	.047

^{*} Correlation is significant at the 0.05 level (2-tailed).

^{**} Correlation is significant at the 0.01 level (2-tailed).

CHAPTER V

CONCLUSION AND DISCUSSION

This chapter presents the purpose of the study, participants, summary of procedures, discussion of research question findings, limitations of the study, recommendations, suggestions for future research, and the implications of the study for instructional designers and teachers.

Purpose of the Study

The purpose of this quantitative study was to explore the perceptions toward online and face-to-face discussions of Saudi female students who are studying in the United States. The following research questions guided this study:

- Q1 For female Saudi students, do marital status, region, or previous experience with online courses influence learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q2 For female Saudi students, is there a relationship between attitude toward technology and learner's level of comfort toward each learning discussion (face-to-face and online) environment?
- Q3 Do female Saudi students report greater comfort in participating in face-to-face or online discussions?
- Q4 For female Saudi students, do marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?
- Q5 For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender face-to-face and online discussions?

- Q6 For female Saudi students, do marital status, region, or previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?
- Q7 For female Saudi students, is there a relationship between attitude toward technology and benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?
- Q8 Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?

Discussion of Research Findings

The present study addressed eight research questions. Survey questions were designed to answer those questions. The following is a discussion of the findings of the study for each research question.

Research Question 1

- Q1 For female Saudi students, do marital status, regions, or previous experience with online courses influence learner's level of comfort toward each learning discussion (face-to-face and online) environment?

The findings revealed that only one factor, marital status, affected the level of comfort for Saudi female students in face-to-face learning environments. Unmarried Saudi female students reported that they felt more comfortable participating in face-to-face learning discussions than married Saudi female students. This result aligned with prior studies that found positive relationships between marital status and face-to-face learning discussion environments (Alanazy, 2011; Alreshoud & Koeske, 1997; Trice, 2004).

This result matched anecdotal experiences of the researcher. Some married Saudi females might be controlled by either their partners' perceptions or their own fears of being judged by other Saudi female peers living in the same city. After completing the

survey, one Saudi female student shared her story with the researcher about being judged by other Saudi housewives for participating in class and interacting with males. This action inhibited her from being an active participant in class and interacting with males, especially Saudi males.

In another event, the researcher observed a Saudi female student walking into class with her husband. The female was a registered student in the class; however, her husband was not. This action raised many questions. Was it a religious issue or an issue related to cultural norms? Was it a trust issue? What were his motivations? What was his wife's opinion?

Many unmarried Saudi female students participate and interact in class because they want to learn and gain a degree despite possible criticisms. In general, they also have their parent's support in what they are doing. However, there are unmarried Saudi female students who do feel uncomfortable in participating in both learning discussion environments (face-to-face and online). One Saudi female student reported that being shy prevented her from participating in class, especially face-to-face. For shy females, online discussions might be more appropriate environments to share their opinions. Another student shared her concerns with the researcher about being judged by other Saudi female students, housewives, and Saudi males. The basis of these concerns was rooted in the notions that she might be judged as being disrespectful or inappropriately "open-minded" outside of cultural norms.

On the other hand, region and previous experience with online courses did not significantly affect Saudi female students' level of comfort for both face-to-face learning discussion environments. These results did not support prior studies that found

relationships among regions and previous experience with online learning and learning discussion environments (Alanazy, 2011; Alreshoud & Koeske, 1997; Trice, 2004). The current results could be explained by many factors. One of these factors is the period of time Saudi female students have spent in the United States. The first thing that Saudi students do when they arrive in the United States or other foreign countries before they start their degrees is to enroll in English as a Second Language programs (ESL). Some universities give pre-admission status for enrolling in ESL to develop not only students' basic interpersonal communications skills (BICS) but also their cognitive academic language proficiency (Hong-Nam & Leavell, 2006). Saudi students may spend more than one year learning English in these programs. Many students do not start their degrees until they are more confident with their English skills; thus they might spend up to 18 months in ESL. While participating in these programs, Saudi female students become more accustomed to the environment by discussing topics, introducing presentations in front of the class, working with small and large groups, feeling more comfortable around male students, and participating in discussions. All these activities can help most Saudi female students open up and lose some of their fears about cultural norms in the United States. As a result, when Saudi female students start their degrees, they are more familiar with the classroom environment.

Another factor that might have impacted these results is the current state of the technological revolution. The world has become a *global village* because of the Internet, social networking sites, YouTube channels, and satellite television (Hanson, 2007). Because many Saudi females own cellphones, these technological resources are available in the palm of their hands. These elements have made them open to and aware of other

cultures. For example, many Saudis follow celebrities through Twitter or Facebook such as Dr. Phil, Oprah Winfrey, NCIS, actors, and singers; while others follow soccer players such as Cristiano Ronaldo, Lionel Messi, and David Beckham. These activities allow them to interact with the celebrities by posting comments on their websites and getting Twitter updates. Moreover, watching international news makes them aware of what is happening in other countries and makes them aware of other cultures.

The variance among the numbers of participants from the five regions impacted the results: the Northern region (5) and the Southern region (17) had the fewest responses; whereas the Western (118), Eastern (71), and Central (66) region had the most. As a result, the researcher had to exclude the two regions that had the smallest number of participants from some of the statistical procedures. This makes it difficult to generalize the results to all regions. However, the open-ended responses added some useful information. In general, it is known that the Northern and Southern regions are more attached to culture and tradition than the other regions in this study. One of the participants wrote, “As a Saudi Muslim women, yes I would-think online discussion may help increase participation.” Another participant wrote, “As a culture, maybe we don't easily accept anything foreigner.... the real Islam is totally different from cultural beliefs.”

A final factor that could have impacted the results was age. The greatest number of participants was college age, which meant they represented a younger generation with new thoughts. The average age of the Saudi female students participating in this study was between 20 and 29. According to the Royal Pingdom site (2012), more than half of

the social media users in the United States are between 25 and 44 years old. One would expect a similar trend in Saudi Arabia.

Research Question 2

Q2 For female Saudi students, is there a relationship between attitude toward technology and learner's level of comfort toward each learning discussion (face-to-face and online) environment?

The results revealed a relationship between attitude toward technology and the Saudi female student's level of comfort toward the online learning discussion environment. They also indicated that most of the participants either agreed or strongly agreed that they liked technology and that it improved communication between people.

The study showed significant differences in Saudi female student's level of comfort toward online learning discussion environments between low and high attitude groups. Participants with high attitudes toward technology had higher levels of comfort in online learning discussion environments than did those with low attitudes toward technology. This finding aligned with Alarfaj's (2001) study wherein he reported that Saudi females had positive perceptions toward online learning. He also stated, "Female students favored online education and believe it provides a better opportunity for them to obtain a higher education" (p. 132). Additionally, Alaugab's (2007) study supported this finding by concluding that female students showed a positive attitude toward online instruction. He stated, "Saudi female students were very excited about online learning" (p. 172). Furthermore, Alanazy (2011) reported that Saudi students have positive overall attitudes toward coeducational online cooperative learning; that has led to positive attitudes toward technology.

Most individuals who live in developed nations are involved with technology in their daily activities, especially in the area of communications. They can watch their young kids playing with their friends on webcams. They can use the Internet to interact with other players using their online Playstation, Wii, and X-box accounts. Parents use their cellphones and computers to communicate with their family, friends, and coworkers. Even businesses routinely use technology to market their products or contact clients. According to Rheingold (2002), cellular telephone technology has allowed people to become more connected and may have increased feelings of community through those connections.

Prensky (2009) calls the 21st century the digital age and those born recently digital natives. He described how in his introduction that people have involved technology in most fields such as medical, engineering, art, and education. He wrote,

It is in the afterschool world, rather than in schools, that many of our kids are teaching themselves and each other all kinds of important and truly useful things about their real present and future. A host of powerful tools are available to them for this purpose, and those tools—and our kids through using them—are growing more and more powerful each day. After school, no one tells kids what to learn or do. They follow their interests and passions, often becoming quite expert in the process. (p. 18)

He further addressed education by stating,

Today's students know that when they learn something after school, they can immediately apply it to something real. When they learn to play a game, they can collaborate and compete with others around the globe. When they learn to download, text, and tweet, they can immediately participate in profound social revaluations, such as changing the music business and influencing government policy. As they learn to post their creations and ideas online, they become aware that even as young people they can truly influence and change the world. (p. 21)

This could be applied to the Saudi female students in this study since the majority of the participants were between 20 and 29 years old.

However, online communication has limitations. Many people prefer to meet people face-to-face to either show their personality when applying for a job or if there is a misunderstanding of a topic. Face-to-face communication allows people to express emotions that are difficult in online communication. For example, many people read email or text messages in different ways depending upon their mood or feelings. They might also interpret the message as being angry, loud, or calm depending upon how they perceive the sender. It is difficult to determine whether the person is angry or content from their typing. Another example can be demonstrated by this sample text message: “I have not seen you today. Where have you been?” This statement can be read in several different ways; either with a loud voice because you are angry or with a calm voice because you are missing the person.

Lastly, the results for the second research question concluded that attitude toward technology affected the Saudi female students’ level of comfort in online learning discussion environments. All the studies and examples cited above supported the finding that the more positive attitudes Saudi female students had toward technology, the more comfortable they felt in participating in online learning discussion environments compared with the face-to-face environments.

Research Question 3

Q3 Do female Saudi students report greater comfort in participating in face-to-face or online discussions?

The result revealed no significant difference between the two learning discussion environments (face-to-face and online). This result contradicted Wang and Woo (2007) who reported a preference for online discussions over face-to-face discussions. This result could be explained partly by the target population. Their study was conducted in

Singapore, which represents a different culture and background from the current study. The participants in Wang and Woo's study were national students studying the course in their language (homogenous group), while the participants in the current study were Saudi female students in the United States (international students). One other difference was the current study measured the participants' perceptions in general after they had been in one or more online courses, whereas Wang and Woo's study was an experimental study where participants were taking the same class online and face-to-face. Wang and Woo's study investigated the students' preference between face-to-face and online learning discussion environments for a number of themes (atmosphere, response, efficiency, interactivity, and communication).

This finding was supported by several Saudi female students' comments: "Face-to-face helps me understand the topic better and not only answer the questions and post comments." "Face-to-face discussion could provide an opportunity to break the ice. Unlike online." "In general, I prefer face-to-face courses rather than online courses in every level." "Face-to-face is definitely better for international students to get a chance to interact and engage with other classmates to prepare them for future circumstances." "Face to face discussion is more memorable than online one because all senses are alert and prepared to involve with the discussion."

Research Question 4

- Q4 For female Saudi students, do marital status, region, or previous experience with online courses influence levels of inhibition to participate in mixed gender face-to-face and online discussions?

Five significant findings were found related to this question and are discussed in the following paragraphs.

Type of male. The findings indicated that a female Saudi student's level of inhibition to participate in mixed gender discussions in the presence of Saudi males was significantly higher than in the presence of non-Muslim males and non-Saudi males.

In the previous research question, Saudi female students were asked about their level of comfort toward participating in each learning discussion environment (face-to-face and online) without mentioning the presence of males; they reported they were comfortable in both learning discussion environments. In this research question, Saudi female students were asked about their level of inhibition when participating in the presence of males in each learning discussion environment (face-to-face and online). They reported they were more inhibited when participating in both learning discussion environments in the presence of Saudi male students.

This result aligned with prior studies that found a positive relationship between type of male and the level of inhibition when participating in a learning discussion environment (Alreshoud & Koeske, 1997; Hewitt & Alqahtani, 2003). The results could be explained by Saudi culture and religion. Saudi Arabia policy depends on implementation of Islamic law. One of these laws is to keep males and females separated in some situations such as schools and restaurants (unless the female is accompanied by a male relative). Saudi females do not interact face-to-face with males who are not related to them unless it is necessary, e.g., merchant, doctor, driver, and people who work in restaurants.

One of the Saudi female students responded as follows to an open-ended question: "I think the prescience of [Saudi] males is a huge factor in inhibiting women from participating and expressing their opinions and beliefs." This participant epitomized this

result when she mentioned that the presence of Saudi male was an inhibiting factor. Her choice of bracketing the term Saudi drew specific attention to their influence.

Type of medium. The findings indicated there was a significant main effect for type of medium. An individual's level of inhibition to participate in mixed gender discussions was significantly higher for the face-to-face learning discussion environment than the online learning discussion environment.

In the previous research question, Saudi female students reported that their level of comfort toward participating in both learning discussion environments (face-to-face and online) was high without mentioning the presence of males. In this research question, Saudi female students reacted differently when reporting their level of inhibition in the presence of males in each learning discussion environment (face-to-face and online). They were more inhibited when participating in the face-to-face learning discussion environment than the online learning discussion environment. This result could be explained due to the presence of males and their direct influence in a face-to-face learning discussion environment. As has been explained previously, Saudi female students were not used to this kind of environment before they came to the United States. Then they encountered a different face-to-face learning discussion environment when they were placed in a classroom with their male peers. In this new environment, they were concerned about their body language, physical appearance, their clothing, voice, and how they sounded when they spoke. A Saudi female student shared her point of view: "I just want to point out that many Saudi females find it hard to participate in face-to-face discussion especially in the presence of a Saudi male."

An additional explanation for Saudi female students being inhibited to participate in learning discussion environments, especially in face-to-face, is the Saudi Arabia education system that is based on single-sex. This means male and female are separated from first grade through graduate school. However, some private schools had permission from the Ministry of Education to have mixed-gender education from grade one to three only. Saudi female students were accustomed to being in an environment where all the classes were female only. From these explanations, the reported results would be expected in this study.

Marital status. The results in the current study indicated there was an effect for marital status in the level of inhibition to participate in any learning discussion environment (face-to-face and online). It showed that married Saudi female students were more inhibited to participate in mixed-gender were unmarried Saudi female students regardless of the type of medium.

According to Lesthaeghe and Surkyn (2004), married women are more conservative in applying the culture's norms than unmarried women. Thus, the results of the current study were not surprising because this fact also applied to Saudi married women. Married Saudi women are more conservative in their norms and cultural values than unmarried Saudi women because they are under society's pressure, which wants them to rear the new generation according to these norms and values.

According to Alanazy (2011), married women receive more attention than unmarried when following social roles. Moreover, married Saudi women will more likely consider how people will look or think about them or their partners depending on their behaviors in public.

Type of male and type of medium. There was a significant interaction between type of male and type of medium in terms of inhibition. After testing the contrasts for the three levels of male types (non-Muslim, non-Saudi, and Saudi) and two levels of medium types (online and face-to-face), the relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Muslim males and type of medium was a significant ordinal interaction. Likewise, the relationship between an individual's level of inhibition to participate in mixed gender discussion with Saudi and non-Saudi males and type of medium was a significant ordinal interaction. There was no significant interaction between level of inhibition for non-Muslim and non-Saudi males and type of medium.

These results could be explained due to the nature of the Saudi female students and their backgrounds. Saudi females have been raised to be polite; their voices should not be raised or heard by foreign males. They are not allowed to talk to a male in the presence of their partners or guardians, e.g., father or brother. For example, in Saudi Arabia, if a Saudi female is shopping with her husband and they go to the register to pay, she is not allowed to talk to the cashier. All correspondence must take place between her male companion and the person behind the cash register. In nearly all cases, the person working in the retail establishment in Saudi Arabia will be a male except in rare instances, i.e., in the make-up department or lingerie.

A Saudi female student shared, "Some Saudi female students hesitate to participate in discussion in mixed classes." Another participant stated, "I just wanted to include that the presence of Muslim Saudi students in the class can sometimes prevent us from speaking only if it's a sensitive subject that is related to Saudi politics or religion

debates.” Saudi female students are less inhibited to participate in online learning regardless the type of male (non-Muslim, non-Saudi, and Saudi) because there is no direct interaction between them and their male peers. This explanation aligns with Alanazy’s study (2011) wherein he describes that Saudi female students had a positive attitude toward participating in mixed gender online classes.

Type of male and marital status. The findings also revealed an interaction of type of male and marital status. The relationship between a Saudi female student’s level of inhibition to participate in mixed gender discussion with Saudi and non-Muslim males and marital status was a significant ordinal interaction. Likewise, the relationship between an individual’s level of inhibition to participate in mixed gender discussion with Saudi and non-Saudi males and marital status was a significant ordinal interaction. There was no significant interaction between level of inhibition for non-Muslim and non-Saudi males and marital status.

The interaction is largely due to married Saudi female students being more inhibited to participate in the presence of Saudi males. It is likely that they are inhibited to participate because they are in environments where other Saudi male students are likely to know their husbands or they have been asked by their husbands not to participate. In other words, there was direct social pressure to inhibit participation.

Unmarried Saudi female students did believe that the presence of males in learning discussion environments would not inhibit them from participating. For unmarried female students, the issue of relationships was less complicated. They were not worried about leaving a negative impression about themselves in front of their male

peers because there were fewer consequences. It was their belief that they were there to learn and interact with the class.

However, the results still showed that married and unmarried Saudi female students had positive attitudes toward participating in a mixed gender class. These attitudes were also affected by the changes happening in the Middle East. After the Arab Spring events of 2011, many females have felt more empowered to express their thoughts without fearing the consequences. The Arab Spring might have pressured King Abdullah Bin Abdul Aziz, King of Saudi Arabia, to give an order allowing Saudi women to run for both Advisory Council and Municipal Council offices. Currently, Saudi women represent 20% of the Advisory Council or what it called in Saudi Arabia, “Shura” Council (Hauser, 2013).

Type of male, marital status, and region. There was also a significant three-way interaction of type of male, marital status, and region. A relationship was found among an individual’s level of inhibition to participate in mixed gender discussion with Saudi and non-Muslim males, marital status, and region. Likewise, there was a relationship among an individual’s level of inhibition to participate in mixed gender discussion with Saudi and non-Saudi males, marital status, and region. However, there was no significant relationship between level of inhibition for non-Muslim and non-Saudi males, marital status, and region. The results indicated that married Saudi female students from the Eastern region were most inhibited to participate in mixed gender learning discussion environments while in the presence of Saudi males. Also, unmarried Saudi female students from the Central region were more inhibited than other regions while in the presence of Saudi males.

To explain these findings, the geographical characteristics of Saudi Arabia must be examined: the bordering countries, the major cities within each region, and the traditions and norms that vary from region to region. For example, the Eastern region borders with other Gulf countries like Bahrain, United Arab Emirates, and Oman. These countries are similar to the Saudi Arabian culture wherein interaction with unrelated males is forbidden. Additionally, many native tribes from the Southern and Northern regions have migrated to the Eastern region to find work or attend school. The presence of these new residents could have had an impact on the results. The researcher asked students to indicate the region in which they resided, not the region where they might have grown up. As the researcher mentioned in the first research question, the Northern and Southern regions are the regions most attached to the culture and norms. Due to the lowest participation from these two regions, they were excluded. However, some of them might have moved to the Eastern region, the region most inhibited.

The Western region borders with Egypt where interaction between males and females is somewhat accepted in certain situations like jobs, while shopping, and dealing with hospitals and other medical environments. Moreover, Muslim pilgrims from all over the world with different cultural backgrounds and norms visit the holy mosques in Mecca and Medina, which are located in the Western region. Some of these pilgrims remain in Saudi Arabia and never leave (Gearon, 2006). After many years, they become Saudi citizens but they retain their original cultural ties and norms.

Most people who live in the Central region have migrated from other regions (Khoury & Kostiner, 1990). They have moved to the capital of Saudi Arabia, Riyadh, where the majority of the businesses and the main government offices are located: the

Ministry of Higher Education, Ministry of Education, Ministry of Finance, Department of Defense, Ministry of Civil Service, Ministry of Aviation, Ministry of Foreign Affairs, and Ministry of Interior. Also, King Saud University (KSU) is located in Riyadh where students from all over the country look forward to enrolling after they finish high school. Some families might move from their small villages so their daughters can attend KSU. Consequently, this might have affected the results in which the Central Region responded somewhat neutrally to the question of inhibition.

Unmarried Saudi females from the three regions (Central, Eastern, and Western) were less inhibited than married students. This result has been explained previously in the effect of marital status.

Research Question 5

- Q5 For female Saudi students, is there a relationship between attitude toward technology and levels of inhibition to participate in mixed gender face-to-face and online discussions?

No relationship was found between attitude toward technology and levels of inhibition to participate in mixed gender online discussions. A limited number of technology items and a median split were used to identify high and low levels of attitudes toward technology. Thus, it is possible that measurement limitations on the attitude factor affected this outcome. A more thorough examination should be conducted before concluding that there was no relationship.

Research Question 6

- Q6 For female Saudi students, do marital status, region, or previous experience with online courses influence perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?

A significance was found for marital status on perceived benefits of the medium in the areas of social interaction, language skills, and learning environment. The other significant finding was the interaction of marital status and region on the perceived benefits of the medium in the areas of social interaction, language skills, and learning environment.

Marital status. Married Saudi female students reported that they leaned slightly toward online learning discussion environment when compared with unmarried Saudi female students in terms of perceived benefits in the three areas. This result could be partially explained by what the participants shared in the open-ended questions. One Saudi female student stated, “Online courses are more suitable for female students with kids.” Another Saudi female participant wrote, “Online courses are beneficial for moms who might not find babysitters to look after their kids while they are in their classes. Online courses are an ideal substitute to face-to face classes.” Another married Saudi female student answered, “As a housewife, it is my chance to study online while working at home, being around my kids when they need me.” These open-ended responses supported the idea that married female Saudi students preferred an online learning discussion environment because of the responsibilities they had besides being a student. This contrasted with unmarried Saudi female students who had more flexibility in their schedules.

Marital status and region. The result showed a two-way interaction of marital status and region in the three areas of social interaction, language skills, and learning environment.

Area of social interaction. Unmarried female students from the Eastern region perceived more benefits from face-to-face learning discussion environment than did unmarried female students from the Central and Western regions. With married Saudi students, there were major differences among the women from all three regions on their ratings of perceived benefits of social interaction. Those from the Central region reported that they perceived the most benefit from face-to-face learning discussion environments, followed by those from the Western region, and then from the Eastern region. In other words, married Saudi female students from the Eastern region leaned slightly more toward the online learning discussion environment in terms of perceived benefits in the area of social interaction than did married female students from the Western and Central regions.

This result could be explained by Saudi female students' awareness of the importance of social interaction in learning discussion environments (face-to-face and online), especially since the benefits of this area could only be perceived through a face-to-face learning discussion environment. However, the variance between married female Saudi students from different regions in leaning toward online learning discussion environment was discussed by the researcher in the previous question regarding the effect of geographic borders for the Saudi Arabia; thus, it will not be revisited here.

Area of language skills. Unmarried Saudi female students from the Eastern region reported that they perceived more benefit from the face-to-face learning discussion environment than did students from the Central and Western regions. In married Saudi students, there were no differences among the women from the three regions--they all leaned toward an online learning discussion environment in terms of perceived benefits in

the area of language skills. One Saudi female student wrote, “There are some advantages and disadvantages for online course. Advantages: improve writing and grammar.”

Another participant stated, “I think it support my learning value much more than online courses, and my English language skills as well.” From these statements, it can be seen that there was support for the fact that Saudi female students believed online discussion allowed them time to edit, read more about the topic, and participate with higher self-steam.

Area of learning environments. Unmarried Saudi female students from the Eastern region reported more differences in perceived benefits from face-to-face learning discussion environment than did students from the Central and Western regions. For married Saudi female students, those from the Eastern region reported that they leaned slightly more toward perceived benefits from the online learning discussion environment than did students from the Central and Western regions. This result could be explained due to Saudi female students’ awareness of the importance of “Learning Environments” in learning discussion environments (face-to-face and online). They indicated that the benefits of this area could only be perceived through a face-to-face learning discussion environment. However, married Saudi female students from the Eastern region leaned slightly toward an online learning discussion environment. The explanation for this action could be due to their attachment to the culture, the fact that they had more responsibilities, or because of their partners’ control over their daily schedules. This part was discussed previously.

Research Question 7

- Q7 For female Saudi students, is there a relationship between attitude toward technology and benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment?

The findings revealed an impact of attitude toward technology on the perceived benefits of the face-to-face or online medium in the areas of social interaction, language skills, and learning environment. For all three areas, those with better attitudes toward technology rated the online learning discussion environment more favorably than did those with lower attitudes. This result was not surprising according to many studies in this area (Isman, Caglar, Dabaj, Altinay, & Altinay, 2004; Isman & Dabaj, 2004; Kim, 2000). These studies revealed a positive relationship between attitude toward technology and preference of using an online learning environment.

The result was supported by one of the Saudi female students who wrote, “I think face-to-face class is very useful in terms of understanding the material like math or finance.” Another participant stated, “The type of course and the topics within them are sometimes more suitable for face-to-face discussions. Holding debates for example could get confusing and untimely if held online.” Another Saudi female student shared her opinion by writing the following: “Face-to-face discussions are valuable and important when the course requires more practical applications and collaboration between and within class teams.”

On the other hand, Saudi female students believe that online learning discussion is a better medium in reducing social anxiety in class more than face-to-face. This result could be explained due to the technology revolution. As mentioned previously, technology is the best way for Saudi women to gain strength and self-confidence to

spread and share their thoughts and beliefs online by using all the apps and sites that provide these features. As time goes by, Saudi women will be able to talk and write their thoughts without hiding behind nicknames.

Research Question 8

Q8 Are there any listed features of online discussion boards that correlate with perceived level of comfort in participation?

Three significant, but weak relationships were found among perceived level of comfort and “the ability to revise my written comments even after I post them,” “the ability to save drafts of my written comments before I post them,” and “the ability to attach documents and hyperlinks that support my written comments.”

In general, Saudi female students showed positive attitudes toward online learning discussions. They identified various attributes of technology in online discussion boards that helped them participate with confidence. The feature they most liked was “the ability to share what they posted in social networks.” The second feature was “the ability to modify the font type, size, and color.” In third place were two features that had the same value for Saudi female students: “the ability to revise their written comments even after they post” and “the ability to view all posts separate or in one page.” The fourth place was for “the ability to upload images and diagrams that support their written comments.” Finally, two features were reported as least valuable to Saudi female students: “the ability to save drafts of their written comments before posting them” and “the ability to correct what they have posted.”

Summary

The current study was designed to gain an understanding of Saudi female students’ perceptions toward participating in online and face-to-face learning discussion

environments in the United States. It revealed that Saudi female students felt comfortable when they participated in both face-to-face and online leaning discussion environments. In the first research question, unmarried Saudi female students felt more comfortable when participating in face-to face learning discussion than did married students. The second research question suggested a relationship between attitude toward technology and the Saudi female student's level of comfort toward an online learning discussion environment. The fourth research question indicated that Saudi female students would be inhibited in a mixed gender learning discussion environments, especially in the presence of Saudi males. Moreover, married Saudi female students from the Eastern region were the most inhibited when participating in the presence of Saudi male students in a face-to-face learning discussion environment. Research question five had no significant results. The sixth research question revealed that married female students from the Eastern region perceived more benefits from an online learning discussion environment in the three areas of social interaction, language skills, and learning environment than did married female students from the Central and Western regions. The seventh research question reported that Saudi female students with better attitudes toward technology perceived more benefits from an online learning discussion environment in the three areas of social interaction, language skills, and learning environment. In the final research question, Saudi female students reported that the most important tools for online discussion boards were the ability to revise the written comments before submitting, save drafts of written comments, and attach documents and hyperlinks. Research question five found no significant result.

Recommendations

The current study was unique in terms of its purposes and the target area. Investigating the perceptions toward online and face-to-face discussions of Saudi female students who are studying in the United States has not been thoroughly studied in the past. Beyond the current work, more investigation is needed. Based on the findings of this study, the following recommendations are made:

1. Explore some of the factors with greater representation from the Northern and Western regions of Saudi Arabia.
2. Investigate the possible relationship between the time Saudi female students have spent in the United States and their level of comfort toward each learning discussion environment (face-to-face and online).
3. Investigate other barriers that face Saudi female students when participating in learning discussion environments (face-to-face and online).
4. Further study could be conducted on the responsibilities and cultural norms affecting both married and unmarried Saudi female students in the United States.
5. A similar study could be expanded to include synchronous learning discussions.

Implications

This study revealed valuable findings on Saudi female student perceptions of participating in learning discussion environments (face-to-face and online) in the United States. This information might be used by instructional designers and teachers.

Instructional Designers

The following suggestions might be taken under consideration while designing a course:

1. When deciding on course formats, face-to-face learning discussion environments provide a more comfortable mixed gender environment for unmarried Saudi female students.
2. When deciding on course formats, online learning discussion environments provide a more comfortable mixed gender environment for married Saudi female students.
3. Saudi female students, like many others, are likely to perceive benefits of the experience and are more comfortable participating in online discussion environments when they have better attitudes towards technology.
4. In designing classroom activities, married Saudi female students are more inhibited to participate in discussions, particularly in the presence of Saudi male students.

Teachers

The following suggestions might be taken under consideration when having a Saudi female student in their class/course:

1. Saudi female students are self-conscious when participating in a mixed-gender class, especially married female students in the presence of Saudi male students.
2. A face-to-face learning discussion environment is generally favorable for unmarried Saudi female students in the area of social interaction.

3. An online discussion is a better environment for married Saudi female students in perceived benefits in the area of language skills.
4. Saudi female students with better attitudes toward technology favor an online learning discussion environment.

REFERENCES

- Alamri, M. (2011). Higher education in Saudi Arabia. *Journal of Higher Education Theory and Practice*, 11(4), 88-91.
- Al-Amrani, G. (2011). *Multiple literacies, fragmented identities: Arab students at American universities*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. 3466543)
- Alanazy, S. M. (2011). *Saudi students' attitudes, beliefs, and preferences toward coeducational online cooperative learning*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. 3445199)
- Alarfaj, A. (2001). *The perception of college students in Saudi Arabia towards distance web-based instruction*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. AAT 3032949)
- Alaugab, A. (2007). *Benefits, barriers, and attitudes of Saudi female faculty and students toward online learning in higher education*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. AAT 3258686)
- Al-Banawi, N. A., & Yusuf, N. (2011). *Impact of the demand of women higher education: A new dimension: Case: Saudi Arabia*. Paper presented at the International Conference on Qualitative and Quantitative Economics Research (QQE). doi:10.5716_2010-4804_1.2.70

- Al-Mouhandis, Z. (1986). *Higher education for women in Saudi Arabia*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. AAT NO. 8619509).
- Almousa, A. (2011, February 23). *Custodian of the two holy mosques: By education, we qualify citizen to build the nation and compete against the world*. Retrieved from <http://www.alriyadh.com/2011/02/23/article607392.html>
- Al-Munajjed, M. (2008). *Women's education in Saudi Arabia: The way forward*. Retrieved from http://www.ideationcenter.com/media/file/Womens_Education_in_SaudiArabia_Advance_Look_FINALv9.pdf
- Alreshoud, A., & Koeske, G. F. (1997). Arab students' attitudes toward and amount of social contact with Americans: A causal process analysis of cross-sectional data. *Journal of Social Psychology, 137*(2), 235-245.
- Anderson, T. (2003). Modes of interaction. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (pp. 129-144). Mahwah, NJ: Lawrence Erlbaum Associates.
- Anderson, D. M., & Haddad, C. J. (2005). Gender, voice, and learning in online course environments. *Journal of Asynchronous Learning Networks, 9*(1), 3-14.
- Arbaugh, J. B. (2000). Virtual classroom characteristics and student satisfaction with internet-based MBA courses. *Journal of Management Education 24*(1), 32-54.
doi: 10.1177/10525629000240010
- Atkinson, R. C., & Shiffrin, R. M. (1968). Chapter: Human memory: A proposed system and its control processes. In K. W. Spence & J. T. Spence (Eds.), *The psychology of learning and motivation* (Vol. 2, pp. 89–195). New York: Academic Press.

- Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1986). *Women's ways of knowing*. New York, NY: Basic Books.
- Bender, T. (2003). *Discussion based online teaching to enhance student learning: Theory, practice and assessment*. Sterling, VA: Stylus.
- Bitterman, M. E. (2006). Classical conditioning since Pavlov. *Review of General Psychology*, 10(4), 265-376.
- Bloom B. S. (1956). *Taxonomy of educational objectives, Handbook I: The cognitive domain*. New York: David McKay Co Inc.
- Boneva, B., Kraut, R., & Frohlich, D. (2001). Using e-mail for personal relationships: The difference gender makes. *American Behavioral Scientist*, 45, 530-549.
- Bongey, S. B. (2012). *Evaluating learning management system (LMS)-facilitated delivery of universal design for learning (UDL)*. (Doctoral dissertation). Available from ProQuest Dissertations and theses database. (UMI NO. 3505870).
- Bostock, S. J., & Lizhi, W. (2005). Gender in student online discussions. *Innovations in Education and Teaching International*, 42(1), 73-85.
- Bouras, C. (2009). *Instructor and learner presence effects on student perceptions of satisfaction and learning in the university online classroom*. (Doctoral dissertation). Available from ProQuest Dissertations and theses database. (UMI NO. 3361795).
- British Broadcasting Corporation Worldwide Monitoring. (2011, February 15). *Saudi Arabia "transforms" higher education system*. [Text of report by Saudi-owned leading pan-Arab daily Al-sharq al-Awsat website on 13 February]. Retrieved from <http://www.lexisnexis.com//>

- Brookfield, S., & Preskill, S. (2005). *Discussion as a way of teaching : Tools and techniques for democratic classrooms*. San Francisco: Jossey-Bass.
- Bruner, J. (1966). *Toward a theory of instruction*. Cambridge, MA: Harvard University Press.
- Byrne, R., & Findlay, B. (2004). Preference for SMS versus telephone calls in initiating romantic relationships. *Australian Journal of Emerging Technologies and Society*, 2(1), 1-14.
- Caffarella, R. S. (1992). Research in self-directed learning: Some critical observations. In H. B. Longand Associates, *Self-directed learning: Application and research* (pp. 25-35). Stillwater: Research Center for Continuing Professional and Higher Education, University of Oklahoma.
- Card, K. A., & Horton, L. (2000). Providing access to graduate education using computer mediated communication. *International Journal of Instructional Media*, 27(3), 235–245.
- Caspi, A., Chajut, E., & Saporta, K. (2008). Participation in class and in online discussions: Gender differences. *Computers & Education*, 50, 718–724.
- Chen, C., Wu, J., & Yang, S. (2006). The efficacy of online cooperative learning systems: The perspective of task-technology fit. *Campus-Wide Information Systems*, 23(3), 112-127. doi: 10.1108/10650740610674139
- Crombie, G., Pyke, S. W., Silverthorn, N., Jones, A., & Piccinin, S. (2003). Students' perception of their classroom participation and instructor as a function of gender and context. *Journal of Higher Education*, 74(1), 51–76.

- Crump, T. (2010). *Early childhood education students' perceptions of community college distance education courses*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. AAT 3427787)
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2008). Using discussion pedagogy to enhance oral and written communication skills. *College Teaching*, 56(3), 163-172.
- Davis, J., & Graff, M. (2005). Performance in e-learning: Online participation and student grades. *British Journal of Educational Technology*, 36(4), 657–663. doi: 10.1111/j.1467-8535.2005.00542.x
- Davis, T. M., & Murrell, P. H. (1993). *Turning teaching into learning: The role of student responsibility in the collegiate experience*. Retrieved from ERIC database. (ED372702).
- Desire2Learn. (2013). *Desire2Learn learning environment is more than a learning management system*. Retrieved from <http://www.desire2learn.com/products/learning-environment/>
- Elbaum, B., McIntyre, C., & Smith, A. (2002). *Essential elements: Prepare, design, and teach your online course*. Madison, WI: Atwood Publishing.
- Ellis, R. A., Calvo, R., Levy, D., & Tan, K. (2004). Learning through discussions. *Higher Education Research and Development* 23(1): 73-93.
- Engelmann, A. (2008, March). Two important but almost never related beliefs. *Integrative Psychological & Behavioral Science*, 42(1), 87–91. doi:10.1007 /s12124-008-9054-y

- Gagne, R. M. (1968). Contributions of learning to human development. *Psychological Review* 75(3), 177-191.
- Gearon, E. (2006, August-September). After the pilgrimage: Every year approximately two million people enter the Kingdom of Saudi Arabia to perform the hajj or umrah pilgrimage. *The Middle East*, 370, 44-47.
- Glass, G. V., & Hopkins, K. D. (1996). *Statistical methods in education and psychology* (3rd ed.). Boston, MA: Allyn and Bacon.
- Hand, D. J., & Taylor, C. C. (1987). *Multivariate analysis of variance and repeated measures: A practical approach for behavioural scientists*. London, England: Chapman and Hall.
- Hanson, J. (2007). *24/7: How cell phones and the Internet change the way we live, work, and play*. Westport, CT: Praeger.
- Hauser, C. (2013, January 11). Saudi Arabia's king allows women to join National Advisory Council. *The New York Times*, p. A7. Retrieved from <http://www.nytimes.com>
- Hayes, B. (1989). Compensatory lengthening in moraic phonology. *Linguistic Inquiry*, 20, 253-306.
- Hayes, R. L., & Lin, H. (1994). Coming to America: Developing Social Support Systems for International Students. *Journal Of Multicultural Counseling & Development*, 22(1), 7-16.

- Haythornthwaite, M. M., Kazmer, J., Robins, J., & Shoemaker, S. (2000). Community development among distance learners: Temporal and technological dimensions. *Journal of Computer-Mediated Communication*, 6(1). Retrieved from <http://www.ascusc.org/>
- Heikenheimo, P. S., & Shute, J. C. M. (1986). The adaptation of foreign students: Student views and institutional implications. *Journal of College Student Personnel*, 27(5), 399-406.
- Hewitt, J., & Alqahtani, M. A. (2003). Differences between Saudi and U.S. students in reaction to same- and mixed-sex intimacy shown by others. *The Journal of Social Psychology*, 143(2), 233-42.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1994). *Applied statistics for the behavioral sciences*. Boston, MA: Houghton Mifflin.
- Hong-Nam, K., & Leavell, A. G. (2006). A comparative study of language learning strategy use in an EFL context: Monolingual Korean and bilingual Korean-Chinese university students. *System*, 34, 399-415.
- Hrastinski, S. (2008). Asynchronous and synchronous e-learning. *Educause Quarterly*, 31(4), 51-55.
- Huang, X., & Hsiao, H. (2012). Synchronous and asynchronous communication in an online environment: Faculty experiences and perceptions. *Quarterly Review of Distance Education*, 13(1), 15-30.
- Huerta, J. C. (2007). Getting active in the large lecture. *Journal of Political Science Education*, 3, 237-249.

- Ibrahim, S. E. M. (1970). Interaction, perception, and attitudes of Arab students toward Americans. *Sociology and Social Research*, 55(1), 29-46.
- Isman, A., Caglar, M., Dabaj, F., Altinay, F., & Altinay, Z. (2004). Attitudes of students toward computers. *Turkish Online Journal of Educational Technology*, 3(1), 11.
- Isman, A., & Dabaj, F. (2004). Attitudes of students towards internet. *Turkish Online Journal of Distance Education*, 5(4), 6.
- Jaffe, J. M., Lee, Y., Huang, L., & Oshagan, H. (1999). Gender identification, interdependence, and pseudonyms in CMC: Language patterns in an electronic conference. *The Information Society*, 15(4), 221–234.
- Johnson, D., Sutton, P., & Poon, J. (2000). *Face-to-face vs. CMC: Student communication in a technologically rich learning environment*. Paper presented at the 17th Annual Conference of the Australian Society for Computers in Learning in Tertiary Education: ASCILITE 2000, Coffs Harbour, Australia.
- Jonassen, D. (1999). Designing constructivist learning environments. In C. Reigeluth (Ed.), *Instructional design theories and models: A new paradigm of instructional theory* (2nd ed., pp. 215-239). Mahwah, NJ: Lawrence Erlbaum Associates.
- Kanoka, H., & Anderson, T. (1999). Using constructivism in technology-mediated learning: Constructing order out of the chaos in the literature. *Radical Pedagogy*, 1(2). Retrieved from <http://radicalpedagogy.org>
- Karayan, S., & Crowe, J. (1997). Student perspectives of electronic discussion groups. *THE Journal: Technological Horizons in Education*, 24(9), 69–71.
- Khoury, P. S., & Kostiner, J. (Eds.). (1990). *Tribes and state formation in the Middle East*. Berkeley: University of California Press.

- Kim, J. S. (2000). *Students' attitudes and perceptions toward technology*. Available from ProQuest. Dissertations and theses database. (UMI NO. 9962825).
- Klein, C. I. (2007). *Exploring new classroom designs: Instructor perceptions of sport administration classes designed in a blended format*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. AAT 3298187)
- Laurillard, D. (2002). *Rethinking university teaching: A conversational framework for the effective use of learning technologies* (2nd ed.). New York: Routledge.
- Lesthaeghe, R., & Surkyn, J. (2004). *When history moves on: Foundations and diffusion of a second demographic transition*. Seminar on Ideational Perspectives on International Family Change, Center for Population Studies and Institute for Social Research (ISR), University of Michigan, Ann Arbor.
- Leung, L. (2001). College student motives for chatting on the ICQ. *New Media & Society*, 3, 483-500.
- Ling, R. (2005). The socio-linguistics of SMS: An analysis of SMS use by a random sample of Norwegians. In R. Ling & P. Pedersen (Eds.), *Mobile communications: Re-negotiation of the social sphere* (pp. 335-349). London: Springer.
- Liu, C., & Yang, S. (2012). Applying the practical inquiry model to investigate the quality of students' online discourse in an information ethics course based on Bloom's teaching goal and Bird's 3C model. *Computers & Education*, 59(2), 466-480. doi:10.1016/j.compedu.2012.01.018.
- Mackey, S. (2002). *The Saudis: Inside the desert kingdom*. New York, NY: Norton & Company.

- Meyer, K. A. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks*, 7(3), 55–65.
- Ministry of Education. (2011). *Summary statistics on general education in K.S.A academic year 2010/2011*. Retrieved from <http://portal.moe.gov.sa/Pages/stats31-32.aspx>
- Ministry of Higher Education. (2010). *King Abdullah scholarship program to continue for five years to come: Ministry Deputy for Scholarship Affairs in a statement*. Retrieved from <http://www.mohe.gov.sa/en/news/Pages/an74.aspx>
- Ministry of Higher Education. (2011). *Conditions for acceptance in the scholarship program*. Retrieved from <http://www.mohe.gov.sa/en/studyaboard/King-Abdullahstages/Pages/conditions-for-acceptance-in-the-scholarship-program-a.aspx>
- Moore, M. G. (1989). Three types of interaction. *The American Journal of Distance Education*, 3(2), 1-6.
- Murphy, H. J., Casey, B., & Young, J. D. (1997). Field dependence-indolence and undergraduates' academic performance in an information management program. *College Student Journal*, 31, 45-50.
- Nandi, D., Hamilton, M., & Harland, J. (2012). Evaluating the quality of interaction in asynchronous discussion forums in fully online courses. *Distance Education*, 33(1), 5-30. doi:10.1080/01587919.2012.667957
- Overholser, J. C. (1992). Socrates in the classroom. *The Social Studies*, 83(2), 77.
- Parsad, B., & Lewis, L. (2008). *Distance education at degree-granting postsecondary institutions: 2006–07*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences.

- Paterson, B. L., Brewer J., & Stamler, L. L. (2012). Engagement of parents in on-line social support interventions. *Journal of Pediatric Nursing*, 28(2), 114-124.
- Perron, B. (2002). Online support for caregivers of people with a mental illness. *Psychiatric Rehabilitation Journal*, 26(1), 70-77.
- Phelan, C., & Wren, J. (2006). *Exploring reliability in academic assessment*. Retrieved from <http://www.uni.edu/chfasoa/reliabilityandvalidity.htm>
- Phipps, R., & Merisotis, J. (1999). *What's the difference?* Washington, DC: Institute for Higher Education Policy.
- Prensky, M. (2009). *How to change your teaching to the pedagogy that works for today's students! Teaching digital natives: partnering for real learning*. Thousand Oaks, CA: Corwin Press, a SAGE Company.
- Pruitt, F. J. (1978). The adaptation of African students to American society. *International Journal of Intercultural Relations*, 21, 90-118.
- Rheingold, H. (2002). *Smart mobs: The next social revolution*. Cambridge, MA: Perseus Press.
- Roshwald, M. (1999). Socrates today. *Modern Age*, 41(2), 141-150.
- Royal Pingdom. (2012). Report: Social network demographics in 2012. Retrieved from <http://royal.pingdom.com/2012/08/21/report-social-network-demographics-in-2012/>
- Rugh, W. A. (2002) Education in Saudi Arabia: Choices and constraints. *Middle East Policy*, 9, 40–55. doi:10.1111/1475-4967.00056
- Rummel, R. J. (1970). *Applied factor analysis*. Evanston, IL: Northwestern University Press.

- Russo, T., & Campbell, S. (2004). Perceptions of mediated presence in asynchronous online course: Interplay of communication behaviors and medium. *Distance Education*, 25(2), 215-232.
- Saleh, M. A. (1986). Development of higher education in Saudi Arabia. *Higher Education*, 15(1/2), 17-23.
- Saudi Arabian Cultural Mission. (2011). *Saudi students in the United States*. Fairfax, VA: Author.
- Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. New York: Appleton-Century.
- Skinner, B. F. (1958). Teaching machines. *Science*, 128(967-977), 137-58.
- Smith, D., & Hardaker, G. (2000). E-learning innovation through the implementation of an internet supported learning environment. *Educational Technology & Society*, 3(3), 422-432.
- Stevens, J. (1986). *Applied multivariate statistics for the social sciences*. Hillsdale, NJ: Lawrence Erlbaum.
- The Higher Committee for Education Policy (Saudi Arabia). (1970). *Education policy of the Kingdom of Saudi Arabia*. Riyadh, Saudi Arabia: Author.
- Thompson, B. (1998). Statistical significance and effect size reporting: Portrait of a possible future. *Research in the Schools*, 5(2), 33-38.
- Tiene, D. (2000). Online discussions: A survey of advantages and disadvantages compared to face-to-face discussions. *Journal of Educational Multimedia and Hypermedia*, 9(4), 371-384.

- Trice, A. G. (2004). Mixing it up: International graduate students' social interactions with American students. *Journal of College Student Development, 45*(6), 671-687.
- Tucker, A. A. (2007). Leadership by the Socratic method. *Air & Space Power Journal, 21*(2), 80-87,127.
- Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*(1), 3-43.
- Wang, Q., & Woo, H. L. (2007). Comparing asynchronous online discussions and face-to-face discussions in a classroom setting. *British Journal of Educational Technology, 38*(2), 272-286. doi: 10.1111/j.1467-8535.2006.00621.x
- Witkin, H. A., Dyk, R. B., Faterson, H. F., Goodenough, D. R., & Karp, S. A. (1962). *Psychological differentiation*. New York: Wiley.
- Witkin, H. A., Moore, C. A., Goodenough, D. R. & Cox, P. W. (1977). Field-dependent and field-independent cognitive styles and their educational implications. *Review of Educational Research, 47*(1), 1-64.
- Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. A. (1971). *Group embedded figures test manual*. Palo Alto, CA: Consulting Psychologist Press.

APPENDIX A

RECRUITMENT EMAIL AND SURVEY INSTRUMENT

Dear Saudi Student,

I am inviting you to participate in my study: Female Saudi Students' Perception Toward their Participation in Online Discussion Compared to Face-to-Face Discussion. The survey is provided in English language. If you are interested, please click on the following link to participate:

<https://www.surveymonkey.com/s/Malanazy>

Thank you,
Manal Alanazy
+966546417708

"FEMALE SAUDI STUDENTS' PERCEPTION"

Welcome

Welcome To

Female Saudi Students' Perception Toward their Participation in Online Discussion Compared to Face-to-Face Discussion Survey

Manal M. Alanazy
Department of Educational Technology
University of Northern Colorado

"FEMALE SAUDI STUDENTS' PERCEPTION"

Informed Consent for Participation in Research

Researcher: Manal Alanazy (alan5954@bears.unco.edu), Ph.D student in Educational Technology.
Under the direction of: Dr. Jeff Bauer (jeff.bauer@unco.edu)

The primary purpose of this study is to determine in which discussion environment does the Saudi Female feel comfortable in participating; online discussion or face-to-face discussion.

As a participant in this research, you will complete a questionnaire. The questionnaire will require you to rate your experience in computer use and your level of comfort of each environment (online discussion or face-to-face discussion) you participate in. The questionnaire will take 15-25 minutes to complete. Responses will be reported anonymously and your identity will in no way be attached to the answers provided.

Data will be stored on the researcher's personal password protected home computer. Data from the study will also be shared with members of the Doctoral Committee. Since this study is a required to complete the program, researcher will share research notes and experiences with other members of the committee. However, your identity will be kept anonymous even in this setting. Also, the committee members follow the ethical guidelines of confidentiality, and information shared in meetings will not be shared outside of the meeting room setting. Data collected in this study will be erased three years after the study is completed.

There are no known risks for participating in this study. Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected. There are no benefits offered to the participants. However, the findings of this study will lend knowledge to the field as well as create an effective discussion environment for the Saudi female students in the future at UNC. Findings may also be presented in a manuscript to be submitted for publication.

Having read the above and having had an opportunity to ask questions, please complete the questionnaire if you would like to participate in this research. By completing the questionnaire you will be giving us permission for your participation. You may keep this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, 25 Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-2161.

"FEMALE SAUDI STUDENTS' PERCEPTION"**Learner's Characteristic*****1. What is your gender?**☐ Female☐ Male

"FEMALE SAUDI STUDENTS' PERCEPTION"**Online Discussion Course**

***2. Have you participated in an online course?**

☐ Yes

☐ No

"FEMALE SAUDI STUDENTS' PERCEPTION"**Demographic information*****3. What is your Marital Status?**

- ☐ Unmarried
☐ Engaged
☐ Married
☐ Divorced

4. How old are you?**5. Which region in Saudi Arabia are you from?**

- ☐ Central Region
☐ Northern Region
☐ Eastern Region
☐ Southern Region
☐ Western Region

***6. How many online courses have you taken including courses in which you are currently enrolled:**

- ☐ 1 Course
☐ 2 Courses
☐ 3 Courses
☐ More than 3 courses

***7. What is your current academic Level?**

- ☐ Bachelor Degree
☐ Master Degree
☐ Doctoral Degree
☐ Other (please specify)

"FEMALE SAUDI STUDENTS' PERCEPTION"***8. What is your field of Study (please check one)**

- | | |
|-----------------------------------------|----------------------------------------|
| <input type="radio"/> Art | <input type="radio"/> Medicine |
| <input type="radio"/> Business | <input type="radio"/> Law |
| <input type="radio"/> Education | <input type="radio"/> Science |
| <input type="radio"/> Engineering | <input type="radio"/> Computer Science |
| <input type="radio"/> Political science | |

Other (please specify)

"FEMALE SAUDI STUDENTS' PERCEPTION"

Attitude toward technology

***9. Please read the following statements and rate your attitude toward technology:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
I like trying new technologies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think technologies help my productivity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technologies improve communication between people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"FEMALE SAUDI STUDENTS' PERCEPTION"**Student level of comfort regarding the learning discussion environment*****10. Please read the following statement and rate how you feel about them:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
I feel comfortable participating in face-to-face discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable participating in online discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"FEMALE SAUDI STUDENTS' PERCEPTION"

Student's perception toward participation in online discussion and face-to-...

Part 1

***11. Read the following statements and rate how you feel about them:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
In face-to-face discussions, the presence of a non-Muslim male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In online discussions, the presence of a non-Muslim male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In face-to-face discussions, the presence of a non-Saudi Muslim male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In online discussions, the presence of a non-Saudi Muslim male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In face-to-face discussions, the presence of a Saudi male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In online discussions, the presence of a Saudi male student in the class inhibits me from participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"FEMALE SAUDI STUDENTS' PERCEPTION"

Student's perception toward participation in online discussion and face-to-...

Part 3

***12. Read the following question and choose what is appropriate for you:**

	Face-to-Face is Definitely Better	Face-to-Face is Slightly Better	Online is Slightly Better	Online is Definitely Better
Which medium helps you better understand the course content?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium allows you to better manage your time?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for participating in discussions about course content?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for understanding other students' points of view?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for civilized debates about a topic?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for improving your reading skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for improving your writing skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for improving your speaking skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for improving your listening skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better for collaborating with other students?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better in allowing you to participate comfortably on topics that are personally sensitive to you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better in reducing social anxiety in a class?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on your previous experience, which medium is better for someone who has weak English language skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which medium is better in motivating you to participate in class?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on your previous experience, which medium is better for your personal learning?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"FEMALE SAUDI STUDENTS' PERCEPTION"

Features of online discussion boards

***13. Please rate how much you value the following features of online discussion boards:**

	Not valuable 1	2	3	4	Highly valuable 5
The ability to revise my written comments even after I post them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to save drafts of my written comments before I post them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to upload images and diagrams that support my written comments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to attach documents and hyperlinks that support my written comments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to modify the font type, size and color.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to view all posts separate or in one page.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to correct what I have posted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ability to share what I have posted in social networks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"FEMALE SAUDI STUDENTS' PERCEPTION"**Student's perception toward participation in online discussion and face-to-...**

Part 7

14. Do you think using a photo or graphic (such as nature, your kids, etc..) representation of yourself in online discussions helps you to participate comfortably and without hesitation? Why?

15. Is there any thing you would like to share about face-to-face discussions that has not been addressed by this survey?

16. Is there any thing you would like to share about online discussions that has not been addressed by this survey?

"FEMALE SAUDI STUDENTS' PERCEPTION"**Illegible participant**

You are illegible to participate in this survey, thank you for your time!

"FEMALE SAUDI STUDENTS' PERCEPTION"**Legible participant**

Thank you for your participation and your value feedback!

APPENDIX B

SAUDI ARABIAN CULTURAL MISSION APPROVAL

إستبيان بخصوص المشاركة في المناقشات التعليمية على الانترنت وجها لوجه

From: no_reply@mohe.gov.sa This sender is in your [safe list](#).

Sent: Monday, January 07, 2013 2:32:21 PM

To:

Normal 0 false false false EN-US X-NONE AR-SA MicrosoftInternetExplorer4

بسم الله الرحمن الرحيم

عزيزتي الطالبة

السلام عليكم ورحمة الله وبركاته. و بعد،

اسمي منال العنزي طالبة دكتوراة في تخصص تقنيات التعليم من جامعة شمال كلورادو. أود أن أدعوك للمشاركة في دراستي:

"Participating in online and face-to-face discussions: Perceptions of female Saudi students in the United States"

المشاركة في المناقشات التعليمية على الانترنت وجها لوجه: تصورات الطالبات السعوديات في الولايات المتحدة الأمريكية

إذا سبق لك ان درستي مادة او اكثر عن طريق الانترنت "Online"

أمل للمشاركة في هذه الدراسة بالضغط على الرابط التالي

Outlook Print Message

<https://dub002.mail.live.com/mail/PrintMessages.aspx?cpids=0...>

الاستبيان مقدم باللغة الانجليزية:

<https://www.surveymonkey.com/s/Malanazy>

ولكي مني جزيل الشكر

منال العنزي

+966546417708

هذه الرسالة مرسلة من نظام الشؤون الدراسية ،
الموظف الفني محمد عبدالرحمن الشعلان

Disclaimer: The information in this email and in any files transmitted with it, is intended only for the addressee and may contain confidential and/or privileged material. Access to this email by anyone else is unauthorized. If you receive this in error, please contact the sender immediately and delete the material from any computer. If you are not the intended recipient, any disclosure, copying, distribution or any action taken or omitted to be taken in reliance on it, is strictly prohibited. Statement and opinions expressed in this e-mail are those of the sender, and do not necessarily reflect those of the ministry of higher education.

APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY of
NORTHERN COLORADO
Institutional Review Board (IRB)



December 15, 2011

TO: Maria Lahman
Applied Statistics and Research Methods

FROM: The Office of Sponsored Programs

RE: Exempt Review of *Female Saudi Students' Perception toward Their Participation in Online Discussion Compared to Face-to-face Discussion*, submitted by Manal M. Alanazy (Research Advisor: Jeff Bauer)

The above proposal is being submitted to you for exemption review. When approved, return the proposal to Sherry May in the Office of Sponsored Programs.

I recommend approval.


Signature of Co-Chair

1-4-12
Date

The above referenced prospectus has been reviewed for compliance with HHS guidelines for ethical principles in human subjects research. The decision of the Institutional Review Board is that the project is exempt from further review.

IT IS THE ADVISOR'S RESPONSIBILITY TO NOTIFY THE STUDENT OF THIS STATUS.

Comments: *mail 1-3-12*