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An Investigation Into the Use of HERO I ®, a Videogame for Interpersonal Communications in Enhancing Intercultural Competency

Ahmed K. Yousof

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AN INVESTIGATION INTO THE USE OF HERO I ®,

A VIDEOGAME FOR INTERPERSONAL COMMUNICATIONS

IN ENHANCING INTERCULTURAL COMPETENCY

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Philosophy

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Indiana University of Pennsylvania

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Title: An Investigation Into the Use of HERO I ®, a Videogame for Interpersonal
        Communications in Enhancing Intercultural Competency

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Although intercultural communication has long been a vital issue, accelerating globalization and immigration over the past century have increased its importance. Therefore, it is imperative that education and training in intercultural communication are created and continually evaluated for effectiveness. One effective new strategy is the use of technology in this type of training.

This study examines the effectiveness of using HERO I® to enhance intercultural communication skills. HERO I® is a 3D video game that was designed and developed to address the cultural differences between the Middle East and the United States as well as to also educate the trainees about those differences.

Results show that the use of video games is functional on the levels of interpersonal and intercultural communication. Hence, video games may positively influence the intercultural competency of a player. In terms of interpersonal communication, the results as reported in the ICC test after playing the game show the players demonstrating a better understanding of the dispositional factors of interpersonal communication. Thus, video games may function as a productive training tool by which to address abstract aspects of the communication process. Consequently, HERO 1® is expected to address the learning needs of young students whose visual learning style can help them understand abstract concepts.

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whose unique and different character taught me the real meaning of how a person can be sincere, spontaneous, and lovable.

Finally, I am grateful to my wife, Nahla Abu Samra. She has always been there for me. Her passion, hard work, spontaneity, and unconditional support have been the motive that prevented me from giving up. She believed in and accepted me throughout the ups and downs we have faced during this journey. Her words, actions, and passion were the invaluable tools that supported me all around. She knows how to make dreams for both of us and then make them real. Not only is Nahla considered my wife, love, and supporter, but she is a life partner and source of dream.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

Although intercultural communication has long been a vital issue, accelerating

globalization and immigration over the past century have increased its importance. Therefore, it

is imperative that education and training in intercultural communication are created and

continually evaluated for effectiveness. One effective new strategy is the use of technology in

this type of training. Technology often engages learners in ways that traditional education

cannot, and it has many benefits to other educational strategies (Gee, 2005; Prensky, 2011).

Furthermore, an interrelated relationship has always existed between games using technology

and communication (Lee, Choi, Kim, Park, & Gloor, 2013; Moline, 2010; Terlecki &

Newcombe, 2005; Vermeulen & Van Looy, 2016).

The history of video games is a central element in considering the relationship between

games and communication. Since the beginning of the 21st century, digital gaming has continued

to gain popularity and attract new users from all over the world. In 2006, Nintendo was the first

company to capitalize on the communicative side of digital games when the company focused on

social gaming by producing games that enabled all family members to play together (Eklund,

2015). Later, digital games were released with multiplayer features, allowing several players to

play together from different locations. Currently, the most popular genre of digital games played

over the Internet is social gaming (Lee et al., 2013).

Today, digital games have become tools that enhance many social activities and

meaningful communication (Eklund, 2015; Lee et al., 2013). Accordingly, higher levels of

interpersonal communication competency have become a requirement for successful video game

players, because online video gamers collaborate or compete with other players to achieve a

certain goal. Therefore, players from anywhere in the world can virtually mingle with each other, communicate, and share ideas during their game play (Taylor, 2008). Given that digital and online games have brought players from all over the world together, this has important consequences for interpersonal as well as intercultural communication. For example, although players may have different languages, backgrounds, and cultures, they can interconnect to play online games.

Intercultural communication first became an issue when people began traveling and, as a result, were exposed to other cultures. Prior to these interactions, people could not fully assess their own culture, because they did not have the opportunity to compare it to another culture. It is also important to understand intercultural communication because it can be utilized to highlight many communication problems that naturally occur in interactions between people from different backgrounds such as religion, ethnicity, and education(Spencer-Oatey & Franklin, 2009). Although people of different cultures share some basic concepts, they view these concepts from various angles and perspectives, or through their own cultural biases, leading them to behave in a manner which can be considered irrational or unacceptable when compared to what some people from other cultures consider to be the norm (Bakić-Mirić, 2012). Naturally, then, this can create challenges in communicating effectively across different cultures.

Potential problems in intercultural communication include, but are not limited to, inability to appreciate differences, anxiety, , stereotyping, prejudice, and racism (Ihtiyar & Ahmad, 2015; Samovar & McDaniel, 2007; Spencer-Oatey & Franklin, 2009). One strategy to avoid such problems is to develop strong intercultural communication competency (Bakić-Mirić, 2012; Franklin, 2007). To achieve this, most intercultural training programs require participants to attend classes and interact with people from other cultures. An increasingly important

educational strategy is to use technology to make education and training more engaging and meaningful by using technological tools to facilitate the learning process.

Statement of the Problem

Intercultural communication is an increasingly important issue, due to increasing globalization and immigration, as well as tensions and conflicts between cultures. In particular, it is crucial in education, business, and international relations where the power of language and communication plays an especially vital role in the success of the individual (Moeller & Osborn, 2014). The need to communicate among varied cultures affects those already living in a culture and immigrants within a host culture. For example, it has a great impact upon the host culture when immigrants arrive because host individuals are then required to redefine traditional perceptions of "self" and "other" (Kotthoff & Spencer-Oatey, 2007; Moeller & Osborn, 2014). Additionally, Velasco (2015) noted that insufficient awareness of how to handle change, limited thinking, and fear of otherness are three major consequences of globalization that can lead to poor intercultural communication.

An important theme in the extant literature is that intercultural training is needed; however, in most cases, there is insufficient or poorly designed training. Hence, with the augmented number of individuals dealing with each other interculturally and the shortage of proper cross-cultural training among those people, the need for training that addresses cultural differences has become more important (Bakić-Mirić, 2012; Gražulis & Markuckienė, 2014; Lebedeva, Makarova, & Tatarko, 2013; Rehm & Leichtenstern, 2012). The weaknesses of most of the current intercultural training programs are mainly related to the content and method of delivery.

Hiratsuka, Suzuki, and Pusina (2016) identified five necessary levels that need to be included in intercultural training programs: interpersonal, intragroup, intergroup, organizational/institutional, and community levels. Furthermore, Wang and Kulich (2015) found that the content of most intercultural training programs focuses mainly on the organizational level. Earlier research conducted by Cushner and Brislin (1996) concluded that culture has two sides: (a) the tangible side, or objective culture, and (b) the invisible side, or subjective culture. Building on this seminal work, other scholars have suggested that most of the intercultural training content focuses on the objective aspect of culture (i.e. food, costume, music, etc.) rather than the subjective ones (i.e., values, social roles, cultural dimensions) (Franklin, 2007; Gražulis & Markuckienė, 2014; Hiratsuka et al., 2016; Velasco, 2015; Wang & Kulich, 2015).

In terms of methods of delivery for intercultural training, most intercultural training programs require participants to attend seminars and classes, interact with people from other cultures, and participate in role-plays and simulations. However, Gražulis and Markuckienė (2014) found that many attendees find this type of training difficult, due to the required effort and time commitment related to traveling to such face-to-face programs. While intercultural training in a face-to-face setting can be effective, there are costs to participants such as spending a significant amount of time and money. Currently, there is no solution to this problem, since there are no affordable cultural training programs available for a large number of individuals (Bakić-Mirić, 2012; Gražulis & Markuckienė, 2014; Hiratsuka et al., 2016). Therefore, it is necessary that more effective and practical training be created.

Rationale for the Study

Technology has enabled people to attain education and training wherever and whenever it is convenient for them, often at a reduced cost. Pioneering universities and corporations, such as

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Boston University and IBM, have been educating and training students/employees by using technological innovations for the past 30 years (Hugh, 2012; Scherr, 2007). These institutions allow participants to pursue the training they need for improving their intercultural communication skills from anywhere in the world, without interrupting their professional and personal lives, and without the travel costs associated with face-to-face training.

Thus, the current study examines the use of video games as a cost-effective and convenient training tool to enhance the intercultural communication competency of participants. Not only can videogames be used as a training tool to teach the subjective and objective aspects of cultures in a way that many people find more engaging than most traditional approaches, they are also cost-effective tools given that participants do not need to be face-to-face during the training session(s). According to the U.S. Department of State (2006), cross-cultural training and consulting services may annually cost up to $ 850,000. This amount includes the cost of the trainer, materials, needs assessment, evaluation, and follow-up sessions. This figure may even go up when a business corporation hires a consulting and training company. For instance, British Petroleum dedicated millions of dollars for cross-cultural training for its employees (Berardo & Simons, 2004) because it operates in 72 countries and has 74,500 employees (Behrisch, 2016). Neither the U.S Department of State nor big corporations rely on on-line training for cross-cultural training because they rely on the trainer's first-hand experience with the culture (Spencer-Oatey & Franklin, 2009).

Furthermore, ease of use and accessibility are two additional factors that contribute to the effectiveness of video games in enhancing intercultural communication skills. For example, video games can be used by all age ranges due to the interactivity and visual nature of these games (Gee, 2005; Guerro, 2011; Prensky, 2011). In addition, video games are accessible to

anyone anywhere in the world provided they have Internet access; thus, people from all over the globe are able to virtually share their online experiences regardless of their cultural background, language, or values (Guerro, 2011; Kain, 2015; Lumby, 2014). Although big corporations and governmental institutions can afford the massive cost of cross-cultural training and consultancy, other institutions may not be able to afford it (Behrisch, 2016). The U.S. Immigration and Customs Enforcement service stated that the number of exchange students who received education and training in U.S. universities amounted to six million students (Zong & Batalova, 2016). Similarly, the number of U.S. students studying abroad in 2015 was 400,000 students (Zong & Batalova, 2016). For educational institutions to offer proper cross-cultural training to this massive number of students, they will need to rely on a cost-effective tool with easy accessibility and widespread appeal to students. Therefore, using a video game to teach students about intercultural communication might be that effective tool.

Purpose of the Study

The purpose of this study is to investigate and compare the issues related to content, methodology, and accessibility of current intercultural training programs through the implementation of HERO I®, a 3D video game that addresses cultural differences between the Middle East and the United States. These issues consist of facets of program design related to cognitive, behavioral, experiential, and culturally assimilating training, discussed in more detail in the following chapter. This examination is necessary to understand the issues related to intercultural training programs, and then to design one that is research-based, after an exhaustive review of current programs.

To address the above-mentioned issues, a video game called HERO I ® was developed by the researcher to raise awareness about cultural differences between the United States and the

Middle East, to assess players' unique levels of cultural awareness, and then to teach these differences and/or areas of limited cultural understanding. This study aims to explore the possibility of using this game to deliver intercultural training to U.S. individuals who have never been exposed to Middle Eastern culture.

In terms of content, HERO I® will virtually engage U.S. trainees in a full Middle Eastern cultural experience by covering the objective and subjective aspects of the Middle Eastern culture. As for the methodology, the game will adopt a simulation and problem-based training methodology. Trainees will embark on a virtual journey in the Middle East and try to solve cultural puzzles mixed with adventurous levels of game play to successfully pass this game-based training module. The benefits of the game include its convenience and cost effectiveness, as it can easily be accessed online from anywhere in the United States.

This study intends to fill the gaps in the current literature by creating and testing a game-based training program using HERO I®, created by the researcher to effectively assess and educate students about intercultural competency. The results of this study could potentially be used to create more educationally effective and cost-effective intercultural competency training.

Theoretical Framework

Intercultural communication and intercultural training will theoretically be examined through the lens of the uncertainty reduction theory, the Gender Role, as well as Standpoint theories. In this section, each of these theories are discussed. Also, detailed below is how each theory supports this study.

Uncertainty Reduction Theory

Franklin (2007) suggests that individuals experience high levels of uncertainty in intercultural encounters. Additionally, a lack of intercultural communication skills, low

motivation, and poor knowledge about the host culture may lead the individual to develop growing levels of anxiety (Franklin, 2007; Gudykunst, 2010; Lewis, 2006; Lizardo, 2012). Therefore, travelers use tension-reducing strategies in order to communicate effectively with the host culture (Gudykunst, 2005).

Kotthoff (2007) referred to one such uncertainty and tension-reducing strategies as the "cultural dictionary," a tool that helps in the uncertainty-reduction process. Using this strategy, a person in a host culture develops almanacs in his/her mind about the host culture as he/she becomes intimately familiar with it through personal experiences. In this reference book, the person can record the knowledge he/she develops about the host culture in terms of such norms as social distance and relationships among people in this culture. This recording contributes to the enhancement of the intercultural competence of that person (Gudykunst, 2010).

Gender Role and Standpoint Theories

Although stereotyped gender expectations exist within cultural interactions, the process of socialization within any culture sheds light on the role of gender in such interactions (Molina et al., 2015). Gender role theory states that any community sets certain cultural expectations about gender; such expectations affect the way children socialize within the community (Wohn, 2011). Similarly, standpoint theory complements this view by stating that women in society are framed as outgoing, sensitive, and emotional, while men are conservative, courageous, and decisive (Moreton-Robinson, 2013). Both gender role theory and standpoint theory conceptualize this socialization process in terms of spatial performance, gender-based playing experience, and gender identity.

Men tend to gain and master more spatial experiences provided by computer and video game usage than women. Therefore, men perform at higher levels than women on tests of spatial

ability. Terlecki and Newcombe (2005) suggested that women have limited experience of of

videogame play. As a result, they may improve more on spatial tasks if they increase their

videogame usage. McQuivey (2006) also concluded that women can achieve spatial

improvement because women who play videogames often spend more time playing than males.

This is a remarkable finding because "digital game play has traditionally been conceived as a

typically male leisure activity" (Poels, De Cock, & Malliet, 2012, p.634).

Furthermore, in terms of gender and playing experience, research has found that males

and females form their own and different playing style that corresponds to the existing social and

cultural views about gender (Chen, 2010; Poels et al., 2012; Walsh, 2010). Many contemporary

games showcase female characters in stereotyped roles (Terlecki & Newcombe, 2005).

Accordingly, a many video game genres have been set as more culturally suitable for males than

for females (Moline, 2010; Wang & Kulich, 2015). Recent studies have suggested that gender-

based social roles are significant to the video game playing experience (Chen, 2010; Guerro,

2011; Walsh, 2010). These cultural aspects have been underscored as essential reasons why

females have become into video game playing experience (Poels et al., 2012).

Poels et al. (2012) investigated how gender identity, in terms of the masculine and

feminine characteristics that identify the individual, can be used to analyze the differences that

exist among the female player group. Until now, the literature has elaborated on the differences

between male and female players by utilizing different social and cultural views. Current

research also suggests that females take on different playing styles related to the social context,

cultural background, and ethnicity. Furthermore, their playing behavior is often determined by

other factors considered male-related such as competition as well as elements considered as

female-related such as cooperation (McQuivey, 2006; Poels et al., 2012; Prensky, 2011; Wang &

Kulich, 2015). These findings concluded that future research should focus on investigating/examining the differences within the female group rather than only focusing on the differences between male and female groups.

Research Questions

Using the literature pertaining to intercultural communication and competency, in addition to the theories of learning and gender, this study examines the four primary research questions and hypotheses listed below. These research questions were created to guide this study. To best answer these questions, the researcher chose to collect quantitative data via pretests and surveys.

RQ1: Does the HERO I® videogame enhance learning of subjective intercultural communication skills?

H1: There is no significant difference between subjects who complete the HERO I® videogame and those who do not in terms of performance on an instrument measuring their subjective intercultural communication skills.

RQ2: Does the HERO I® videogame enhance learning of objective intercultural communication skills?

H2: There is no significant difference between subjects who complete the HERO I® videogame and those who do not in terms of performance on an instrument measuring their objective intercultural communication skills.

RQ3: Is there a gender difference in enhancing subjective intercultural communication skills through the HERO I® videogame?

H3: There is no significant difference between males and females in enhancing subjective intercultural communication skills through the HERO I® videogame.

RQ4: Is there a gender difference in enhancing objective intercultural communication skills through the HERO I® videogame?

H4: There is no significant difference between males and females in enhancing objective intercultural communication skills through the HERO I® videogame.

<div align="center">**Operational Definition of Terms**</div>

Objective Culture

Cushner and Brislin (1996) described objective culture as the "visible, tangible aspects of culture, and includes such things as the artifacts people make, the food they eat, the clothing they wear, and even the names they give to things" (p.123). Objective culture is typically found in the form of practices (e.g., ways of talking or walking), objects, and artifacts both "mundane" and aesthetic, and ritual or religious objects (material culture). Objectified culture is also increasingly likely to be found in the form of non-verbal, multi-modal media "images or music" transmitted via television, movies, radio, and recorded and digital media (Lizardo, 2012).

Subjective Culture

Subjective culture means any aspect that is not tangible such as ideology, values, and social roles (Cushner & Brislin, 1996). Hofstede (2001) suggested that most cross-cultural misunderstandings occur at the subjective cultural level; therefore, this level should be the focus of effective cross-cultural training.

Additionally, Hofstede (2001) specified individualism vs. collectivism as one of the major domains for subjective culture. The focus on group vs. individual orientation differs from one culture to another and has significant influence on people's decisions and the way they act effectively on their own (Hofstede, 2001). Of all the differences found to exist between cultures, group vs. individual orientation seems to be one of the most significant (Triandis, 2002). People

in individualistic societies seek out and are rewarded for achieving their own goals. For example, they tend to set their own goals, make their own plans, and do their own things in pursuit of their goals (Hofstede, 1983). Conversely, people in collective societies focus more on the needs and goals of the group. For example, they are more likely to integrate group goals with their own goals (Cushner & Brislin, 1996). Hofstede's major study suggests that the United States is the most individualistic of all societies in the world. Nations that score high on collectivism are primarily those in Asia, South America, and the Middle East (Hofstede, 1991).

Values

Values can be described as a set of abstract and general principles that guide behavior. Individual values are, in effect, judgments about what is right or wrong and good or bad (Hofstede, 2001).

Interpersonal Communication

Interpersonal communication is defined as the process people follow within a certain context to exchange information through verbal and non-verbal messages (Echterhoff, 2014).

Intercultural Communication

 Intercultural communication is the communication process that happens between individuals or groups of different linguistic and cultural origins (Bennett, 2003; Moon, 2008). The differences in cultural origins entail differences in language, values, social norms, and perceptions (Gudykunst, Ting-Toomey, & Chua, 1988; Moon, 2008).

Gender

"Gender is the degree to which an individual identifies with characteristics that are traditionally defined as masculine and feminine" (Poels et al., 2012, p. 634). The differences in

gender-based characteristics exist on multiple levels: biological, emotional, and ideological (Wohn, 2011).

Cultural Training

Cultural training is design and delivery of intercultural activities that make trainees able to experience different cultural aspects of the host culture (Rehm & Leichtenstern, 2012; Wang & Kulich, 2015).

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Significance to the Field of Communications

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This study is important to the field of communications because it examines the use of video games to enhance intercultural communication through more effective game-based intercultural communication training. Ihtiyar and Ahmad (2015) advocated for the academic use of the videogame industry in the development of games for entertainment as a strategy to increase educational effectiveness. An exhaustive literature review revealed a need for more effective training in intercultural communication that is designed in more effective ways. Therefore, this study will examine the use of HERO I® that is specifically developed by the researcher for intercultural communication training. The study will evaluate the game's effectiveness as a tool to determine intercultural communication and competency, as well as to educate others.

Recognizing a lack of research linking video games to cultural communication competence, Zackariasson and Wilson (2012) suggested that future studies focus on shared cultural practices, resources, and roles that emerge through game play. However, Zackariasson and Wilson had doubts that console games could be used for educational or training purposes without further sound research. Those doubts are underscored by Lumby (2014) and Kain (2015), both of whom refer to the millions of dollars that the videogame industry invests in

producing such games. Therefore, HERO I is an attempt to fill the gaps in the literature by producing a research-based 3D videogame that can be used for the enhancement of intercultural communication.

Organization of the Study

This study is divided as follows. Chapter Two presents a critical evaluation of the literature in terms of culture, interpersonal communication, intercultural communication, video games and learning, and gender and videogames. The researcher also critically evaluates theoretical concepts related to intercultural communication, learning, and gender. These concepts encompass the difference between subjective and objective cultures, the role of video games in learning, and gender utilization of and representation in video games.

Chapter Three focuses on the research design used to carry out this study. It presents the research methodology, population and subjects, and the research instruments used to conduct the study. Also, this chapter includes a detailed description of the HERO I game that will be used as an instructional and content module to collect and then analyze the data.

In Chapter Four, the researcher provides an analysis of the research findings. This analysis contains demographic data, as well as statistical tests analyzed through the hypotheses and research questions. Chapter Five is the concluding chapter for this study. It includes interpretation and discussion of results, conclusions, and recommendations for further research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This literature review contains four essential sections that are related to intercultural communication and videogames as a potential training tool for enhancing intercultural communication competency. Additionally, the role of gender in using video games has also been investigated. Accordingly, the four main sections of this literature review are videogames and learning, gender and videogames, culture, and intercultural communication training.

Videogames and Learning

A trend in the literature shows that videogames and learning are discussed from general and specific perspectives. Hence, this section starts with a discussion of the impact that videogames have had, and continue to have, on learning. It then elaborates on the review of the literature about videogames and intercultural training.

The Impact of Videogames on Learning

The impact of video games on learning and education has been significant. According to researchers, the impact of video games on learning and education includes an impact on learners, the learning process, and assessment (Gee, 2005; Moline, 2010; Prensky, 2011; Smart & Csapo, 2007). Therefore, implementing video games as a training tool could be an effective strategy to use in intercultural communication training.

Impact upon learners. The use of videogames specifically for educational purposes has been examined by many researchers in different fields. In terms of learners and their use of videogames, the literature demonstrates that the use of videogames can increase learners' enjoyment and engagement during the learning process (Gee, 2005). Learners are also able to

gain critical thinking skills and experience-based learning (Gee, 2005; Prensky, 2011).

Prensky (2011) found that digital game-based learning is beneficial to students because this educational tool focuses on learners' enjoyment and engagement as well the intermixing of learning and interactivity into a newly digital and entertaining medium. Guerro (2011) concurred with Prensky's claim by stating that sports games, war games, and even games like *Grand Theft Auto* simulate real-world experiences. Through such games, players must think critically and solve problems without realizing they are learning.

Guerro (2011) took the example farther by stating that the Massive Multiplayer Online Games (MMOG) genre of videogames has more educational potential because it necessitates that students do more than just sit passively and listen; rather, it promotes critical thinking. As Guerro noted, "These virtual settings anticipate advanced online learning worlds that can be dedicated to different subjects, populated by single users and teams, and pedagogically structured for deep and rapid experience-based learning" (Guerro, 2010, p. 12).

Videogames promote experienced-based learning because they provide learners with learning activities that encourage interaction and involvement (Smart & Csapo, 2007). This approach suggests that experience offers a substantial medium for learning that enables learners to increase their understanding and retain knowledge in ways that more traditional educational strategies, such as rote memorization of lists of facts, usually cannot achieve (Gee, 2005; Prensky, 2011; Smart & Csapo, 2007).

Impact on the learning process. Videogames affect the learning process in several ways, enhancing constructive learning, critical learning, and virtual communities of practice. For example, the MMOG genre focuses on the process, rather than the outcomes of learning (Chan, 2012). Therefore, gamers develop constructive learning through being placed in actual

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experiences (emotionally, physically, and intellectually), such as role-playing

scenarios/situations (Lebedeva et al., 2013). Experiential use of MMOGs necessitates that

gamers use communication and analytical skills as they interact with others who are also playing

the game. Consequently, constructivist learning is one of the benefits of playing MMOGs which

could have valuable application in an intercultural communication training program (Chan, 2012;

Guerro, 2011; Prensky, 2011).

Moline (2010) found that a constructivist-learning environment exists in some

videogames, such as *Lineage*. In this game, an apprenticeship relationship is formed whereby the

more experienced veteran players will help a new player by demonstrating successful

performance and pointing out important contextual aspects. The veteran player will also teach

the new player how to handle certain situations and model what kind of person they should

become in order to successfully complete the game. Once the new player is self-sufficient, the

veteran player allows the player to play on his or her own.

Videogames also have an impact on critical learning. This occurs when one experiences

the world in new ways, forms new affiliations, prepares for future learning, and thinks at a meta-

level in order to see interrelated parts of the world (Rehm & Leichtenstern, 2012). Critical

learning allows a player to build the virtual world rather than only playing within a pre-designed

world. This gives the player the opportunity to express him or herself and interact meaningfully

with other participants in the virtual environment (Gee, 2005). Furthermore, critical learning

theoretically improves transferability of learned skills through innovation and creativity (Chen,

2010; Salen & Zimmerman, 2003; Walsh, 2010).

Videogames also have valuable application in the creation of a virtual community of

practice. Because members are distributed throughout the world, they have an expanded network

of friends and colleagues, and they are connected to each other via the Internet (Walsh, 2010).

However, Guerro (2011) warned that virtual communities of practice can be difficult to foster because of distance, group size, organizational affiliation, and cultural differences. Still, if enough time is invested in addressing these difficulties, the virtual community of practice can succeed. In fact, if successfully created, virtual communities of practice can be more successful than face-to-face communities because they can attract a more diverse and larger group of individuals while overcoming time and space constraints of face-to-face communities (Gee, 2005).

There is debate over whether virtual communities are, in fact, real communities. For instance, some scholars believe communities can only exist in a shared physical space (Hofstede, 2001; Rehm & Leichtenstern, 2012). In contrast, others define communities as a product of shared relationships rather than shared space (Prensky, 2011). If the definition of a community includes the continuous presence of others, a collectivity of information, and active interaction, then a virtual space fits that definition of a community (Gee, 2005; Prensky, 2011; Walsh, 2010). In this view, space virtually is no different than space physically; rather it is defined by user perception. Consequently, if the virtual space is perceived as real, then it is real to the user. Likewise, if the virtual community is perceived as real, then the virtual community is real as well (Prensky, 2011; Walsh, 2010).

Impact on assessment. Researchers have also found that video games have an impact on assessment by increasing a player's performance on exams (Chen, 2010; Gee, 2005). For instance, competitive games, games with animated characters, and MMOGs without animated characters were three major videogame types examined by research in relation to educational assessment.

In one study, Moline (2010) examined the impact a physics computer game had on learning, investigating if collaborative and competitive games affected learning and social practice. Two eighth-grade classes served as the control group and three classes served as the experimental group. The experimental group played the physics game *Supercharged* (Moline, 2010). The results showed that the experimental group performed better on exams after playing the game than the group that did not use the game.

Videogames and Intercultural Training

Research suggests that video games can have valuable applications in intercultural education in several ways, such as interactivity and immersion, identity, and experiential learning (Gee, 2005; Lee et al., 2013; Salen & Zimmerman, 2003; Walsh, 2010). These aspects are examined in more detail in the following sections.

Interactivity and immersion. Flow, immersion, and collaboration during game play experiences are theoretical concepts through which video games promote cultural interactivity. As for the theory of flow, Salen and Zimmerman (2003) created principles that describe what constitutes a meaningful videogame experience. Some of these principles correspond to Chen's (2010) principles that enhance flow during game play. These principles include gaming experiences in which exist:

- Clearly defined rules and goals

- Clear and consistent feedback

- A sense of control

- An optimized challenge, meaning the game is neither too hard nor too easy

When playing a well-designed game, participants find that achieving flow results in the game being more engaging, interactive, and an overall more effective learning tool (Prensky, 2011).

Additionally, immersion and interactivity environments that use advanced three-dimensional graphics help to create an engaging, immersive, and interactive learning experience (Walsh, 2010). Role-playing games that use these graphics could provide exciting opportunities for "immersing players in engaging educational game environments, primarily through the shift from reading about educational content to thinking with that content to achieve compelling goals" (Chen, 2010, p.149). Concurring and expanding on this research, early tests of interactive games show they promote collaboration, communication, and interaction (Prensky, 2011).

Identity. Video games also have an impact on cultural identity. They push the gamer to develop a strategic representation of him/herself, build up interpersonal skills, and practice transferability of individual skills. Also, because interactions are virtual, players can choose how they will represent themselves to other players. According to Guerro (2011), all individuals present themselves strategically, by assuming a certain identity regardless of the medium of communication in order to achieve their goals. Gee (2005) explained how a player presents him/herself can be deceptive and confusing, but it can also be challenging and motivating. By claiming a new identity, players must use a number of learning principles including interaction, risk-taking, customization, challenging problems, situated meaning, and complex systems and relationships (Gee, 2005).

Enhancing interpersonal skills as well as a new identity through video game play, in addition to using them as tools of experiential learning, are some aspects of video games that can be used in intercultural education. However, scholars have varying viewpoints about the ability

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of videogames to develop interpersonal skills. Some believe that video games only provide opportunities to solve simple problems (Walsh, 2010). An opposing viewpoint is that some scholars believe video games are conducive to complex problem solving in simulated environments that involve interpersonal communication during the experience of playing online games (Chen, 2010; Ecenbarger, 2014). For example, one of the benefits of participating in a simulated environment is being able to see problems firsthand as you are working to solve them. Good learning video games include successively more difficult problems that build upon knowledge gained from previous experiences.

One final strand raised in the literature are concerns about the transferability of skills and information learned during video game play. For example, players may develop skills in one game that are similar to those needed in another game. However, this does not necessarily translate to critical thinking or planning skills in the new gaming situation (Walsh, 2010).

Finally, effective learning through games allows players to think laterally and practice new skills before demonstrating competence (Gee, 2005). One study examining students playing *Civilization III* concluded that students progressed from simple one-issue problem solving to complex multi-issue problem solving (Guerro, 2011). In this study the researcher has observed 60 students playing the game over a period of one semester. The same researcher studying *Quest Atlantis* and *River City MUVE* concluded that students addressed multi-causal problems in a complex environment which allowed them to see how issues related to one another at a meta-level (Guerro, 2011).

Experiential Cultural Training

The final impact of video games on intercultural education examined in this section involves the experiential cultural learning that can occur during video game play. Creating one's

own knowledge is a fundamental principle of experiential learning. In learning through video games, as with all learning, the learner constructs his or her own knowledge through a process called scaffolding (Chan, 2012). Scaffolding in video games occurs when a more knowledgeable entity (e.g. avatar) creates conditions that allow a novice to practice and build skills and knowledge in order to further develop his/her game competence (Molenaar, Sleegers, & Boxtel, 2014). As the novice improves in skill and becomes more self-sufficient, the more knowledgeable entity provides less guidance. Scaffolding is then gradually removed as the novice becomes self-sufficient and no longer requires the extra support.

Moline (2010) found that the multiple level-based videogames are a clear example of scaffolding and experiential learning. The gamer may use the initial levels to build up more knowledge and learn instructions about the game. Then he/she becomes more autonomous and relies on the skills developed in the easier levels to overcome the more difficult levels (Chan, 2012; Moline, 2010; Salen & Zimmerman, 2003).

Videogames and Gender

Because gender expectations are stereotyped in some societies, socialization has become an influential factor that is dominated by such stereotypes and hence media use (Terlecki & Newcombe, 2005). Gender role theory states that cultural expectations about gender influences the way children socialize within any community (Wohn, 2011). Similarly, standpoint theory complements this view by stating that women in society are framed as outgoing, sensitive, and emotional, while men are conservative, courageous, and decisive (Moreton-Robinson, 2013). Both gender role theory and standpoint theory conceptualize this socialization process in terms of spatial performance, gender-based playing experience, and gender identity as discussed below.

Spatial Performance

The experience of playing video games may have an impact upon the quality of spatial performance. Men tend to gain more spatial experiences - through computer and video game usage - than women do. Consequently, some researchers suggest that video game female players will most have a room for achieving progress in spatial tasks due to their limited ability in playing video games (Terlecki & Newcombe, 2005). A study by McQuivey (2006) found that, in general, female videogame players spend more time playing and are more involved in their game play compared to male players. "This is a remarkable finding, given that, based upon the gender role theory (GRT) as well as standpoint theory (ST), digital game play has traditionally been conceived as a typically male leisure activity" (Poels et al., 2012, p.636).

Videogame Playing Experience

Many recently published video games portray female characters based on stereotypical views by placing them in subordinate roles (Terlecki & Newcombe, 2005). Consequently, many video game genres are perceived as more culturally suitable for men than for women (Moline, 2010; Wang & Kulich, 2015). Research has also found that the social and cultural perceptions about gender decides the playing style of the males and females as video gamers (Chen, 2010; Walsh, 2010). Recent studies have concluded that aspects like social identity and roles contribute to the playing experience (Guerro, 2011). "These social aspects have been forwarded as important reasons why women have become attracted to videogames" (Poels et al., 2012, p.634).

Gender Identity

Research has also investigated how gender identity (GI) "can be used to explain differences within the female player group" (Poels et al., 2012, p.635). Until recently, the literature has focused on the cultural and social perspectives that explain the gender difference

between males and females in relation to video game play (Poels et al., 2012). females take on different playing styles related to the social context, cultural background, and ethnicity. Furthermore, the playing style is affected by some male-related factors such as competition or female-related elements such as cooperation (Prensky, 2011; Wang & Kulich, 2015).

These findings about gender identity in relation to playing styles concluded that research should tackle the discrepancies within female groups. In concurrence with these findings, some feminist scholars have argued that research solely conducted between male and female groups "conceals the fact that female players, like their male counterparts, constitute a strongly heterogeneous group" (Poels et al., 2012, p. 634).

Culture

To investigate intercultural communication more fully, this section begins with a discussion of the various definitions of culture throughout the 20th and 21st centuries. Following this, the theoretical framework that supports this study is discussed. Lastly, this section concludes with an examination of the different aspects of intercultural communication and how they connect to the theoretical framework.

Definitions of Culture

Since the middle of the 20th century, scholars have perceived culture differently. Therefore, no agreed-upon definition has emerged within or across disciplines. However, over the past decades, definitions have developed that range from a complete focus on culture as an individual concept, to the perception of culture as a term closely linked to communication.

Chronologically, culture as a lone concept was conceived differently from the 1950s through the 2000s in terms of complexity. In the mid-20th century simplicity and surface

interpretations for the word culture dominated the literature. Then, by the end of the 20th century perceptions of culture became more sophisticated.

In the mid-20th century, culture was simply perceived as everything that is made by humans and has shared meanings among certain group of people (Geertz, 1973; Herskovits, 1955). Hofstede (1983) provided a more elaborated perception about culture and defined it as "the collective programming of the mind that distinguishes the members of one category of people from another" (p. 115). In the late 20th century, Ferraro (1994) concluded that the only requirement for culture is to be human; therefore, all people in the world belong to one culture. However, Cushner and Brislin (1996) made a distinction between the objective and subjective cultures, and thus perceived culture as

> a set of human-made objective and subjective elements that in the past have (a) increased the probability of survival, (b) resulted in satisfaction for the participants in an ecological niche, and (c) thus become shared among those who communicate with each other because they have a common language and live in the same time-place. (Cushner and Brislin, 1996, p. 245)

It was not until the beginning of the 21st century that scholars began to understand that communication is an integral part of culture. Now culture and communication are linked together in terms of functionality and interconnectedness. For example, since scholars began to recognize culture in terms of its functionality, they see culture as something that makes a group recognizably different from other groups because of some communication principles such as behavior, actions, etc. Thus, culture is conceived as something that entails the communication elements that give group members a sense of who they are, what they belong to, how they should

behave, and what they should be doing according to their cultural norms (Abu Bakr, 2014; Cornes, 2004; Latane & Bibb, 2010; Lizardo, 2012).

In terms of interconnectedness, Moon (2008) equated culture with communication, suggesting that culture and communication are two different terms, yet they are related to each other, forming a structured and patterned interconnectedness that is called cultural communication. Other scholars agree, such as Wang (2015) who noted that culture focuses more on the structure, while communication is more about the process. It can then be implied from the aforementioned definitions that the essence of successful cultural communication involves sending the appropriate response based on complete understanding of the message (Hall, 1976; Latane & Bibb, 2010; Lizardo, 2012).

Interpersonal vs. Intercultural Communication

Interpersonal communication is defined as the process people follow within a certain context to exchange information through verbal and non-verbal messages (Echterhoff, 2014). Hiratsuka et al. (2016) added the concept of prediction to the definition, thus defining interpersonal communication as the process people adopt to make predictions about the communication outcomes when exchanging messages with each other. Such a prediction is mainly based on people's knowledge of past events and expectations about future events. The knowledge of past events includes an awareness of the person's cultural aspects such as language and prevailing ideology. Such knowledge paves the way to make successful predictions of the person's probable response to the message. Those two definitions of interpersonal communication highlight the relationship between interperosnal and intercultural communication.

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There is a receprocal relationship between interpersonal and intercultural communication. The way the individual communicates may have an impact on the culture he/she shares. At the same time, the culture that the individual belongs to may affect the way he/she communicates with others (Bakić-Mirić, 2012). Two factors influence this mutual relationship: situational and dispositional factors. The situational factors are those characteristics wherein the communication cannot be changed such as place, physical setting, and time. The same situational facators exist in intercultural communication, called objective factors (Cornes, 2004; Samovar & McDaniel, 2007). The second type, dispositional factors, is perceived in interpersonal communication as the behaviors of the individuals that dominate the communication process within a certain setting (Cornes, 2004; Hiratsuka et al., 2016). Those factors shape the subjective side of intercultural communication and are demonstarted as the abstract characteristics of different cultures such as values, power, and distance.

Due to inherent differences among cultures, it is necessary to study intercultural communication. After an exhaustive review of the literature pertaining to intercultural communication, three major themes emerged: causes of cultural differences, relationships between intercultural competency and intercultural interaction, and barriers that may cause unsuccessful communication between different cultures.

Cultural differences. The literature pertaining to intercultural communication suggests that differences among cultures can be attributed to the level of social interaction and individual differences found within and between cultures. The following information is divided into two sections. The first section focuses on social interaction in light of differences between multicultural, cross-cultural, and intercultural communication, followed by the second section that elaborates on the individual characteristics that contribute to cultural differences.

Social interaction varies among people according to the type of cultural communication they use during social interactions. Therefore, the difference between multicultural communication, cross-cultural communication, and intercultural communication lies in the level of social interaction they imply. Lewis (2006) identified multi-culture, cross-culture, and inter-culture as denoting two or more cultures living alongside one another. Nevertheless, Velasco (2015) separated multicultural, cross-cultural, and intercultural communication because they are often used interchangeably, which leads to ineffective communication across cultures. Communicating multi-culturally involves superficial social interactions, while communicating cross-culturally requires a deeper level of social interaction that builds permanent bridges between cultures (Gudykunst, 2010). Intercultural communication necessitates the deepest level of social interaction entailing understanding, acceptance, respect, freedom, equality, diversity, and celebration of different cultures (Velasco, 2015).

Differences among culture are also attributed to differences among individuals. These differences can be subjective such as attitude and ideology or objective such as outfit, body shape, and skin color (Kotthoff & Spencer-Oatey, 2007). These difference decide how individuals within a certain society or culture deal with each other. Latane and Bibb (2010) linked intercultural communication to these differences. In other words those differences decide to a great extent how influential the person is in dealing with and affecting other cultures.

The Relationship Between Intercultural Competence and Intercultural Interaction

Both intercultural communication competence and intercultural interaction have been studied extensively to establish an explicit relationship between them. Initially, Friedman and Antal (2005) defined intercultural communication competence as the ability to think, appreciate differences, and build effective communication with people from different cultures in a

multicultural society. Simultaneously, Cornes (2004) observed that cross-cultural competence encompasses a list of sub-competencies. These sub-competencies imply that a person cannot be truly aware of his/her own cultural tendencies until he/she is placed in another culture. Only then can the person attempt to balance the difference between his/her own culture and the host culture using these competencies. Feelings of isolation may result if the person chooses not to interact (Cornes, 2004).

Based on the above mentioned work of Antal (2005) and Cornes (2004), researchers have established a relationship between intercultural competency and intercultural interaction. People with a higher level of "intercultural competency (IC) show a greater capability to learn different aspects of other cultures, such as foreign languages and cultural norms. Furthermore, they can integrate with other cultures easily" (Ihtiyar & Ahmad, 2015. p. 148). The high level of intercultural competency indicates that the individual can easily deal with different cultures with lower level of anxiety (Sharma, Tam, & Kim, 2012). A high level of intercultural competency increases the ease of social interactions with different cultures.

Novick (2010) highlighted the importance of intercultural competencies in creating an understanding among people from different cultures which, in turn, facilitates social interaction. In his study, Novick (2010) asked foreign students in a training school in the United States to identify which of their fellow American students would be most successful if sent by the US Foreign Service to their country. The foreign students, who were from different countries, demonstrated consistency regarding their choices of whom they considered would be a good fit in their country. Similarly, the foreign students are also consistent regarding those who would not be welcome. Those selected as welcomed visitors were perceived by the subjects as being

able to be sensitive to the host culture, while those who were not selected lacked this competency of understanding the other culture and appreciating differences.

Intercultural Communication Barriers

Although a relationship has been established in the literature between intercultural competency and social interaction, barriers still exist that interfere with effective communication among people from different cultures. These barriers include attitude, de-individuation, and misuse of stereotypes. Attitude is closely related to, and directly affects, a person's behaviors. A negative attitude is an individual attitude that stems from the person's values (Bennett, 2003). From the host's point of view, an attitude is simply what one exposes through behaviors and actions. It is like a cycle in which a sender's attitude is reflected upon his/her behavior. Accordingly, the attitude of the receiver and, consequently, his/her behaviors toward the sender, will be affected. The end result of the receiver's adjusted behavior may then influence the sender's attitude, and so on (Lizardo, 2012).

De-individuation is another barrier when people build their status and identity in their home culture according to the way they are perceived by groups surrounding them (i.e., family, friends, colleagues, etc.). However, when those people travel to another country, they are to a large extent anonymous or de-individuated from their normal social group that they left behind (Latane & Bibb, 2010). This can be a main source of anxiety, especially for people whose public status forms a major part of their identity and self-worth.

The misuse of stereotypes is another important barrier to an effective and appropriate communication between different cultures. Lewis (2006) defined stereotyping as categorizing people as a group while ignoring their individual differences. Therefore, stereotyping negatively works against the effectiveness of cross-cultural communication. Although most people use or

are aware of stereotypes, few people are cognizant of the fact that any stereotype can easily be changed or modified (Lizardo, 2012). Thus, it is recommended that, when the sender and the receiver belong to different cultures, they must become aware of what stereotypes they hold towards each other (Cornes, 2004). Thus, Kotthoff and Spencer-Oatey (2007) explained that if someone holds a negative stereotype of another person who belongs to a different culture, it will be very difficult, if not impossible, to stop some of that prejudice from leaking into non-verbal communication. This is due to the fact that, while the words are supplied by the conscious thoughts, the tonality and body language are generally supplied through the unconscious mind, driven by previously set feelings and emotions (Cornes, 2004).

Theoretical Framework

Communication failure due to intercultural interaction can theoretically be examined through the lens of uncertainty reduction theory, gender role theory, and standpoint theory. Therefore, this section will be divided into subsections according to the theories that support the study.

Uncertainty Reduction Theory

In the theory of uncertainty reduction, Franklin (2007) postulated that individuals experience high levels of uncertainty when they are attempting to ensure effective communication in intercultural encounters. Scholars have concluded that the level of anxiety and uncertainty depends on the level of communication skills, motivation, and knowledge of general and specific cultural factors that the person demonstrates (Franklin, 2007; Gudykunst, 2010; Lewis, 2006; Lizardo, 2012). As a solution, individuals perform tension-reducing and information-seeking behavior in order to help communicate effectively with the host culture (Gudykunst, 2005).

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One uncertainty- and tension-reducing strategy is what Kotthoff (2007) referred to as the "cultural dictionary." This is a tool that can be used to decrease tension in the uncertainty-reduction process. In this strategy, a person who is placed in the host culture is advised to develop almanacs in his/her mind about cultures with which he/she becomes intimately familiar with through personal experiences. In this reference book, the person can record the knowledge he/she develops about the host culture in terms of social distance and relationships among people in this culture. This recording contributes to the enhancement of the intercultural competence of that person (Gudykunst, 2010).

Gender Role Theory

Gender role theory is based on the assumption that males and females have different skills, capabilities, and behaviors based on the roles that they have been assigned by social structures (Molina et al., 2015). In terms of interpersonal communication, researchers have used this theory to evaluate the communication behavior of males and females within a certain setting. When cultures and communities adopt a certain gender-based perspective, gender role theory speculates that males and females will shape their behavior and communication based on the cultural judgements that surround them (Shimanoff, 2009). Additionally, the theory tackles the variability among women and men in social roles that lead to stereotyped expectations in communication between genders.

Although stereotyped gender expectations exist within cultural interactions, the process of socialization within any culture sheds light on the role of gender in such interactions (Molina et al., 2015). Gender role theory states that individuals act within any social context based on how their gender is perceived by the culture (Wohn, 2011). Similarly, standpoint theory complements this view by stating that women in society are conceived as outgoing and sensitive,

while men are decisive and brave (Moreton-Robinson, 2013). Both gender role theory and standpoint theory conceptualize this socialization process in terms of spatial performance, gender-based playing experience, and gender identity.

"Men not only perform at higher levels than women on tests of spatial ability, but they also tend to have had more spatial experiences" (American Psychological Association [APA], 2014) . Terlecki and Newcombe (2005) suggested that women have lower levels of videogame experience. As a result, they may improve more on spatial tasks if they increase their videogame usage. McQuivey (2006) concluded that women can achieve spatial improvement because women who play videogames often spend more time playing than males. This is a remarkable finding because "digital game play has traditionally been conceived as a typically male leisure activity" (Poels et al., 2012, p. 634).

Furthermore, in terms of gender and playing experience, research has also found that the social and cultural perceptions about gender decides the playing style of the males and females as video gamers (Chen, 2010; Walsh, 2010). Many contemporary games depict female characters as weak and dependent (Terlecki & Newcombe, 2005). Therefore, some types of video games are more appealing to men than to women (Moline, 2010; Wang & Kulich, 2015). Recent studies have concluded that aspects like social identity and roles contribute to the playing experience (Guerro, 2011). "These social aspects have been forwarded as important reasons why women have become attracted to videogames" (Poels et al., 2012, p.634).

Standpoint Theory

Standpoint theory is related to the concept of power and people's perceptions in interpersonal communication. Mei-Ling (2016) stated that women – from a socio-economic view – are marginalized in society and therefore have less power than men. Thus, they tend to accept

the perception of the powerful group and therefore limit their communication with the other group based on this power-based view. From an epistemological perspective, standpoint theory calls for marginalized groups to develop a standpoint that helps them be conscious of their social situation in terms of power equality and representation. Hence, they will be able to re-define social roles and communication within existing social structure (Mei-Ling & Yi-Hua, 2016; Wohn, 2011).

Poels et al. (2012) investigated how gender identity (GI) can be used to explain differences within the female player group. Until recently, the literature has focused on the the cultural and social perspectives that explain the gender difference between males and females in relation to video game play (Poels et al., 2012). females take on different playing styles related to the social context, cultural background, and ethnicity. Furthermore, their playing behavior is often determined by other factors considered male-related such as competition as well as elements considered as female-related such as cooperation (McQuivey, 2006; Poels et al., 2012; Prensky, 2011; Wang & Kulich, 2015).

Intercultural Communication Training

Intercultural training contexts and the different types of intercultural training are two main perspectives that emerge in the literature about intercultural communication training. The intercultural training contexts contain the business and school contexts. Also, the various training types are discussed at the end of this section.

Intercultural Communication Training Contexts

Intercultural Communication Training was not a commonly used term until 1950. It started in a business training context where different approaches had been used. However,

Intercultural training was marginalized within school settings, due to different factors dealing with pedagogical and social contexts.

Business context. Since 1950, the year that marked the start of intercultural training, business and intercultural communication training took two approaches: the anthropological and socio-cultural approaches. The first anthropological-based intercultural training took place in 1951 when the Foreign Service Institute assigned Edward Hall as the lead trainer of a training program to Service officers assigned to work in different countries (Moon, 2008). Foreign Service personnel were considered representatives of the US government in their countries of assignments. Therefore, they would require a variety of specialized cultural training. In reflecting upon this anthropological approach, Hall (1959) was unsatisfied with the outcomes of this training because the program relied upon theoretical anthropological information. In this approach, Hall focused on general information about cultural differences among nations. Perceiving it difficult to understand and irrelevant, the trainees asked Hall to change the training into something pragmatic and goal-oriented. Thus, Hall redesigned his training to move from macro-analysis (i.e. culture in general) to microanalysis (i.e. cultural smaller units such as gestures and tone of voice) (Moon, 2008). The socio-cultural approach was then created.

The socio-cultural approach entails training on subjective and objective cultural aspects (Rehm & Leichtenstern, 2012). For culture-specific training that mainly explains subjective culture, training was based on explicitly comparative studies of two or more cultures, often originating in management science (Lebedeva et al., 2013). For the implicit or objective culture, training was primarily based on the pioneering work of Edward Hall, focusing on behavioral orientations and communication styles across a variety of national cultures. This type of training also relied upon the contrastive and value-oriented work of Hofstede. These two scholars

dominate the field of intercultural communication training in business and management worldwide (Franklin, 2007). In a study conducted among 261 intercultural trainers, Berardo and Simons (2004) concluded that Hofstede and Hall together attracted 110 out of 170 responses from trainers when they were asked to name cultural models. The studies by Hofstede and Hall supply insights about the values that can be found in society generally, in the family, at school, and in the workplace in a large variety of national cultures (Franklin, 2007).

School context. Interpersonal, sociological, and pedagogical influences have shaped the way intercultural communication training has been delivered at schools. Studies on school-bound interpersonal communication skills have shown that school-based socialization should be examined with respect to the effect of the host culture on the interpersonal skills of students who belong to other cultures (Lebedeva et al., 2013; Scherr, 2007; Wang & Kulich, 2015). For example, school is not only the place where the hegemony of the dominant culture is played out and transmitted; it also appears in the scene of daily conflicts about culturally legitimate vs. illegitimate behaviors and values demonstrated by students from the host culture and other cultures (Scherr, 2007).

From a sociological perspective, Barbour (2007) mentioned that education in school should have an increased focus on the relationship between national, racial, ethnic, and religious stereotypes and communication. Hence, Scherr (2007) stressed the fact that multicultural education programs should require the implementation of sociological practices, especially in situations where problems related to sensitivity towards cultural differences among students in class are clearly observed. Consequently, Latane (2010) found that difficulties in mutual understanding among school students stem from differences among cultures. He explained that problems and conflicts are likely when students from different cultural origins remain innocently

caught in the perspectives and domains of their own culture failing and therefore are unable to go beyond their own cultural beliefs and certainties. Further, Siegfried (2011) found that the sociological perspective of multicultural education at schools needs to address the socially disadvantaged migrants and minorities, so that students from diverse and different racial, ethnic, and social class groups can be able to experience educational equality.

The pedagogical influence upon intercultural education at schools involves teachers' expectations about their pupils who belong to different cultures (Stuart & Gay, 2010). Unlike US teachers, teachers in Canadian schools are required to be culturally sensitive to the ethnic and religious backgrounds of their pupils and to take these into account when choosing instructional materials and methods. In US schools, teachers are not required to cater to any cultural differences that may exist among students in class; however, they should be culturally sensitive to their students' unique backgrounds (Scherr, 2007; Stuart & Gay, 2010). Studies of multicultural education suggest that in interactions between teachers and students, cultural stereotypes shape teachers' expectations about the abilities and potentials of students who appear to come from different cultures (Hugh, 2012). In language education, for example, a recent German study showed that teachers tend to attribute linguistic deficits to children with immigrant backgrounds (Hugh, 2012; Scherr, 2007). This phenomenon contributes to the judgment that immigrant children have low linguistic competence (Scherr, 2007).

Types of Intercultural Communication Training

Wang and Kulich (2015) found four effective types of intercultural training: (a) cognitive, (b) behavioral, (c) experiential, and (d) culturally assimilating training. Cognitive training emphasizes facts about the host culture. It provides information about what sojourners frequently experience in that culture. Typical teaching methods for this type of intercultural

training include lectures, group discussions, and presentation of written materials. The drawback

of this approach is the small correlation between mastering facts about a certain culture and

trainees' subsequent ability to function effectively in the host culture (Lebedeva et al., 2013;

Wang & Kulich, 2015).

Behavioral training is another type of intercultural communication training. This training

focuses on the roles of rewards and punishment in a person's life. Typical methods for this type

involve asking trainees to visualize what is rewarding and what is punishing for them in their

own culture. Trainees would then be asked to compare between their own culture and the host

culture through which to note the differences. The major drawback of this approach is the high

degree of specificity required and the relatively few trainees who can benefit from such programs

(Hugh, 2012; Smart & Csapo, 2007; Wang & Kulich, 2015).

Experiential training urges employees to participate in intercultural activities that make

them able to experience different cultural aspects of the host culture. Typical methods of

experiential training include having trainees roleplay potentially problematic situations, take part

in simulations of other cultures, and take field trips into other cultures. This face-to-face training

is extremely costly and time consuming (Smart & Csapo, 2007; Wang & Kulich, 2015).

The last type of intercultural training is a so-called cultural assimilator. It was designed to

prepare individuals from one cultural group for interactions with people from another specific

cultural group (Cushner & Brislin, 1996). Wang and Kulich (2015) mentioned a variety of

culture-specific assimilators that have been developed for different uses, such as preparing

French bankers to live and work in Thailand, preparing American adolescents to volunteer in

health programs in Honduras, and preparing white and black servicemen to live and work

together in the US military. The challenge in using cultural assimilators, according to Wang and

Kulich (2015) is that such training is developed for particular audiences and often tailored for specific purposes. Thus, these assimilators are not applicable to the general public. Additionally, an individual needs to have a wide network of colleagues in the field of cross-cultural training to gain access to the cultural-specific assimilators that have been developed by other trainers (Wang & Kulich, 2015).

Conclusion

With the augmented number of individuals dealing with each other interculturally and the shortage of proper cross-cultural training among those people, the need for training that addresses cultural differences has become more important (Bakić-Mirić, 2012; Gražulis & Markuckienė, 2014; Lebedeva et al., 2013; Rehm & Leichtenstern, 2012). The weaknesses of most of the current intercultural training programs according to the literature are mainly related to the content and method of delivery.

This study is intended to fill the gaps in the current literature by creating and testing a game-based training program using the game HERO I®, created by the researcher to effectively assess and educate about intercultural competency. The results of this study could potentially be used to create more effective and cost-effective intercultural competency training.

CHAPTER THREE

METHODOLOGY

Introduction

The purpose of this study was to measure the effectiveness of using HERO I as a tool for enhancing interpersonal communication and addressing issues related to intercultural communication. A video game called HERO I® was developed by the researcher to examine the cultural differences between the United States and the Middle East. A posttest-only design was used to explore the possibility of using this game to deliver intercultural training to US individuals who have never been exposed to the Middle East's culture. In this chapter, the methods and procedures are discussed, and the instruments used to study the HERO I ® game are explained in detail.

Data Required

To answer the research questions guiding this study, quantitative data were collected using a posttest survey. The Intercultural Communication Competency (ICC) Posttest was created by the researcher, and it consists of two parts: the subjective intercultural communication skills and the objective intercultural communication skills. The posttest was created to measure the intercultural communication competency of the control and experimental groups. Since this study contains two parts and two groups, the control group and the experimental group, the methods and procedures are detailed in the following sections by each group.

Reliability & Validity

The ICC test contains 20 questions, wherein 10 questions measure the subjective aspects of the Middle East culture and 10 questions measure the objective aspects of the culture. Three demographic questions conclude the posttest. Split-Half Reliability was used to measure the

reliability of the instrument. The test is split into two and then the scores are compared. The higher the similarity between the scores of the two halves, the higher the reliability is (Thompson, 2010). In this measure of consistency, the ICC test is split in two equal halves: the objective culture section (10 questions) and the subjective culture one (10 questions). Split-Half Reliability was used in this study because it measures the reliability of the instrument with one administration. Additionally, split-half reliability was used because the ICC test cannot be taken more than once.

Face or content validity was implemented for the ICC test validity. An international university faculty member from the Middle East examined the content of the ICC posttest as well as the game to determine whether it appeared to be related to that which the researcher wished to measure. Also, the Middle Eastern faculty member decided if the items in the posttest were reasonably representative of Middle Eastern culture. The international faculty member was born and raised in Egypt. He had received his education in Egypt and moved to the United States to pursue his post-graduate studies in Computer Science. Although he has become a U.S. permanent resident, he spends three months every year in his home country to reconnect with his macro family still living in Egypt. The reviewer was asked first to play the game. By the end of each level, the reviewer filled in a survey using Likert Scale. For each level, the reviewer rates the content of the game in terms of how relevant the content of the game is to the Middle East culture where 1 indicates extremely irrelevant and 5 is extremely relevant. The reviewer marked all levels as 5 which means that they were extremely relevant to and reflective of the Middle East culture. After that, the reviewer evaluated the ICC test by deciding on each question in terms of relevancy to the content of the game and hence the Middle East culture. The reviewer filled in a survey that asks him to rate each question on a scale from 1 to 5 where 1 indicates that the

content of the question is extremely irrelevant and 5 means that the content is extremely relevant. All questions were marked between 4 and 5. The reviewer has also recommended the addition of the word "some" to the phrase "middle eastern countries" in question number 12. So, the questions read: "Which of the following dishes represent popular food/dish in some countries in the Middle East. (Check all the apply)

Setting of the Study

The study was completed in two places: a computer lab and a classroom in a medium sized, liberal studies university in the northeastern region of the US. Both sites were located within the same building. The experiment took place over five days with two or three sessions per day. The following procedures in conducting the experiment were followed:

1. Subjects Recruitment

    1.1 The principle investigator, in coordination with professors at Indiana University of Pennsylvania, visited classes to explain the experiment and recruit subjects.

    1.2 The principle investigator announced that two participants would randomly be selected to receive a $100 Amazon gift card. The investigator used course section email to follow up with each class.

    1.3 The email included a link to a Doodle poll that potential subjects used to schedule a date and time to participate in the study.

2. On the day of the experiment:

    2.1 At the beginning of each hour, subjects were randomly divided into two equally sized groups: the control and experimental groups.

2.2 Subjects were randomly stratified by ensuring that female subjects were included within each group in a number that was proportional to the number of male subjects within the same group.

2.3 Since the study was based on these two groups, the section below explained the setting for each group. Initially, the setting for the experimental group would be explained. Then, the setting for the control group would follow.

  2.3.1 Experimental Group The experimental group was seated in a computer lab in the university. The lab accommodated 45 students who could conveniently work on 45 computers within this lab. The computers placed in the lab had the Windows platform and are normally used for production courses that entail game development, animation, and graphics. Therefore, the computers, in terms of configurations and set up, were compatible with the treatment (i.e., the video game HERO 1®). Once seated in the computer lab, the experimental group was asked to sign a consent form (Appendix B). Then, they were asked to play Hero 1®, which was already installed on the computers. The game was timed to finish in 10 minutes. Also, headsets were given to the subjects in the experimental group to listen to the instructions of playing the game. Finally, after finishing the game, the group was asked to take the ICC posttest that consisted of 20 questions and measured the subjective and objective sides of the Middle East culture.

2.3.2   Control Group**.** The control group was seated in a traditional

classroom at the same university. The classroom accommodated up

to 40 students. Like the experimental group, the control group

signed a consent form (Appendix B). However, unlike the

experimental group, the control group only took the ICC posttest

that of 20 questions that measured the subjective and objective

sides of the Middle East culture. It was expected that the control

group would complete the study instrument in 10 to 15 minutes.

Although the control group was not exposed to the treatment (i.e.,

playing the Hero 1® Intercultural Communication Training Game),

they were given the opportunity to play the game upon their

request after the study was completed.

3. Post-experiment procedures:

3.1 Once all sessions were completed, two subjects were randomly selected to receive a $100

Amazon gift card.

3.2 The researcher also sent a thank-you email (Appendix E) to all students who participated in

the experiment. This correspondence thanked them for their time and informed them that the

two gift cards were awarded.

Study Sample

The sample for this study was a convenience non-probability sample. This type of

sampling approach was used because the sample was a purposive sample. The subjects were

selected based on the criteria that their age is above 18 years old, have never been to the Middle

East before, and must be students enrolled at IUP. The sample included males and females

because gender was one of the variables that were investigated in research questions three and four. After conducting a power analysis, the researcher determined that the number of participants needed for the study was 162 (*N=162*) at a confidence level of 90%. Male participants constituted 62% of the total number of participants, while female participants constituted 38%. The participants in the study were:

1. Undergraduate students enrolled in a medium-sized (i.e. 14,000 undergraduate and graduate students) university in Western Pennsylvania.

2. 18-22 years of age.

3. Majoring in social science, education, business, and science.

Inclusion Criteria

The study included undergraduate students enrolled at a medium-sized Western Pennsylvania university. This university is located 55 miles outside of a Western Pennsylvania city. Also, there were no restrictions on sex, so males and females were invited and expected to participate in this study.

Exclusion Criteria

Students who were minors under 17 years of age were not permitted to participate in the study. International participants and participants who spent a significant amount of time (six months or longer) in a Middle Eastern culture were permitted to participate. However, their data were excluded from the analysis.

<div align="center">

Data Collection

</div>

Pilot Study

Although the size of the pilot sample depended on the actual sample size that would be used in the study, McCuskar and Gunaydin (2015) mentioned that a sample of approximately 30-

50 people was usually sufficient to identify any major flaws in the ICC posttest. Therefore, the researcher decided that, before starting the actual data collection, a full pilot study would be conducted. Thirty participants—who would not be part of the final experiment—were identified to play the game and take the posttest as well as the survey included within it. Not only would this pilot sample be used to verify the reliability and validity of the instruments, but it would also help to test the steps of conducting this posttest from start to finish.

A posttest-only control group design was used as a research method to investigate the research questions that guided this study. A posttest-only control group is a type of experimental design that consists of two or more groups (Fraenkel & Wallen, 2006). The posttest was given to both groups; however, only one group played the game while the other group just took the posttest and did not play the game. A pretest was not required for this design, because the two groups were probabilistically equivalent as both of them were never exposed, or never had a first-hand experience with Middle East culture.

At the beginning of each hour, subjects for the pilot study were randomly divided into two equally sized groups. One half, known as the control group, completed the study instrument (Appendix C) only. It was expected that this control group would complete the study instrument in 10 to 15 minutes. The other half, known as the experimental group, would complete the game (Appendix D) and then the study instrument (Appendix C). This experimental group was expected to spend 35 to 40 minutes to complete the game and the study instrument. The pilot study helped the researcher identify some technical issues within the video game. Those issues affected the flow of the experiment. For example, the game had always been crashing when the subject keeps clicking the mouse or the left arrow on the keyboard. Thus, the researcher managed to fix this problem, so it would not hinder the flow of the main experiment. Also, the

pilot study helped the researcher recognize the subjects should be given detailed and comprehensive instructions about the game before they start playing it. Therefore, the researcher – during the actual experiment – devoted more time for explaining the instructions and areas of glitches that the participants might encounter. The researcher provided some tips to overcome such glitches. Consequently, the actual experiment took 10 minutes more than the original allotted time. This adjustment in the experiment time as well as the identification of glitches was due to the successful implementation of the pilot study.

In terms of the ICC test, the reviewer has recommended rephrasing one of the questions in order to express the Middle East culture and avoid overgeneralization. He suggested the addition of the word "some" to the phrase "middle eastern countries" in question number 12. So, the questions read: "Which of the following dishes represent popular food/dish in some countries in the Middle East. (Check all the apply)". Other than Question 12, the reviewer agreed on the rest of the questions in terms of wording and content. The overall validity – based on the rating given by the reviewer on a scale from 1 (Extremely unrelated to the Middle East culture) to 5 (Extremely related to the Middle East Culture) – was 4.32. The pilot study was also used to measure the reliability of the ICC test. Split-test reliability was utilized. The test was split into two halves. The participants in the pilot study was divided into two groups and each group was assigned one half of the ICC test. Guttmann Split-half Coefficient indicated the reliability of the ICC test was .64.

Method of Obtaining Data

Instruments

In the actual experiment, there were two major instruments used, which varied from the control group to the experimental group. The control group used one instrument only, the ICC posttest. This Posttest included general questions that elicited participant responses pertaining to

demographic information, as well as knowledge questions that measured the subjects' knowledge about Middle East culture. The experimental group took the same test; however, this group also played the game before taking the test. The game, Hero 1®, consisted of two levels, each of which examined and educated players about different aspects of Middle East culture.

The Test

Tests provided a way to assess participants' knowledge and capacity to apply this knowledge to new situations (McCusker & Gunaydin, 2015). Revicki and Schwartz (2015) mentioned that tests are used when one wants to gather information on the status of knowledge. The experiment posttest in this study consisted of the ICC survey, which contained two major sections. In section 1, the subjects were required to answer three questions that addressed gender, age, and education respectively as seen in Table 3 below. Section 2 contained two parts. Questions in part I demonstrate the subjects' knowledge about subjective intercultural communication skills as shown in Table 1 below. Cushner and Brislin (1996) defined subjective culture as the invisible and less tangible aspects of a group of peoples' values, attitudes, norms of behavior and adopted roles in society. Questions were adapted from the literature that examined Middle East culture (D'Enbeau, Villamil, & Helens-Hart, 2015; Krause, 2012; Pennachio, 2005; Tucker & Meriwether, 1999). The table below shows the questions that will be used in the test which pertain to the subjective culture-related aspects.

Table 1

ICC Posttest Subjective Culture Section

Question	Subjective culture aspect
1. The grandfather in a Middle Eastern family will most likely: (A) be placed in a nursing home (B) be consulted for any major decision related to the family (C) be the decision maker in the family	• Power distance • Social role • Collectivism
2. Once you become close to a girl from the Middle East, it is expected for you to: (A) consider her your girl friend (B) talk to her family and propose to her (C) invite her to move in and live with you	• Values • Social role • Collectivism
3. Communications in the Middle East tend to be: (A) direct and brief (B) indirect and elaborative (C) neutral	• Communication
4. In dealing with some government organizations in some countries in the Middle East, it is important to: (A) offer the employee extra money to get your job done (B) be present at 7 am when the workday normally starts in those organizations (C) check the weather conditions before you go out	• Values

5. A husband has the authority to do all the following with his

   wife EXCEPT:

   a. preventing her from going out of the house to visit her

      friends or family

   b. restricting her contacts with people outside the family

   c. beating her (lightly) if she does not show obedience

   d. getting the assistance of the police to forcibly return his

      wife to the marital home if she is absent without his

      leave

   - Power distance

   - Social role

6. In some countries in the Middle East, the consequences for a

   woman and /or a man who are hanging out together without

   being married or relatives are:

   (A) there are no serious consequences

   (B) they might be apprehended

   (C) they might be beaten

   - Values

   - Social role

7. In a typical Middle Eastern family, the husband will most likely

   be perceived negatively if he:

   (A) splits the house chores with his wife

   (B) splits the house expenses between him and his wife

   (C) take care of all the financials

   - Values

   - Social role

   - Power distance

8. To walk or talk in front of a person who is praying in a certain

place is a sign of:

    (A) disrespect

    (B) appreciation

    (C) noninvolvement

- Values

9. In the Middle East, abortion – except under certain medical

circumstances – is:

    (A) a good decision if the husband and wife do not want the

       child

    (B) a serious crime equivalent to murder

    (C) not preferred, but it is still acceptable

- Values

10. An ideal woman is devoted and attentive to

    (A) family's needs

    (B) work's needs

    (C) her own needs

- Social role
- Power distance
- Values
- Collectivism

Part II of section two in the test examined the objective side of Middle East culture.

Cushner and Brislin (1996) defined objective culture as the perceptible and concrete elements of

the culture such as outfit, cuisine, and music. Questions were adapted from the literature that

examined Middle East culture (D'Enbeau et al., 2015; Farhatullah, Ahmad, Sajid, Ali, & Shah,

2014; Ihtiyar & Ahmad, 2015; Osman, 2014). The table below shows the questions that were

used in the survey and the objective culture-related aspects that they addressed.

Table 2

ICC Posttest Objective Culture Section

Question	Objective culture aspect
1- Which one of the following pictures reflect some of the outfits you may encounter in a country in the Middle East? (check all that apply) (A) (B) (C) (D) (E)	• Outfit

2- Which of the following dishes represent popular food/dish

in some countries in the Middle East? (Check all that apply)

a.

b.

c.

- Food

d.

e.

f.

3- If two males meet each other after a long time of not seeing

each other, they will most likely (check all that apply):

- Personal/

physical

space

(A) handshake

(B) kiss each other

(C) hug each other

(D) wave to each other

4- The personal distance while having a conversation between

a male and a female in a Middle Eastern country is

- Personal/

physical

space

(A) relatively far

(B) medium

(C) close

5- The personal distance while having a conversation between

two females in a Middle Eastern country is:

(A) relatively far distance

(B) medium distance

(C) close distance

- Personal/

  physical

  space

6- The personal distance while having a conversation between

two males in a Middle Eastern country is:

(A) relatively far distance

(B) medium distance

(C) close distance

- Personal/

  physical

  space

7- In the Middle East, lunch is served at:

(A) 12-2 pm

(B) 2-4 pm

(C) 4-6 pm

(D) 6-8 pm

- Food

- Time

8- In the Middle East, dinner is served at:

(A) 3-5 pm

(B) 5-8 pm

(C) 8-11 Pm

(D) 11 PM- 12 am

- Food

- Time

9- In the Middle East, you are considered late for your appointment if you're late for: (A) 5 min (B) 10 Min (C) 15 min (D) 20 min (E) 30 min.	 • Time
10- Which one of the following phrases reflect the concept of time in the Middle East? (A) time is precious (B) if something cannot be done today it can be done tomorrow	 • Time

As mentioned above, the initial section of the survey had three questions that addressed demographic information. Such questions were mainly used to reveal the descriptive characteristics of the subject population. Table 3 below shows the questions and demographic information requested from participants.

Table 3

ICC Posttest Demographic Information

Questions	Characteristics
1. What is your gender? (A) Male (B) Female (C) Other (D) Prefer not to answer	Gender
2. When were you born? (A) 1996 or later (B) 1977 to 1995 (C) 1965 to 1976 (D) 1946 to 1964 (E) 1945 and before	Age
3. What is your level of university study? (A) Freshman (B) Sophomore (C) Junior (D) Senior (E) Non-traditional	Education

The Treatment (HERO 1®)

Prensky (2011) found that digital game-based learning is beneficial to students because it is precisely about enjoyment and engagement. It is also about the intermixing of serious learning and interactive entertainment into a newly emerging and highly exciting medium—the digital learning game. Therefore, videogames promote this type of learning, because they adopt an approach to instruction by providing opportunities for interaction and involvement through controlled activities and instructional interventions (Smart & Csapo, 2007).

HERO I® is a role-playing intercultural communication training simulation game that empowers and enables American college students to enhance their intercultural communication skills. HERO I® simulation game is a first-person adventure and educational game that teaches students about Middle East culture by embarking on a journey in which they virtually take part in violence-free, yet action-based, intercultural adventure. By completing the required two levels of the game, the participants were able to recognize, practice, and evaluate the subjective and objectives aspects of Middle East culture. Level 1 focused on the objective Middle East cultural aspects that included (but were not limited to) costumes and outfits, food, and personal space. In level 2, the game touched upon the subjective aspects of the Middle East culture that included (but were not limited to) power, distance, collectivism, and social roles.

The technical aspects of the game are:

- 3D game
- Role playing game (RPG)
- Adventure based
- First-person
- Color Depth

a. 1280x720 resolution using 32-bit color depth PNG files.

- Avatar type

    a. First-person avatar

    b. 3D avatars: representing the rest of the characters in the game.

- Maximum number of players and possible interactions

    a. One player can play the game.

    b. One player against the game's Artificial Intelligence (AI) is the main
    remarkable interaction.

    c. The AI of the game is demonstrated through game characters, places, and
    situations.

Data Analysis

Campbell and Stanley (1963) suggested a t-test as the optimal statistics for the posttest-only design research. As mentioned previously, the data collected through this study pertained to two groups: the control and experimental groups. Thus, the t-test was used to assess whether the means of the two groups were statistically different from each other. To test the significance, Alpha level was set at .05, since this is the level commonly set in most social research (Wrench, 2008).

The use of the t-test in this study was based on the underlying assumptions of the independent samples t-test as specified by Wrench (2008):

- The dependent variable must be an interval or ratio variable. In this study, the performance of the subjects and their knowledge about subjective and objective culture was measured by calculating their score out of 20 in the ICC posttest.

- The independent variable must be a nominal variable. Gender and game play were the two nominal independent variables in the study.

Conclusion

This chapter examined this study's design and methodology. The researcher chose a quantitative approach, wherein data were collect through the use of a posttest-only design. The data were then analyzed using descriptive statistics. Chapter Four will next discuss the analysis of the data and the findings of the study.

CHAPTER FOUR

FINDINGS

Introduction

The study examined the effectiveness of using 3D video games as a training tool for enhancing intercultural competency. To address issues related to the current intercultural training programs in terms of content, methodology, and accessibility, a video game called HERO I® was developed to educate college-age students about the cultural differences between the United States and the Middle East. Not only did the game teach students about the areas of limited cultural understanding, but it also assessed the players' unique levels of cultural awareness through the ICC test that measures that intercultural competency of the subjects. The game adopted a simulation and problem-based training methodology through which trainees embarked on a virtual journey in the Middle East and tried to solve cultural puzzles cloaked with adventurous levels of gameplay to successfully pass the game-based training module.

The Treatments

The study adopted the Posttest-Only Design. A posttest (i.e., ICC test) was administered to two groups to look at the effectiveness of using 3D video games to enhance the intercultural competency of the subjects. One group (control group) did not play the game. The other group (experiment group) played a 3D video game called HERO I®. Both groups received a posttest (ICC test) that measured the subjects' understandings of the cultural differences between the Middle East and the United States. The scores on the posttest were compared to see if there was a difference between the two groups and whether the game had an impact upon the experiment group.

HERO I® is a first-person simulation game that was developed and used for this study to educate the subjects about Middle Eastern culture. The experiment group which played the game completed two levels of the game. By the end of the two levels, the subjects should have been able to recognize, practice, and evaluate objective and subjective cultural aspects of Middle Eastern culture. Level 1 of the game focused on the explicit and tangible aspects of the culture such as outfit, food, and personal space. Level 2 then focused on the implicit and abstract aspects of the culture such as power, collectivism, and social roles.

Both the control and experiment groups took the Intercultural Communication Competency (ICC) Posttest (Table 4). The ICC test aimed at assessing the subjects' knowledge about the cultural environment in the Middle East. The test started with questions that revealed demographic information about the subjects such as gender, age, and level of education. The next section of the test included questions that measured the participants' knowledge about the subjective culture of the Middle East in terms of values, attitudes, and behavior prevalent within Middle Eastern countries. In section 2 of the test, the subjects answered questions pertaining to objective culture of the Middle East in terms of artifacts, outfit, food, and personal space.

Table 4

Treatment Breakdown

Subject group	Treatment	Number of Subjects
Experiment Group	HERO I® & ICC Test	78
Control Group	ICC Test	80

Profile of the Sample

Undergraduate students enrolled in a midsized (i.e., 12,000 undergraduate and graduate students) university in Western Pennsylvania from different disciplines and majors were invited to participate in the study. The sample included undergraduate students from the Communications Media, Computer Science, Sociology, Business, and History departments. The convenience sample did not have any subjects who might have any prior experience living and/or working in the Middle East. There were 78 students in the experiment group and 80 students in the control group for a total of 158 students. In coordination with some of the faculty in the Communications Media, Business, Computer Science, Sociology, and History departments, an e-mail was forwarded to the students within these majors to invite them to participate in the study. In this e-mail, they were asked to visit the Doodle website to sign up for a timeslot. Of 372 students (total number of students enrolled in some of the classes in the above-mentioned majors), 254 students signed up for certain timeslots. However, only 158 students showed up throughout the five-day experiment. According to the power analysis that was conducted to decide on the number of subjects needed for the study compared to the target population, the results indicated that 162 subjects (N= 162) are needed at a confidence level of 90% (CF = .9). Subjects were stratified by ensuring that female subjects were included within each group in a number that was proportional to the number of male subjects within the same group. Stratified sampling is functional as it ensures that subgroups within the population (i.e., males vs. females) has proper representation within the sample. Thus, it captures key population characteristics in the sample. The researcher calculated a proportionate stratification by counting the total number of attendees within each session and dividing them according to the chosen stratification (i.e., gender).

Gender distribution (Table 5) within each group was relatively close. Hypotheses 3 and 4 of the study examined gender differences in relation to intercultural competency. Hypothesis 3 stated that there is no significant difference between males and females in enhancing subjective intercultural communication skills through the HERO I® videogame. Hypothesis 4 stated that there is no significant difference between males and females in enhancing objective intercultural communication skills through the HERO I® videogame. Males represented 61% ($N = 48$) of the total number of the experiment group ($N = 78$). In the control group, males composed 62% ($N = 50$) of the group ($N = 80$). Table 5 demonstrates the gender distribution among groups.

Table 5

Gender Distribution

Gender		Experiment Group	Control group	Total
Female	#	30	30	60
	%	39%	38%	38%
Male	#	48	50	98
	%	61%	62%	62%
Total	#	78	80	158
	%	100%	100%	100%

Statistical Analysis

The four research questions utilized unpaired groups in which the subjects were different. For each research question, differences among individuals were measured. In comparing two groups in each question, an individual in one group could not also be a member of the other group. For this reason, the researcher used an independent t-test to determine whether there was a statistically significant difference between the means in the two unrelated groups.

In order to determine if the groups had similar variance, the researcher used Levene's test to find out about the homogeneity of the variances. The test for homogeneity of variance provides an F-statistic and a significance value (p-value). If the significance value is greater than 0.05 (i.e., $p > .05$), group variances can be treated as equal. However, if $p < 0.05$, this means that the homogeneity of variance assumption is violated. If so, an adjustment to the degrees of freedom using the Welch-Satterthwaite method will take place. Because SPSS was mainly used for the analysis, it automatically made an adjustment for any issues pertaining to the homogeneity of the variances.

Results

RQ1: Does the HERO I® videogame enhance learning of subjective intercultural communication skills?

Research question one measured the impact of playing HERO I® on enhancing the subjective side of intercultural communication. Both groups (i.e., control and experiment) took the same test. In order to find out if there was a difference between the two groups, the researcher formed the following null hypothesis:

H_o1: There is no significant difference between subjects who complete the HERO I® videogame and those who do not in terms of performance on an instrument measuring their subjective intercultural communication skills.

An independent t-test was conducted to determine whether there was a difference between the experiment group ($M = 7.14$, $SD = 2.18$) that played the game and the control group ($M = 5.61$, $SD = 1.21$) that did not in terms of the scores the subjects received in the ICC test (Table 6), specifically, the section of the test pertaining to the subjective culture.

Table 6

H1 Descriptive Statistical Information

Class	N	Mean (ICC Test Scores	Std. Deviation	Std. Error Mean
1.00 (Exper.)	78	7.1410	2.18450	.24735
2.00 (Control)	80	5.6125	1.21690	.13605

Levene's test for equality of variance was significant ($F = 31.98$, $p < 0.05$), so equality of variance could not be assumed (t (df 119.94) = 5.42, $p = .001 (P<.05)$) (table 7).

Table 7

Independent t-test Results for H1

		F	Sig.	t	df	Sig. (2-tailed)	90% Confidence Interval of the Difference	
							Lower	Upper
Scores	Equal variances assumed	31.984	.000	5.451	156	.000	.97464	2.08
	Equal variances not assumed			5.415	119.9	.000	.96960	2.08

Thus, H_o1 was rejected as there was a significant difference between the subjects who completed the HERO I® videogame and those who did not in terms of performance on the ICC test that measures their subjective intercultural communication skills. By investigating the means, the subjects who played the game ($M = 7.14$) scored higher than those who did not play the game ($M = 5.61$).

RQ2: Does the HERO I® videogame enhance learning of objective intercultural communication skills?

Research question 2 investigated the impact of playing HERO I® on developing an understanding of the objective culture. In order to find out if there was difference between the two groups, the researcher formed the following null hypothesis:

H_o2: There is no significant difference between subjects who complete the HERO I® videogame and those who do not in terms of performance on an instrument measuring their objective intercultural communication skills.

An independent *t*-test was conducted to determine whether there was a difference between the experiment group (*M* = 7.47, *SD* = 2.16) and the control group (*M* = 3.33, *SD* = 2.08) in terms of the scores the subjects received on the objective culture section of the ICC test (Table 8).

Table 8

H2 Descriptive Statistical Information

Class	N	Mean (ICC test Score)	Std. Deviation	Std. Error Mean
1.00 (Exper.)	78	7.4750	2.16400	.24194
2.00 (Control)	80	3.3375	2.08031	.23259

Levene's test for equality of variance ($F = 0.117$, $p > 0.05$) showed that the variability between the scores of the two groups was about the same (t (df =158) = 12.33, $p = .001$ ($P<.05$)) (Table 9).

Table 9

Independent t-test Results for H2

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	90% Confidence Interval of the Difference	
								Lower	Upper
	Equal variances assumed	.11	.733	12.32	158	.000	4.137	3.4746	4.8003
Scores	Equal variances not assumed			12.32	157.75	.000	4.137	3.4746	4.8003

Thus, H$_o$2 was rejected as there was a significant difference between subjects who completed the HERO I® videogame and those who did not in terms of performance on the ICC test that measured their objective intercultural communication skills. By investigating the means, the subjects who played the game ($M = 7.47$) scored higher than those who did not play the game ($M = 3.33$).

RQ3: Is there a gender difference in enhancing subjective intercultural communication skills through the HERO I® videogame?

Research question 3 investigated whether there was a gender difference in playing HERO I® and accordingly enhancing the subjective part of the intercultural communication. To find out if there was a difference between the males and females, the researcher formed the following null hypothesis:

H$_o$3: There is no significant difference between males and females in enhancing subjective intercultural communication skills through the HERO I® videogame.

An independent t-test was conducted to determine whether female ($M = 7.2$, $SD = 1.83$) and male ($M = 6.8$, $SD = 1.64$) levels of subjective intercultural communication after playing HERO I® differed (Table 10).

Table 10

H3 Descriptive Statistical Information

Gender	N	Mean (ICC Test Scores)	Std. Deviation	Std. Error Mean
1.00 (female)	30	7.2333	1.83234	.33454
2.00 (male)	48	6.8333	1.64166	.23695

Levene's test for equality of variance ($F = 0.674$, $p > 0.05$) showed that the variability between the scores of the two groups was about the same (t (df=76) = 1.00, $p = .320$ ($P>.05$)) (Table 11).

Table 11

Independent t-test Results for H3

		F	Sig.	t	df	Sig. (2-tailed)	Std. Err	90% Confidence Interval of the Difference	
								Lower	Upper
	Equal variances assumed	.67	.41	1.0	76	.320	.399	-.265	1.06
Score	Equal variances not assumed			.97	56.	.333	.409	-.285	1.08

Thus, H₀3 was not rejected as there was no statistically significant difference between male and female test scores.

RQ4: Is there a gender difference in enhancing objective intercultural communication skills through the HERO I® videogame?

Research question 4 explored the difference between males and females in enhancing their objective intercultural communications after playing HERO I®. In order to find out if there was a difference between the males and females, the researcher formed the following null hypothesis:

H₀4: There is no significant difference between males and females in enhancing objective intercultural communication skills through the HERO I® videogame.

An independent t-test was conducted to determine whether female ($M = 6.9$, $SD = 2.61$) and male ($M = 5.1$, $SD = 2.78$) levels of subjective intercultural communication after playing HERO I® differed (Table 12).

Table 12

H4 Descriptive Statistical Information

Class	N	Mean	Std. Deviation	Std. Error Mean
1.00 (Female)	30	6.90	2.61758	.47790
2.00 (male)	48	5.18	2.78030	.40130

Levene's test for equality of variance ($F = 0.423$, $p > 0.05$) showed that the variability between the scores of the two groups was about the same ($t(\text{df} = 76) = 2.71$, $p = ..008$ ($P<.05$)) (table 13).

Table 13

Independent t-test Results for H4

		F	Sig.	t	df	Sig. (2-tailed)	90% Confidence Interval of the Difference	
							Lower	Upper
Score	Equal variances assumed	.42	.517	2.706	76	.008	.65863	2.766
	Equal variances not assumed			2.744	64.52	.008	.67108	2.753

Thus, H_o4 was rejected as there was a significant difference between females who completed the HERO I® videogame and males who completed the same game on the ICC test that measured their objective intercultural communication skills (Table 10). According to the means, females ($M = 6.9$) scored higher than males ($M = 5.2$).

Conclusion

The purpose of this study was to examine the effectiveness of 3D videogames on enhancement of intercultural communication skills. This chapter demonstrated the results of this study. The data was analyzed using an independent *t*-test. The first research question investigated

whether the HERO I® videogame enhanced learning of subjective intercultural communication skills. Analysis of H_o1 showed that there was a significant difference between the subjects who played the game and those who did not in learning about the abstract concepts of intercultural communication. The subjects who played the game achieved better scores in the ICC test than those who did not play the game. Similarly, research question 2 inquired as to the effectiveness of playing HERO I® in terms of enhancing the knowledge of the subjects about the tangible and concrete side of the intercultural communication. Like H_o1, H_o2 showed that there was a significant difference between the subjects who played the game and those who did not in learning about the objective side of Middle East culture. According to a comparison of the means of the two groups' scores in the ICC test, those who played the game scored higher than the subjects who did not play the game.

Both the third and fourth research questions investigated the gender difference in enhancing intercultural communication skills through playing HERO I®. The third research question examined the gender differences in enhancing the subjective intercultural communication skills through playing the game. Results supported H_o3 and showed that males and females were almost the same in developing their subjective intercultural communication skills after playing HERO I®. On the other hand, results for research question four, which examined the gender difference in acquiring the objective culture after playing the HERO I® videogame, showed that scores of males and females in the ICC test were significantly different. Accordingly, H_o4 was rejected as females scored higher than males in the ICC test after completing HERO I®. In chapter five, the results will be analyzed and linked to the theoretical framework of the study. Furthermore, implications of the results as well as limitations will be discussed.

CHAPTER FIVE

DISCUSSION

Summary

Since the beginning of the 21st century, video games have attracted new users from all over the world. Production companies have become keen to produce social games that enable all family members to play together (Eklund, 2015). Currently, the most popular genre of video games is social gaming (Lee et al., 2013). Video games are now released with new features that allow several players to be connected online and therefore play games together from different locations across the world. Accordingly, higher levels of interpersonal communication competency have become a requirement for successful video game players (Taylor, 2008). Because those players have different backgrounds, languages, and cultures, intercultural communication has become an integral asset in video game design and production. The aim of any production company is to easily interconnect players from different places and cultures to play online games (Samovar & McDaniel, 2007).

The critical value of intercultural communication appeared when people began travelling and they were exposed to other cultures. Although people of different cultures share some basic concepts, they view these concepts from various angles and perspectives, or through their own cultural biases. This can lead them to behave in a manner which can be considered irrational or unacceptable when compared to what some people from other cultures consider to be the norm (Bakić-Mirić, 2012). Potential problems in intercultural communication include, but are not limited to, failure to recognize differences, anxiety, the desire to reduce uncertainty, stereotyping, prejudice, racism, misuse of power, ethnocentrism, and culture shock (Franklin, 2007; Ihtiyar & Ahmad, 2015; Samovar & McDaniel, 2007).

Although intercultural training exists, the weakness of most of the current intercultural training programs are mainly related to the content and method of delivery. The current and available intercultural training focuses on the tangible aspects of cultures such as food, costumes, music, etc. rather than on the invisible or implied aspects of culture such as values, social roles, and cultural dimensions (Hofstede, 2001; Molina et al., 2015). As for the method of delivery, most intercultural training programs require participants to attend seminars and classes, interact with people from other cultures, and participate in role-plays and simulations. However, Gražulis and Markuckienė (2014) found that many attendees find it difficult to attend this type of training, due to the required effort and time commitment related to traveling to face-to-face programs.

The purpose of this study was to examine the effectiveness of using video games in delivering intercultural training that observes the implicit and explicit aspects of the host culture. To do so, a video game called HERO I ® was developed to raise awareness about cultural differences between the United States and the Middle East, assess players' unique levels of cultural awareness, and teach about these differences and/or areas of limited cultural understanding. This study aimed to explore the possibility of using this game to deliver intercultural training to US individuals who have never been exposed to Middle East culture.

Discussion

The first hypothesis stated that playing HERO I® would have an impact on the subjects in understanding the less tangible aspects of a certain culture such as values, norms of behavior, and adopted roles. The subjects in the control group scored lower than their counterparts in the experiment group. Such a finding is supported by the literature in terms of the training and cultural capacities of video games.

The findings indicate HERO I® can act as a training tool for intercultural communication that helps the trainees recognize and understand the subjective elements of the host culture. This finding corresponds to the claim made by Smart and Csapo (2007) in that video games promote experience-based learning because they provide learners with opportunities for interaction and involvement through innovative interventions. This finding also supports the claim that video games are beneficial in addressing cognitive tasks that require utilization of the memory (de Castell, Larios, Jenson, & Smith, 2015). The experiment group demonstrated better cognitive skills in answering the posttest questions pertaining to the cultural, less tangible aspects after playing the video game. The ability of the subjects—as shown in the score they achieved in the ICC test—to find out about the implicit aspects of the culture through playing HERO I® came in harmony with Prensky's (2011) conclusion that constructivist learning is one of the benefits of playing video games. Additionally, the results complement Walsh's (2010) concept about video games and the transferability of skills. He stated that video games provide the learners with an interactive learning experience that enables them to transfer the skills they learned into other contexts.

In terms of intercultural communications, HERO I® helped the subjects recognize the abstract aspects of the host culture (i.e., the Middle East). This is a critical and essential finding as Hofstede (2001) mentioned that failure in intercultural communication mostly takes place on the subjective aspect of the culture. HERO I® tackles abstract values such as collectivism, power, and distance (Hofstede, 1983). Such cultural values have been described as vague and confusing aspects of any culture because they may radically vary from one culture to another (Shuping, 2016). By playing HERO I® and then taking the ICC test, the subjects demonstrated a better understanding for such abstract concepts. Hence, HERO I® could be a potential tool to clear out

any vagueness or confusion resulted from the values of the host culture. In relation to Kim's (2001) Adaptation Theory, HERO I® is expected to be a helpful tool to help travelers understand the communication system in the Middle East. Thus, the video game might be a tool of adaptation and anxiety reduction for those who will play it. This happened when HERO I® assisted the subjects to achieve a refocusing of interactions (Kim, 2001; Lee et al., 2013). In this process, HERO I® is speculated to walk future players through the communication system of the host culture (i.e., the Middle East) and have them be aware of the difference between the host culture and the old culture.

The second hypothesis stated that playing HERO I® enables the subjects in the experiment group to better understand the objective side of the culture than those in the control group. The objective side of the culture has to do with the visible cultural aspects such as food, outfit, and distance (Cushner & Brislin, 1996). A better comprehension of this cultural aspect can be assumed from the significant difference in the scores achieved by the two groups in the ICC test. In light of Bennett's (2003) developmental model of intercultural sensitivity (DMIS), the subjects who played HERO I® reached an advanced ethnorelative stage by being able to integrate the cultural differences into the context of the game. According to Bennett (2003), the ethnorelative stage of integration in intercultural communication is achieved when the individual is able to form his/her cultural knowledge by intertwining different cultural perspectives with none being central. In reference to the Uncertainty Reduction theory, HERO I® might be a tool to help individuals reduce their anxiety when placed in a foreign culture (Franklin, 2007; Lewis, 2006; Lizardo, 2012). This anxiety-reduction strategy will take place when future gamers play HERO I® and consider it their "cultural dictionary" (Kotthoff, 2007). Thus, HERO I® will function as a reference that the individual can refer to every now and then to know about the

tangible aspects of the host culture and therefore reduce his/her level of anxiety in communicating with other cultures. Scholars encourage the use of a cultural reference as it improves the intercultural competency of the individuals (Cornes, 2004; Cushner & Brislin, 1996; Gudykunst, 2010; Kotthoff, 2007; Spreckels & Kotthoff, 2007)

Also, this finding emphasizes the importance of experiential learning. The subjects were involved in a cultural assimilator (i.e., HERO I®) and therefore were able to virtually experience different cultural aspects of the host culture (Smart & Csapo, 2007). Although Wang and Kulich (2015) suspected the effectiveness of using cultural assimilators because they were mainly tailored for business needs, the results of the subjects in the experiment group in the ICC test cast doubt upon the aforementioned claim. HERO I® as a cultural assimilator can easily be used by the general public and address their needs. The video game addresses general cultural areas such as food, outfits, and physical interaction. Those aspects are both tangible and generic.

In addition, the results show that HERO I® demonstrates experiential learning by functioning as a scaffolding tool for the subjects. According to Molenaar, Sleegers, and Boxtel (2014), scaffolding in video games occurs when a more knowledgeable entity (e.g., avatar) creates conditions that allow a novice to practice and build skills and knowledge in order to further develop his/her game competence. The HERO I® design ensures that the subjects are introduced to the input first, and then go through a series of cultural adventures based on their understanding to this input. Scaffolding is clearly demonstrated in HERO I® through the feedback system that allows the subject to go back to the input whenever he/she made any mistake. Additionally, Moline (2010) found that the multiple level-based videogames are a clear example of scaffolding and hence experiential learning. HERO I® satisfies this view as it consists of six levels. The subjects use the initial levels to build up more knowledge and learn instructions

about the host culture. Then they become more autonomous and rely on the skills developed in the easier levels to overcome the more difficult levels (Chan, 2012; Moline, 2010; Salen & Zimmerman, 2003).

The third as well as the fourth hypotheses shed light on the gender difference in playing video games aimed at intercultural training. Hypothesis three stated that there was no significant difference between males and females in understanding the subjective aspect of intercultural communication through playing HERO I®. This similarity could methodologically be attributed to the manipulation of the independent variable in the sense that the number of males who played the game was not equal to the number of females. Thematically, this similarity in performance between males and females might be attributed to the playing style adopted by females. Research has stated that women adopt different playing styles which are typically related to their cultural and social perceptions and experiences (Chen, 2010; Poels et al., 2012; Walsh, 2010). Unlike violent and sports games, HERO I® does not require any specific style of game play. It is based on overcoming a series of adventures related to the abstract aspects of the host culture. Hence, males and females were expected to perform relatively the same.

The fourth hypothesis stated that a significant difference occurs between males and females in understanding the objective side of the culture through playing HERO I®. Females scored higher than males in the ICC test, implying that females can better understand, synthesize, and apply the input they received when playing the game. This finding can be interpreted in light of McQuivey's (2006) research wherein female video game players are more involved in their gameplay when compared to male players. Terlecki and Newcombe (2005) mentioned that males, as video game players, perform better in violent video games. However, HERO I® does not have violent themes and, therefore, males' superiority in the game was not well manifested.

Thus, females had more room for improvement and scored higher in the ICC test as a result of playing the game. In addition, females are more into video games that focus on social interaction and collaborative, instead of competitive, gaming elements (Vermeulen & Van Looy, 2016). These features are clearly demonstrated in HERO I® as the game tackles the cultural and social aspects of the Middle East and position the player as a truth-seeker who has to collaborate with the video-game system to find out about the host culture. Hence, in light of Standpoint theory, the research findings that females scored better than males were strongly supported, as women in society are encouraged to be emphatic, social, and kind (Moreton-Robinson, 2013) .

Implications

The findings imply that digital interactivity is a successful factor in intercultural training. Video games may provide a successful platform to utilize the required interactivity. This interactivity is demonstrated through the player's attempt to interact with different cultural elements and properly use them within the right context. Because video games are based on the concept of the magic circle that is governed by certain rules and behaviors (Salen and Zimmerman, 2003), video games can easily make use of the magic circle and impose cultural rules and behavior that allow the player to develop intercultural competency. The findings imply that the magic circle may function as a virtual place where players can perform and master objective and subjective elements of the host culture.

The findings of the study contribute to the proposed theoretical framework as demonstrated by the theories of uncertainty reduction, gender role, and standpoint theory. Although the three theories focused on communication and gender within certain settings, they do not explicitly examine emerging media as a communication means that can enhance or hinder

communication competency. This study examined the use of video games as a potential tool for encouraging communication among individuals who belong to different cultures.

Uncertainty reduction theory assumes that communicating with new acquaintances for the first time creates a cognitive discomfort that people will try to reduce (Franklin, 2007; Gudykunst, 2010; Lewis, 2006; Lizardo, 2012). The study's findings show that video games that address cultural differences among individuals may have an impact upon reducing the cognitive discomfort that dominates the communication process. So, the study suggests that new media— represented video games—may function as a preliminary tool that enables senders and receivers to be introduced to cultural patterns that they might encounter when they exchange information with each other. (Gudykunst, 2005) outlined some concepts related to uncertainty reduction such as information seeking. According to this concept, individuals—when encountering each other for the first time—obtain more information about each other passively through information and/or actively through conversation. The study's findings suggest that video games may function as a passive tool to ease the cognitive discomfort related to the tangible aspects of the other culture where the other individual comes from. Also, Kotthoff (2007) suggested three stages of communication through which uncertainty avoidance advances: entry, personal, and exit. The researcher proposes that HERO 1® may functionally enhance and fit in with the personal stage of communication. In this stage, communicators share personal information including lifestyle, attitude, and values. The game will thus allow communicators to identify and be introduced to those aspects away from the influences of any social constraints.

Gender role theory assumes that males and females have different skills, capabilities, and behaviors based on the roles that they have been assigned by social structures. The findings of the study imply that female video game players demonstrated a better understanding of the

tangible part of a culture than males after playing HERO 1®. Thus, video games may function as a predictor of the communication capabilities of females versus males within certain social and cultural contexts. Although the theory is used to explain the gender difference in communication, it does not investigate video games as a means of communication. Thus, the study contributes another dimension to the theory focusing on the role of emerging and digital media in exploring gender roles in using video games as a tool for enhancing intercultural communication competency.

Similarly, the standpoint theory looks at the power inequality between males and females from a socio-cultural perspective. The results challenge the stereotypes of females as game players. The prevailing view privileges males in their perceived superior capability to play video games. However, the study showed females achieving better scores than males, especially in the part of the game related to the objective culture. This finding is an initial step toward forming a standpoint that places female video game players on a relatively equal foot with male video game players. Moreover, the findings suggest that females might be similar or even better than their male counterparts in communicating interculturally through the lens of objective culture.

The study implies that the use of video games is functional on the levels of interpersonal and intercultural communication. Hence, video games may positively influence the intercultural competency of a player. In terms of interpersonal communication, the results as reported in the ICC test after playing the game show the players demonstrating a better understanding of the dispositional factors of interpersonal communication. Thus, video games may function as a productive training tool by which to address abstract aspects of the communication process. Consequently, HERO 1® is expected to address the learning needs of young students whose visual learning style can help them understand abstract concepts.

Moreover, because intercultural communication is an integral part of interpersonal communication, the findings imply that video games are highly likely a pragmatic training tool by which communicators may identify the differences between the host and guest cultures. Thus, emerging media may work as an interactive point of reference for individuals placed in a different culture. The feedback system attached to video games helps individuals predict the consequences of not observing the proper cultural codes and the impact upon the communication process across cultures. Also, the findings imply that the players may successfully formulate a cultural schema that helps them raise their awareness about cultural differences. The more the players become aware of such differences, the better they communicate within the host culture.

Intercultural competency is a necessary predictor of an individual's behavior when he/she communicates across different cultures. The study suggests that video games can be used as a screening tool for individuals who plan to experience and interact with different cultures. As the player who is able to finish the game demonstrates a compatible intercultural competency, he or she has the cultural capacity to recognize the cultural differences and apply them to real-life situations within the host culture. Also, the findings imply that HERO 1® can be used as a diagnostic tool for individuals who refuse to mingle with individuals coming from different cultures.

Limitations

Certain limitations may have influenced the results. The version of HERO 1® that was used in the experiment is a prototype. Therefore, some of the playable levels had technical issues while the game was played. Some subjects had to restart the game in order to overcome such issues. As a result, the time the subject spent to finish the game was relatively longer than the original allotted time for playing the game. Two subjects decided to quit the experiment because

they did not have time to start over. Thus, their results were discarded. Also, the prototype has fewer levels than the original game design document. However, this did not affect the results of this study, as the part of the game used to collect the data contained all the necessary cultural elements that need to be examined. Still, it is possible that future results may vary if the completed game is played by the subjects. Finally, because 3D game design was not part of the study investigation, this may result in a less attractive User Interface (UI) and graphics compared to the commercial games that the subjects may usually play.

Future Research

Future research may investigate the role of video game design aspects in affecting the outcome of HERO 1®. Design aspects include, but are not limited to, User Interface, graphics, virtual 3D representation, and visual and spatial interactivity within virtual reality settings. Those aspects are expected to lead to better results as they allow more space for physical interactivity. Also, future research is encouraged to focus on the use of commercial and best-selling video games for training purposes. Finally, future research should have an increased focus on examining the differences within the female group rather than only focusing on the differences between male and female groups.

Conclusion

This study examined the effectiveness of using HERO I® to enhance intercultural communication skills. HERO I® was designed and developed to address the cultural differences between the Middle East and the United States as well as to also educate the trainees about those differences. The subjects in this study have never been to the Middle East before. So, their scores in the ICC Test were a relatively true indication as to what they gained from playing the game as

a training tool. The content of the game covered Hofstede's (1983) cultural dimensions and Cushner and Brislin's (1996) subjective and objective elements of culture.

Results and findings implied that playing 3D video games to learn more about the host culture may be a good strategy to reduce uncertainty while dealing with the host culture. According to Franklin's (2007) Uncertainty Reduction Theory, individuals experience high levels of uncertainty when they are attempting to ensure effective communication in intercultural encounters. Additionally, scholars have postulated that the level of anxiety and uncertainty depends on the level of communication skills, motivation, and knowledge of general and specific cultural factors that the person demonstrates (Franklin, 2007; Gudykunst, 2010; Lewis, 2006; Lizardo, 2012). The literature suggests other strategies to reduce uncertainty and anxiety such as the use of a cultural dictionary, de-individuation, and cultural identity (Cornes, 2004; Cushner & Brislin, 1996; Gudykunst, 2005; Spreckels & Kotthoff, 2007). Video games were neither tested nor explicitly suggested as a tool for overcoming intercultural anxiety and uncertainty. Thus, the current study proposes that playing 3D video games about cultural differences might be an effective tension-reducing tool. It may promote information-seeking behavior and therefore help the gamers communicate effectively with the host culture.

Results suggest that playing 3D video games that tackle cultural differences with the host culture nurtures the ability of "refocusing of interactions." According to Kim (2001), effective communication within the host culture depends on the level of awareness and understanding of the host communication system; hence, that playing HERO I® may help the gamers to accept the host environment and develop an intercultural identity. The results also imply that females are likely more able than males to construct this identity. The game provided the gamers with an extended experience of trial and error, an experience that females were better at. Thus, gamers –

specially females - will be able to achieve deculturation from the old culture and develop more tolerance towards the host culture.

Results also suggest that playing video games that address the host culture leads to a better understanding of cultural dimensions (Hofstede, 1983). Subjects who played the game showed a better understanding of the concepts of collectivism, high-context, power distance, masculinity, and indulgence. Hofstede (2001) and Cushner and Brislin (1996) emphasized that failure in cross-cultural communication tends to be due to the failure in recognizing and handling those dimensions. Thus, 3D video games may work as a functional training tool that helps trainees achieve a better understanding of this subjective level of the culture.

In terms of gender differences, results showed that males and females were relatively similar in dealing with this level of culture. This similarity between males and females can also be perceived in light of the standpoint and gender-role theories. Stereotyped gender expectations exist within cultural interactions (Molina et al., 2015). Gender role theory states that individuals act within any social context based on how their gender is perceived by the culture (Wohn, 2011). Similarly, standpoint theory complements this view by stating that women in society are framed as outgoing, sensitive, and emotional, while men are conservative, courageous, and decisive (Moreton-Robinson, 2013). HERO I® did not involve any violent or aggressive content, yet it focused on social and cultural aspects. Therefore, female subjects were more into the game as it emphasizes their role in society. In terms of video game play, while women have lower levels of video game experience, they may improve such experience if they increase their video game usage and involvement (McQuivey, 2006). Research has also found that the social and cultural perceptions about gender decides the playing style of the males and females as video gamers (Chen, 2010; Walsh, 2010). Thus, the study revealed that females are expected to achieve

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equal to or higher than males in video game play provided that the game is void of any themes

that are not gender-neutral.

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Appendix A

Request for Participation E-mail

I am writing to you to request your participation in a brief study. As you may recall from my visit to your class, I am recruiting university students to participate in a study that investigates the use the 3D video games as a training tool to enhance intercultural communication competency. Click on the link below to sign up for a date and time to complete the study. Participation in the study will take between 30 and 45 minutes.

During that time, you will play a 3-D video game focusing on the development of intercultural communication competencies. You will then answer some questions about the game and yourself. Anyone who completes the game and survey will be entered to win one of two $100 Amazon gift cards.

If you have any questions, please contact me at a.k.yousof@iup.edu. Thank you very much for your time and cooperation!

Sincerely,

Ahmed Yousof
Doctoral Candidate
Communications Media and Instructional Technology
Indiana University of Pennsylvania

Link to Doodle Poll for Sign Up

Appendix B

Consent Form

You are invited to take part in a research study of the use of 3D videogames in enhancing intercultural communication competencies. Your participation in the study will take approximately 45 minutes of playing a 3D game and filling a 23-item survey. There are no known risks or discomforts associated with playing this game (i.e. HERO I®) nor completing the survey. The latter includes some demographic as well as cultural questions that measure your knowledge and understanding of cultural aspects in the Middle East. By participating in this research study, you may be one of two participants who will randomly be selected to win a $100 gift card from Amazon.

Your participation in this study is completely voluntary, and as such you are free to decide not to participate in this study or to withdraw at any time by simply not taking the survey or playing the game at any time without adversely affecting your relationship with anyone at the university. You may also contact the researcher, Ahmed Yousof, at vfts@iup.edu , or the advisor, Dr. James Lenze, at jlenze@iup.edu

Your information will be kept strictly confidential and digital data will be stored in secure computer files. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified. You must be 18 or older to participate in this study. If you have questions or want a copy or summary of this study's results, you may contact the researcher at the email address: a.k.yousof@iup.edu.

Principal Investigator   Faculty Advisor
Ahmed K. Yousof   Dr. James Lenze
vfts@iup.edu   jlenze@iup.edu
122 Stouffer Hall   127 Stouffer Hall
1175 Maple Street,   1175 Maple Street,
IUP   IUP
Indiana, PA 15705   Indiana, PA 15705
Phone: 724-357-5691   Phone: 724-357-2492

_____
Signature:

_____
Date:

THIS PROJECT HAS BEEN APPROVED BY THE INDIANA UNIVERSITY OF PENNSYLVANIA INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS (PHONE 724.357.7730)

Appendix C

Survey

You are invited to take part in a research survey about the use of 3D videogames in enhancing

intercultural communication competency. Your participation in this survey will require

approximately 10-15 minutes. There are no known risks or discomforts associated with this

survey. By completing this instrument, you may be one of two participants who will randomly

be selected to win a $100 gift card from Amazon. Taking part in this study is completely

voluntary. If you choose to be in the study you can withdraw at any time without adversely

affecting your relationship with anyone at Indiana university of Pennsylvania. Your responses

will be kept strictly confidential, and digital data will be stored in secure computer files.

Clicking the "Next" button below indicates that you are 18 years of age or older, and indicates
your consent to participate in this survey.

NEXT

1- **What is your gender?**

(E) Male
(F) Female
(G) Other
(H) Prefer not to answer

2- **When were you born?**

(F) 1996 or later
(G) 1977 to 1995
(H) 1965 to 1976
(I) 1946 to 1964
(J) 1945 and before

3- What is your level of university study?

(F) Freshman

(G) Sophomore

(H) Junior

(I) Senior

(J) Non-traditional

PART I: Subjective Culture:

1- **The grandfather in a middle eastern family will most likely:**
   (D) be placed in a nursing home
   (E) be consulted for any major decision related to the family
   (F) be the decision maker in the family

2- **Once you become close to a girl from the Middle East, it is expected from you to:**
   (D) consider her your girlfriend
   (E) talk to her family and propose to her
   (F) invite her to move in and live with you.

3- **Communications in the middle east tend to be:**
   (D) Direct and brief
   (E) Indirect and elaborative
   (F) Neutral

4- **In dealing with government organizations in some countries in the Middle East, it is important to:**
   (D) offer the employee extra money to get your job done
   (E) be present at 7 am when the workday normally starts in those organizations
   (F) check the weather conditions before you go out

5- **A husband has the authority to do all the following with his wife EXCEPT:**

   (A) Preventing her from going out of the house to visit her friends or family

   (B) Restricting her contacts with people outside the family

   (C) Beating her (lightly) if she does not show obedience

   (D) Getting the assistance of the police to forcibly return his wife to the marital home if she were absent without his leave

6- **In some countries in the Middle East, the consequences for a woman and /or a man who are hanging out together without being married or relatives are:**

(D) There are no serious consequences

(E) They might be apprehended

(F) They might be beaten

7- **In a typical Middle Eastern family, the husband will most likely be perceived negatively if he:**

(D) Split the house chores with his wife

(E) Split the house expenses between him and his wife

(F) Take care of all the financials

8- **To walk or talk in front of a person who is praying in a certain place is a sign of:**

(D) Disrespect

(E) Appreciation

(F) Noninvolvement

9- **In the Middle East, abortion – except under certain circumstances – is:**

(D) A good decision if the husband and wife do not want the child

(E) A serious crime equivalent to murder

(F) not preferred, but it is still acceptable

10- An ideal woman is devoted and attentive to

(D) Family's needs

(E) Work's needs

(F) Her own needs

PART II: Objective Culture

11- Which one of the following pictures reflect some of the outfits you may encounter in a country in the Middle East (check all that apply)

(F)

(G)

(H)

(I)

(J)

12- Which of the following dishes represent popular food/dish in some countries in the Middle East. (Check all that apply)

(A)

(B)

(C)

(D)

(E)

(F)

13- If two males meet each other after a long time of not seeing each other, they will most likely (check all that apply):

(A) Handshake
(B) Kiss each other
(C) Hug each other
(D) Wave to each other

14- **The personal distance –while having a conversation between a male and a female in a Middle Eastern country is (clearer pictures are needed)**

(D) Relatively far distance
(E) Medium distance
(F) Close distance

15- **The personal distance –while having a conversation - between two females in a Middle Eastern country is:**
(A) Relatively far distance
(B) Medium distance
(C) Close distance

16- **The personal distance –while having a conversation - between two males in a Middle Eastern country is:**
(A) Relatively far distance
(B) Medium distance
(C) Close distance

17- **In Middle East lunch is served at:**
(E) 12-2 pm
(F) 2-4 pm
(G) 4-6 pm
(H) 6-8 pm

18- **In Middle East dinner is served at:**
(E) 3-5 PM
(F) 5-8 pm
(G) 8-11 Pm
(H) 11 PM- 12 am

19- **In Middle east, you are considered late for your appointment if you're late for:**
(F) 5 min
(G) 10 Min
(H) 15 min
(I) 20 min
(J) 30 min.

20- **Which one of the following phrases reflect the concept of time in the Middle East**
(C) Time is precious
(D) If something cannot be done today it can be done tomorrow

Appendix D

Screen Captures and Scripts from the HERO 1® Game

Scene	Visual	Description	Interaction	Narration/on-screen text
1.1		Game Menu	Player clicks on one of the buttons: "Middle Eastern *or* American". For the sake of this prototype, the player will have the button: "American" active, while the other button "Middle Eastern" is not.	None

1.2		Game Menu	Player clicks on "New Game" button. The rest of the buttons – for the sake of this prototype – are not active.	None
1.3		Static Screen	Player listens to a narration. After the narration is complete, the player will click anywhere to proceed to the following scene.	"Over 350 million people live in the Middle East. Arabs constitute the majority ethnic group in all of the Middle East states except Iran, Israel, and Turkey. In addition to ethnicity, the peoples of the Middle East are differentiated by their religion. Most of the people in the Middle East practice Islam. They are referred to as Muslims. Islam is the dominant religion in all of the Middle Eastern states except Israel and Palestinian areas. For centuries, most of the Middle East was

			under the political control of the Ottoman Empire, which was centered on Istanbul, which is in present-day Turkey. During the 1990s, some states in the Middle East have been moving slowly and tentatively toward greater democratization. Already well established in Israel and Turkey, democracy has begun to show signs of taking root in many--though not all--of the Middle Eastern states. The Middle East, for the purposes of this game, includes the states of

gypt • Qatar • Syria
Saudi • Bahrain • Turkey
abia • Kuwait • Lebanon
Yemen • Iran • Jordan
Oman • Iraq • Israel
United
ab
irates
AE)

It is important to note that at this time there is no state of Palestine--only territories (the Gaza Strip and portions of

				the West Bank) within the Middle East that are controlled by the Palestinian National Authority. "
1.4		Airport	Player listens to a narration. After the narration is complete, the player will click anywhere to proceed to the following scene.	"The majority of Arab women dress conservatively. In the Arabic countries you will find a variety of traditions. Many women dress in clothes that do not cover their faces or hair, while others cover them and it all depend on the country they reside, their personal choice, or social level. A very conservative woman might wear a long black garment called "Abayah" that covers the body from the shoulders down to feet. Under this cover she could be wearing a traditional Arabian dress, "thawb", or she could be wearing the latest style designer clothes. In addition to the Abayah, a very conservative woman would wear a face and head cover. Some women would wear the

			Abayah without the head and face cover, while others might wear a scarf-like cover called "Hejab" to cover the hair only and not the face. As well, many women wear the latest style clothes without an Abayah or Hejab depending on the country they reside in. In some countries, like Saudi Arabia, you never find women in the streets without the Abayah whereas in other countries such as Jordan, Iraq, Syria, Lebanon and Egypt you find a mixture of women either wearing the Hejab, Abayah, or casual jeans, shirts, and long skirts. The same goes for men and depending on the country they reside in or whether they live in a rural or urban area you will find men wearing the western style clothes or they might wear the traditional "Dishdasha", or "Thawb". It is an ankle-length garment,

					usually with long sleeves, similar to a robe. It is typically worn by men in the Arabian Peninsula and some surrounding countries. It is normally made of cotton, but heavier materials such as sheep's wool can also be used, especially in colder climates."
1.5			Street	The player – using the arrows in the keyboard – will try to find a cloth shop to enter	SFX: Typewriter sound in the background: The Middle East has been taken over by aliens who aims at isolating it from the rest of the world. Those aliens look like Middle Easterners and interact with anyone at any place to know if they belong to the Middle East culture. The officer, the cashier, the sales associate ..etc might be an alien. When you deal with them, you have to be careful not to make any cultural mistake. Otherwise, you will lose points. Show them that you know well about this culture.

1.6		Cloth shop	The player will listen to the instructions	"Pick the items that an Arab male or female will put on.
1.7			The player will move from one room to another within the shop and use the mouse and click on the cloth items that may be used in Middle Eastern Culture	None

| 1.8 | | Restaura nt | Player will listen to a narration and then click anywhere on the screen to proceed to the following screen | The dining etiquette is almost the same. In some of the Arab countries – for example - people traditionally dine without utensils; they scoop up food with their thumb and two fingers or pita bread. It is proper etiquette to try every plate on the table. If a guest does not leave food on his plate, the host generally fills it immediately.

Middle Eastern cuisine is the cuisine of the various countries and peoples of the Middle East. The cuisine of the region is diverse while having a degree of homogeneity. It includes Arab cuisine, Persian cuisine, Israeli cuisine, and Turkish cuisine. Some commonly used ingredients include olives and olive oil, pitas, honey, sesame seeds, dates, and parsley. Some popular dishes include Kebabs, Dolma, and Shawarma. Both Breakfast and dinner are the same. |

				People have light dishes such as cheese, eggs, and cereals. Working classes may add "foul" that is Fava Beans, falafel, and bread. Rice, meat, chicken, and vegetables are served over lunch. Moslems do not eat ham, or pork or drink beer.
1.9		Dining table	Within a certain time limit, the player will need to use the mouse and click on the permissible food items that can be eaten in the Middle East	None

| 1.10 | | | Street | The player will listen to the narration. Then click anywhere to proceed to the following screen | The Middle East prefer a lot more physical contact between the same gender during normal conversations. Some Muslim countries in the Middle East have strict cultural rules about touching. Men and women cannot touch, even casually, in public. You will not see couples, even married, walking down the street holding hands. It is also normal to find two women often walk holding hands and men can be seen walking arm in arm with one another. Also, it is normal that two men hug and kiss each other if they have not seen each other for a long time. The same thing applies to women. |

| Scene 1.11 | | Street (First person view) | 1. The player (who is a first person) will be walking down the street passing other people who also walks in different directions. A woman stopped him to ask for something and she stretched her had to shake hand with the player. 1.A The player will stretch his hand and shake hands with her. (Point missed; score gets lower) 1.B The player will NOT stretch his hand and shake hands with her. (Point earned) 2. the player (who is a first person) has finally met someone he knows. They have never seen each other for years 2.A: the player will hug and kiss the | |
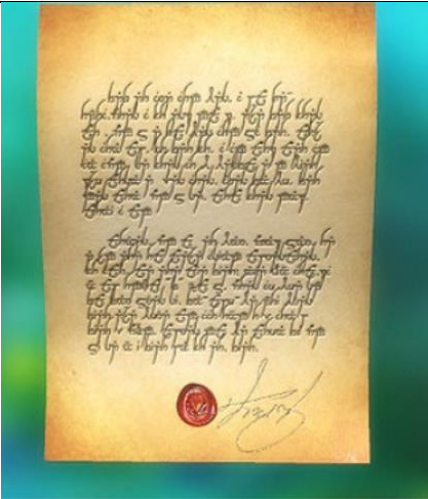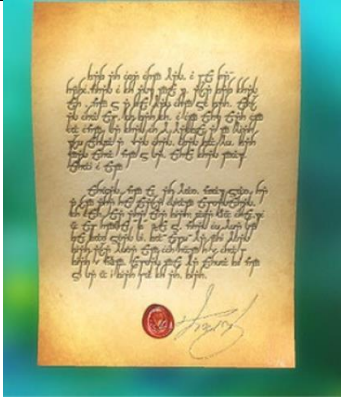
			person (point earned) 2.B: the player will just shake hands (point missed; score gets lower)	
2.1		Static Screen	Player will listen to the narration and then click anywhere on the screen to move to the following screen	There is an active debate in most Middle Eastern communities about how much Western culture and can and should be adopted before such influences begin to compromise their culture, traditions, and identity. This level will require defining that identity to some degree. Will Middle Easterners characterize themselves as Egyptians, Turkish, or Jordanians? Muslim? Arab? A resident of a particular village? A member of a particular tribe? Most importantly, in what order would they prioritize these qualities? These are not easy questions specially that identity and values

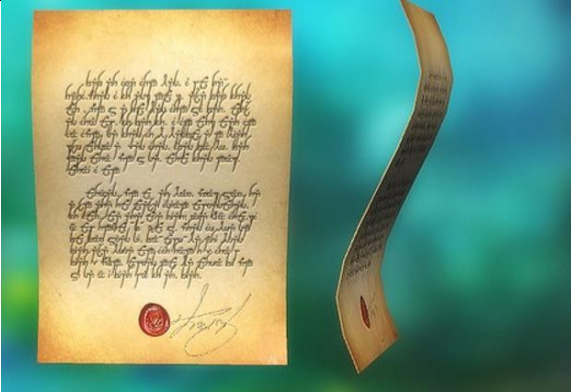|					are things that are invisible and abstract.
2.2		Room	The player will listen to the context and what he is required to do. Then, he can click anywhere on the screen to proceed to the following screen.	You managed to get in the safe house. This house has five residents and three rooms. With you and your Middle Eastern friend joining them, the number of people in this house has become seven. One of the other six members is not a Middle Easterners. In fact it is an alien who is pretending to be a middle easterners. This time, you will be proactive and try to find the alien. Your task is go to each room; search for evidences that can help you identify the alien.	
2.3		Office	Using the arrows, the player will walk around the house till he finds the office room. Any other rooms should be locked.	Middle Easterners respect positions of power and people in authority more than in the USA. There is more formality between leaders and followers. Middle Eastern leaders are expected to have privileges that others may not. Leaders are seen as knowledgeable	

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				and strong and are depended on to make decisions.
				This concept is applicable to families in the Middle East. The Middle Eastern family is the dominant social institution through which persons inherit their religion, social class, and identity. The family is often thought of as a hierarchical pyramid (as far as age and sex are concerned) and what befell one member is thought to bring honor or shame to the entire family. The communication style of many Arabic families tends to be hierarchical in nature. This vertical style can lead to miscommunication between persons in authority (grandparents and parents) and subordinates (grandchildren and children).
				The traditional Middle Eastern family is patriarchal. Fathers and grandfathers are considered the dominant

				force and completely control the family. No one questions the father's authority — for example - over his wife, children, and grandchildren. He is a strict disciplinarian and he demands respect and obedience from the family.
2.4		Office	One of the documents will be in between the books. The player can Identify it by noticing that part of it is popping out of the stacks of books) (the other document will be within a bottle that does not have a cap on it). To get the document, the player will need to click with the mouse in the where the document is hidden.	In this room, there are two documents that explain more details about the family members who live here. Unfortunately, one of them is fake. Find both documents, read them well, and then get rid of the fake one.

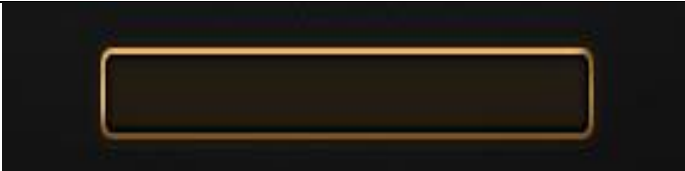| 2.5 | | Paper on the screen | The player should find the first paper among the books on the shelf. He/she should recognize it by noticing part of it popping out of the book stacks on the shelf. The gamer clicks on this part using the Right Mouse Button. Then, the screen will show the paper and the following text written on it: | " June 4th, 2006, Today, my grandson has talked to me about his desire to propose to his colleague in the same department . His dad – my son – is in disagreement with him. He does not like the girl because she belongs to a lower social class. She also works as a server , a part time job, in a restaurant. I see his point that he loves her, but he won't be able to propose to her unless his dad and Mom approve his marriage. This is a dilemma to me. I love my grandson and want him to be with the person he chooses. At the same time, I see my son's point of view. 30 years ago, I prevented my son from proposing to a girl he was in love with her because she was not socially competent. I was a university professor at that time, while her dad was just a typist in the admission office. This could have never happened. After |

				all, I am the grandfather here and have the final say. I think I will ask my grandson to quit the idea. Signature,
2.6		Office	Using the arrows in the keyboard, the player will search for the second paper.	None
2.7		Paper on the screen	The player should find the second paper in a bottle. He/she should recognize the bottle that is on a table among other bottles. The gamer clicks on the bottle. Then, the screen will show the paper and the following text written on it:	" June 4th, 2006, Today, my grandson has talked to me about his desire to propose to his girlfriend. She works as a server in a restaurant. I am proud of him. He has completed his B.Sc in Media. I can see that he truly loves her. She has been his girlfriend for 4 years. Although his dad and mom have some concerns about her, he will proceed with his decision of

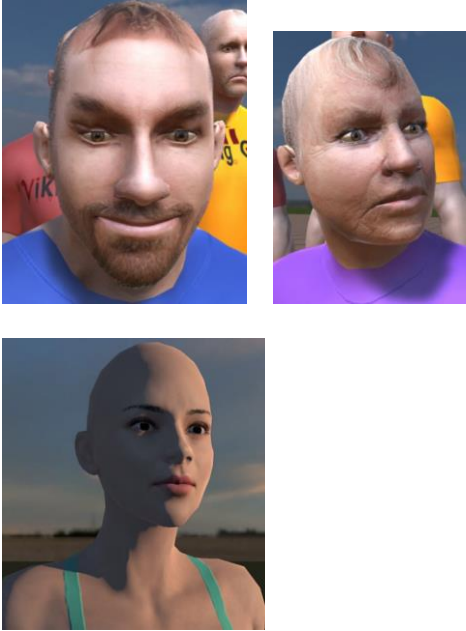|					
					proposing to her hoping that they will like her by time. I love them all. I can't wait to attend his wedding. I hope he will be as kind-hearted as his dad who is taking care of all my expenses in this lovely nursing house. I hope he won't regret his decision of marrying his girlfriend. Signature,
2.8			Two papers on the screen	The player will have the two papers displayed on the screen. He/she will use the Right Mouse Button to click on the paper that represents power distance in Middle Eastern families.	Which paper is the one that is fake; it does not reflect the Middle Eastern power distance in the Middle East.

| 2.9 | | Room | Using the arrows, the player will walk around the house till he finds the dining room. Any other rooms should be locked. | For most Americans the word family denotes a social unit consisting of husband, wife, and children. In Arab culture, the concept of family is much broader. An Arab's family is his kin group (or clan), which probably includes several households and all male first cousins on his father's side. The members of this group usually live in close proximity to each other, meet frequently, celebrate feasts and other occasions together and coordinate their business and political activity. In America, one normally sees the needs of his immediate family as being first and foremost among social concerns. In the Arab World, a different norm prevails. An Arab may |

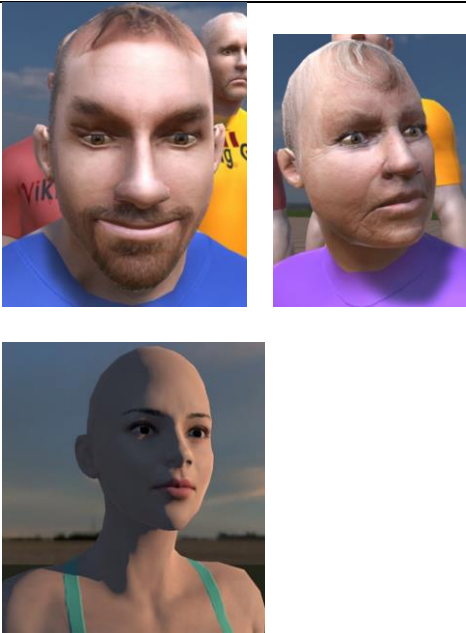|				
				deny his own children for the sake of a brother, nephew, or cousin when clan interests so dictate. Once you find the dining room, do not enter. Just listen to the conversation taking place in this room. Make sure that you won't be visible to the people having conversation in the room, otherwise, you will lose points.
2.10		Dining room	The player will be in a static position, any movement that will make him visible to the other two characters, will make the scene ends.	In this room, there is a conversation taking place between the husband and the wife. Listen carefully, but make sure that they will not see you.

2.11		Dining Room	The player will be in a static position, any movement that will make him visible to the other two characters, will make the scene ends.	Excellent! Now, wait! another conversation will take place between the daughter and her brother
2.12			Two buttons will be on the screen: one of them has the text "Husband-wife", while the other one "sister-brother". The player will click on one of them using the Left Mouse Button	

| 2.13 | | | Using the arrows, the player will walk around the house to find the living room. Any other rooms should be locked. | Middle East countries are very high context, meaning that people from this region take into consideration all the different aspects of a certain event in order to get the true understanding of it. Hidden meanings can be found by analyzing the situation as a whole. On the contrary, the meaning of words in USA can be taken directly from the message, without the necessity to analyze the whole context. When talking about something that they have on their minds, a Middle Eastern individual will expect his interlocutor to know what's bothering him, so that he doesn't have to be specific. The result is that he will talk around and around the point, in effect putting all the pieces in place except the crucial one. Placing it properly is the role of his interlocutor. Another characteristic that distinguishes |

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| | | | | | Middle Eastern communication style from that of the West is related to the perception of time. Middle Eastern individuals usually engage in multiple activities and goals at the same time. In the Middle East, time is an open-ended concept. Therefore, time is considered to be a flexible concept, being late at meetings and not respecting strictly deadlines is usually not seen as offensive behaviour. Moreover, being late could also be a tactic used by Middle Eastern managers to demonstrate their superiority and power over their subordinates. |

2.14		Living room	Player will listen to instructions	Listen to phone recordings. In those phone calls, people in the house indirectly described their communication style. Tell me who is the one who can never be a middle easterner)
2.15		Pics	Three pictures of three characters will appear on the screen. Once the player clicks on each one of them, he is able to listen to the phone call.	None

2.16		Pics	The three characters will appear again and the player will choose the one that He/she believes is the one who does not belong to the culture.	None

Game User Interface (GUI)
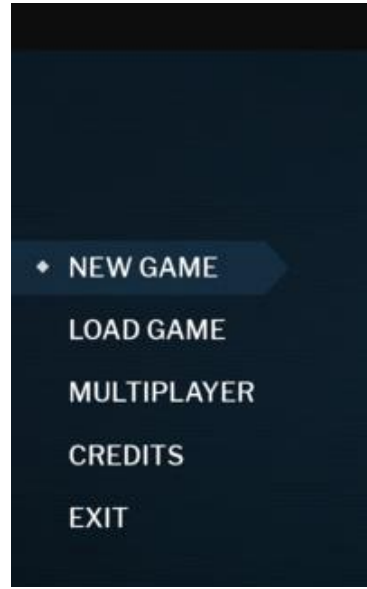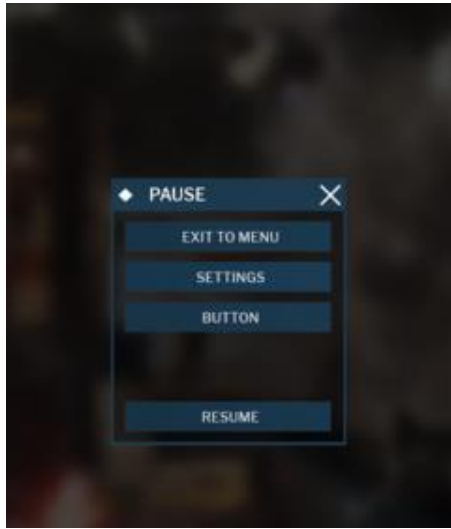
Appendix E

Thank You E-mail

Thank you for participating in this study. Your participation was very valuable to us. We know you are very busy and very much appreciate the time you devoted to participating in this study. If you would like more information about the topic of the study, you may contact Ahmed Yousof at a.k.yousof@iup.edu

Regards,