Digital Literacy to Bridge the Gender Digital Divide: A Phenomenographic Study of the Digital Diversity for Arab Graduate Women in the United States

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This dissertation titled

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Abstract

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Digital Literacy to Bridge the Gender Digital Divide: A Phenomenographic Study of the
Digital Diversity for the Arab Graduate Women in the United States

Director of Dissertation: Teresa J. Franklin

The digital divide exists worldwide. One of the forms of the digital divide is the
gender digital divide: the unequal access of Internet use among men and women.

Typically, women are perceived as less capable of gaining digital skills. Through a
phenomenographic approach, the researcher conducted an empirical and interpretative
inquiry to map the qualitatively different ways in which Arab women in the United
States understand the use of technology in their lives, the skills needed for technology
use, and how they define a digitally literate person. The study also explored their relation
with technology and compared their experiences in using technology in the United States
to their experience in their home country. The purpose of this study was to show the
variation in women’s perception of technology and to understand how to design strategies
that can bridge the gender digital gap in the Arab world. Twenty women from different
colleges at a Midwestern university were interviewed. Semi-structured questions were
used to help women reflect on their experiences with technology. The data analysis
formed five qualitatively different categories that described the ways Arab graduate
women experienced the use of technology. These five categories described digital literacy
as: a basic need, a contextual need, a need to connect, a lifestyle, and as an awareness of
the Internet culture. The categories describe digital literacy as understood by those women and what skills, from their perspective, a digital person should possess.
To my parents who did their best to provide me with good education, to my sister and my coach who always believed in me, to my loving and caring husband, and to my precious daughters: thank you all, I would have never reached this point without your love, support, and prayers.
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# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>3</td>
</tr>
<tr>
<td>Dedication</td>
<td>5</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>6</td>
</tr>
<tr>
<td>List of Tables</td>
<td>16</td>
</tr>
<tr>
<td>List of Figures</td>
<td>17</td>
</tr>
<tr>
<td>Chapter 1: Introduction</td>
<td>18</td>
</tr>
<tr>
<td>Introduction</td>
<td>18</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>21</td>
</tr>
<tr>
<td>Research Question</td>
<td>24</td>
</tr>
<tr>
<td>Research Methodology</td>
<td>24</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>25</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>25</td>
</tr>
<tr>
<td>Limitations</td>
<td>26</td>
</tr>
<tr>
<td>Delimitations</td>
<td>26</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>27</td>
</tr>
<tr>
<td>Summary</td>
<td>30</td>
</tr>
<tr>
<td>Chapter 2: Literature Review</td>
<td>32</td>
</tr>
<tr>
<td>Introduction</td>
<td>32</td>
</tr>
</tbody>
</table>
Gender discrimination................................................................. 52
Promising virtual world................................................................. 53
Cyber activism........................................................................... 54
Digital literacy........................................................................... 55
Digitally literate person................................................................. 56
Globalization, Migration and Information Technology .................. 57
Globalization............................................................................. 57
Migration..................................................................................... 58
Migration and ICTs...................................................................... 60
International students’ migration..................................................... 61
Migration and gender................................................................. 64
Gender and digital skills............................................................... 66
Migration begins by imagination.................................................... 68
ICTs and digital inequality............................................................ 69
Appropriateness of ICTs................................................................. 69
ICTs impact on relations............................................................... 71
ICTs and Arab women expatriates............................................... 73
Summary.................................................................................. 74
Chapter 3: Methodology ............................................................. 76
Introduction .......................................................................................................................... 76

Topic Researched .................................................................................................................... 77

Research Questions ................................................................................................................ 78

Phenomenography .................................................................................................................. 79

  Appropriateness of the phenomenographic approach ...................................................... 79

  Phenomenography as a framework .................................................................................. 80

  Phenomenology versus phenomenography .................................................................. 81

  Phenomenographic analysis ............................................................................................ 83

Ethnography vs. phenomenography ..................................................................................... 84

  Communicative validity ................................................................................................... 85

  Bracketing .......................................................................................................................... 86

  Member check .................................................................................................................... 87

  Generalizability and transferability ................................................................................ 87

Data Analysis ......................................................................................................................... 89

  Coding ............................................................................................................................... 90

Research Validity and Trustworthiness .................................................................................. 92

Data Collection ..................................................................................................................... 93

  Participants ......................................................................................................................... 93

  Participant recruitment ..................................................................................................... 94
Selection criteria........................................................................................................... 94
Interviews. ......................................................................................................................... 95
Institutional Review Board (IRB)..................................................................................... 96
Organization of this Study Research............................................................................... 97
Pilot Study......................................................................................................................... 97
Analyzing Data for this Study......................................................................................... 97
Pool of meaning. ............................................................................................................. 98
The Researcher.................................................................................................................. 101
Summary......................................................................................................................... 102

Chapter 4: Study Findings ................................................................................................. 103
Introduction......................................................................................................................... 103
Research Questions........................................................................................................... 104
Data Analysis......................................................................................................................... 104
How Do Arab Women Studying in the United States Perceive Digital Literacy?
............................................................................................................................................ 107
Categories of description.................................................................................................. 107
Digital literacy is having basic technology skills............................................................. 107
Digital literacy is being connected................................................................................... 109
Digital literacy is a contextual need. .............................................................................. 110
Digital literacy is a lifestyle. ................................................................. 111

Digital literacy is being aware of the Internet culture. .................. 112

How Do Arab Women Gain Their Digital Skills? ........................ 115

Search online ..................................................................................... 116

Ask (family /peers) ........................................................................... 116

Explore. ............................................................................................. 118

Mimic. ............................................................................................... 119

Practice. ............................................................................................ 120

Orientation ......................................................................................... 120

What Motivates Women to Gain These Skills? ............................ 121

Interest in technology ...................................................................... 121

Influence by others .......................................................................... 122

Academic need. ............................................................................... 122

Interested in education. ................................................................... 123

Lifestyle ............................................................................................ 123

Do Women Consider Themselves Digitally Literate? ..................... 124

How Do Women Reflect on Their Digital Experiences in The United States and Their Home Country? ........................................................................... 125
What Factors Hinder or Accelerate Chances of Arab Women to Become Digitally Literate? ................................................................. 127

Role of schools. ........................................................................... 128

Role of society ............................................................................. 134

Role of business. ......................................................................... 141

Do Arab Women Believe that Women Can Benefit from the Opportunities that Digital Literacy Offers? ................................................................. 144

Risks of using social media ............................................................. 145

Social media and women’s online identity ........................................ 145

What Do Arab Women Believe About Women and Technology Stereotypes? ................................................................. 148

Summary ...................................................................................... 150

Chapter 5: Discussion .................................................................. 151

Introduction .................................................................................. 151

Categories of Digital Literacy .......................................................... 151

Digital Literacy Model .................................................................. 153

Phase 1 – Exploring and learning the basics ...................................... 154

Phase 2 – Pervasiveness ................................................................. 155

Phase 3 – Awareness ................................................................. 156

Digital literacy as basic technology skills ...................................... 157
Digital literacy as being connected. .................................................. 158

Digital literacy as a contextual need. ............................................. 159

Digital literacy is a lifestyle. .......................................................... 161

Digital literacy is awareness of Internet culture. ............................ 162

How Do Arab Women Gain Digital Skills? ...................................... 163

What Motivates Women to Gain These Skills? ............................... 165

Do Women Consider Themselves Digitally Literate? ......................... 166

How Do Women Reflect on Their Digital Experiences in the United States and Their Home Country? ...................................................... 169

What Factors Hinder or Accelerate Chances of Arab Women to Become Digitally Literate? ................................................................. 170

Willingness to change. .................................................................... 172

Do Arab Women Believe that Women Can Benefit from the Opportunities that Digital Literacy Offers? .......................................................... 173

What Do Arab Women Believe About Women and Technology Stereotypes? . 175

Chapter 6: Reflection, Conclusion, and Recommendations .................. 177

Variation in Arab Women’s Digital Literacy ........................................ 177

Appreciative. .................................................................................... 178

Acceptance. ....................................................................................... 178
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness.</td>
<td>178</td>
</tr>
<tr>
<td>Real use of technology.</td>
<td>178</td>
</tr>
<tr>
<td>The Hidden Curricula</td>
<td>179</td>
</tr>
<tr>
<td>Consumers and Producers of Digital Information</td>
<td>181</td>
</tr>
<tr>
<td>Technology in Schools</td>
<td>182</td>
</tr>
<tr>
<td>Influence of English Language</td>
<td>183</td>
</tr>
<tr>
<td>Gender Digital Divide</td>
<td>185</td>
</tr>
<tr>
<td>Social media.</td>
<td>186</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>188</td>
</tr>
<tr>
<td>Recommendations</td>
<td>188</td>
</tr>
<tr>
<td>Future Studies</td>
<td>191</td>
</tr>
<tr>
<td>Conclusion</td>
<td>192</td>
</tr>
<tr>
<td>References</td>
<td>195</td>
</tr>
<tr>
<td>Appendix A: Pilot Study</td>
<td>212</td>
</tr>
<tr>
<td>Appendix B: Semi-Structured In-Depth Interview Questions</td>
<td>215</td>
</tr>
<tr>
<td>Appendix C: Consent Form</td>
<td>217</td>
</tr>
<tr>
<td>Appendix D: IRB</td>
<td>220</td>
</tr>
<tr>
<td>Appendix E: Permission to use Phenomenographic Relationality</td>
<td>221</td>
</tr>
</tbody>
</table>
List of Tables

Table 1: Comparing phenomenography and phenomenology..........................82

Table 2: How do Arab graduate women reflect on their digital experience in the United States and their home countries?..........................................................126
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Phenomenographic Research</td>
<td>77</td>
</tr>
<tr>
<td>2</td>
<td>Phenomenography, Process of Analysis</td>
<td>88</td>
</tr>
<tr>
<td>3</td>
<td>Screen Shot for Coding in MAXQDA11®</td>
<td>99</td>
</tr>
<tr>
<td>4</td>
<td>Screen Shot for Visual Organizing of the Codes in MAXQDA11®</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Outcome Space - Categories of Digital Literacy</td>
<td>106</td>
</tr>
<tr>
<td>6</td>
<td>How Do Arab Women Gain Their Digital Skills</td>
<td>115</td>
</tr>
<tr>
<td>7</td>
<td>Why Do Arab Women Who Arrive to the United States Improve Their Digital Skills?</td>
<td>121</td>
</tr>
<tr>
<td>8</td>
<td>Factors that Affects Digital Literacy from Arab Women’s Perspective</td>
<td>127</td>
</tr>
<tr>
<td>9</td>
<td>Digital Literacy Model</td>
<td>154</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

Introduction

Accessing information and communication technologies (ICTs) in developing countries is becoming an essential part of national and international efforts to achieve human development (La Rue, 2011). Development organizations are increasingly relying on ICTs to empower citizens to achieve social, economic, and political development in their communities. As a result, many programs and initiatives are conducted to support people who are still not connected to the Internet and are not able to benefit from the information revolution. The efforts aim to ensure that everyone has access to the Internet and that there is no technology gap or digital divide due to gender, race, income, area, or education (Norris, 2001).

The term digital divide was first used in academic discourse to describe the gap that exists within the United States. Less emphasis has been given by the scholars on the gap that existed between the developing and developed world (Miller, 2001). In 2006, Cooper stated that the digital divide is a worldwide growing problem experienced in developed and developing countries. It affects people despite their age, gender, race, or place. He emphasized how the social context and stereotypes affect women more than men and increase a gender digital divide. The gender digital divide, according to Hilbert (2011), means the unequal access and use of the Internet among men and women. This gender digital divide exists in developed and developing countries and it is wider in the latter, where women are poor, illiterate, or live in rural areas. Hilbert (2011) states that a gender digital divide exists only as a direct reflection of existing gender-related
inequalities. Therefore, digital literacy skills can improve women’s social, economic, and political status. It can also eventually contribute to gender equality (Wamala, 2012).

To address the gender digital divide in the world, one should look at the reasons behind the remarkably low number of women who are accessing the Internet (Abu-Shanab & Al-Rababah, 2010; Joiner, Stewart, & Beaney, 2015). Gender digital divide in the use of Internet as well “persisted over time and across different technologies” (Joiner, Stewart, & Beaney, 2015, p. 85).

For example, in developing countries, “nearly 25 percent fewer women than men have access to the Internet” (Intel, 2012, p. 10). Antonio and Tuffley (2014) believe that “technologies are often considered to be within the purview of men” (para. 18). As Hilbert (2011) states, women suffer pre-existing inequality and this could be the major reason that hinders them from accessing the Internet and accessing available opportunities that can improve their status. The second reason could be the responsibilities and priorities that women have. Hilbert (2011) adds that usually these responsibilities revolve around family, children, and home; leaving little or no time that can be saved for acquiring digital literacy skills. Another barrier could be simply that women prefer not to be engaged in technology related activities (Hilbert, 2011).

Nevertheless, technology initiatives and programs that are targeting women are taking place everywhere; yet, women’s status is not showing much progress. As Primo and Khan (2003) note: "The real problem is that we are hurtling into this new era with very little serious analysis of the adaptability of existing social and technological capabilities, or of the role of human responses to the information revolution,” (p. 18). Examining the
barriers that people face in general and women in particular is important to make technology interventions more beneficial.

In fact, some of the barriers that women face affect both men and women equally (e.g., poor infrastructure, cost of accessing the Internet, and low computer skills and language skills) (Primo & Khan, 2003). Other barriers are gender related and caused by the prevailing inequalities among women in poor communities, particularly in the Arab world. These include the lack of learning and training opportunities for women, women prioritizing other needs for house and family members, and male control on women’s decisions (Hilbert, 2011). However, not all of the women in the Arab world form a monolithic group that share the same circumstances, face the same challenges, and aspire to the same goals. Unlike the developed countries, the data that reflect the gender digital divide is not available in developing countries. Hafkin and Huyer (2007) highlight this by saying:

As with statistics and indicators in general, gender statistics are more developed in rich countries than in poor countries. Where the gender digital divide is generally thought to be most marked, virtually no official statistics are available, and the digital divide is hardest to document (p. 27).

Developing the needed infrastructure, creating gender sensitive policies, and planning advocacy programs are affected by the availability of a reliable sex-disaggregated data (Primo & Khan, 2003). Primo and Khan add that it is difficult to obtain sex-disaggregated data and even when it exists, it will be through unreliable
resources, they emphasize that those “resources are often second-hand sources, drawn from unsubstantiated sources, or constitute estimates and approximations” (p. 35).

It is misleading to rely on data that is generated based on estimations or an “ambiguous and possibly conflicting picture of the situation of women’s access to, use of, and/or participation in the ICT sector” (Primo & Khan, 2003, p. 35). Improving women’s status in developing countries should rely on quantitative and qualitative data. A closer look at women’s experiences is important and can provide critical information that can contribute to the goal of improving women’s status. This qualitative study focused on Arab women at a large Midwestern university. Specifically, it explored how they define digital literacy and reflect on their personal experience in using technology in their countries and compare it to their use here in the United States.

**Statement of the Problem**

Women’s ability to use technology has been underestimated. They have been described as technophobic (Hafkin & Huyer, 2007), less tech savvy, and that technology is not built for their needs and intuition (Hilbert, 2011). However, introducing new technologies that are not relevant to what women are doing and that does not serve their needs makes acquiring digital skills an unfavorable and unlikely task (Purushothaman, 2011). The inequality that exists in all other aspects of life (e.g., education and income) is amplified by the gender digital gap. Some women are missing an opportunity that can help them overcome some of the barriers hindering their advancement and ability to gain their rights through the acquisition of digital skills.
Arab women are among those who are deprived from the wealth of information on the Internet (Elnaggar, 2008). The majority of poor women in the Arab world are located in the most populated areas (e.g., Egypt) (Smith, 2011). Due to various factors such as low income, weak infrastructure, illiteracy, or restrictive gender norms, they lack the privilege of accessing the Internet and benefiting from online opportunities in various fields (e.g., education, health) (World Bank Group, 2012).

Therefore, this research is needed to understand the nature of the gender digital divide and how women perceive digital literacy in the Arab world. An outcome of this understanding can suggest the best strategies to promote use of technology among Arab women. The diffusion of mobile phones in the Arab world has a penetration rate of 110% (Mourtada & Salem, 2014, p. 4). This diffusion can help many women overcome the major obstacle of availability and affordability of Internet access. The mobile phones, if connected to the Internet, can form a delivery channel for ICTs that can empower women. Moreover, if women are able to build their digital literacy skills, they will be able to “define for themselves how technologies will be used to meet their needs” (Goh, 2012).

The concept of digital literacy was studied from the perspective of Arab women who are graduate students in the United States to find out what opportunities does technology offer to women to advance their status and how it affected the gender digital divide in the Arab world. I sought to clarify some of the misconceptions about women, especially women in the developing countries of the Arab world. There is a gender digital gap and some attribute this to a number of reasons: the role of some societies that favor
men over women (Baruch, 2014; Cooper, 2006; Sheikh & Abbas, 2015), the role of
media, as Baruch (2014) states: “It was found that the media reinforces feminine
stereotypes, the importance of external appearance and the myth of a career being more
important for a man than a woman” (p. 194), and the role of educators as “they are the
ones “pushing” the boys to play more mechanical and computer games, while the girls
are urged to play with dolls and engage in social games” (Baruch, 2014, p. 191). Sheikh
and Abbas (2015) add, “Numerous reasons can be marked out behindhand this
discriminative technology adaptation, e.g. societal blockades, technophobia and techno
incompetency” (p. 243). In this phenomenographic study, an empirical approach was
applied to study women’s experiences; I wanted to know Arab women’s conceptions of
technology use in the United States. My goal was to depict Arab women’s
understanding, as they see it, about digital literacy and technology use through:

1. Describing what motivates women and what factors can support them to be
digitally literate.

2. Describing how (they learn new skills), what (skills/apps), where (home/work),
when (all the time/certain times), and why digital literacy matters for women.

3. Exploring what factors matter the most and should exist in digital literacy
strategies and inclusion policies.

4. Understanding the gender digital divide through the eyes of Arab women.

5. Exploring if some of the technology programs that target women in the Arab
world are compatible with Arab women needs and expectations.
6. Identifying women’s personal strategies to learn new digital skills and how they use the skills and for what purpose.

7. Identifying an approach for future interventions.

**Research Question**

This study seeks to examine the answer to this main question: How do Arab women studying in the United States perceive digital literacy? To answer this main question there are sub-questions that will help capture women’s digital experiences in their home countries and in the United States.

- What skills do Arab women believe are needed to be digitally literate?
- How do they gain these skills?
- What motivates them to gain these skills?
- Do you consider yourself digitally literate?
- How do they reflect on their digital experiences in the United States and their home country?
- What factors hinder or accelerate Arab women chances to become digitally literate?
- Do Arab women believe that women can benefit from the opportunities that digital literacy offers?
- What do Arab women believe about women and technology stereotypes?

**Research Methodology**

Through a phenomenographic approach, the researcher conducted an empirical and interpretative inquiry to map the qualitatively different ways in which Arab women
perceive and understand the use of technology in their lives. The research collected qualitative data based on the cultural background of Arab graduate women and the use of technology they experienced at their university in the United States and back in their home country.

**Theoretical Framework**

The phenomenographic approach allowed the researcher to look at the data through a phenomenographic lens that value the variation among individuals in their experiences. According to Walker (1998) the purpose is “not to find the singular essence, but the variation and the architecture of this variation by different aspects that define the phenomena” (p. 27). In other words, the aim of this phenomenographic research was to map the different ways in which Arab graduate women who are studying in a Midwestern university in the United States perceived the term digital literacy and how did they experienced aspects of the digital divide.

**Significance of the Study**

Unlike the developed countries, the data that reflect the gender digital divide is not available in developing countries (Hafkin & Huyer, 2007). Defining the nature of the digital divide in the Arab world needs quantitave and qualitative data to understand the problem. Van Dijk (2005) believes that the literature on the digital divide lacks qualitative studies that looks at the digital divide phenomenon differently and focus on certain aspects of the problem. “Most digital divide research is based on quantitative data collection and tries to describe the large picture of the problem” (van Dijk, 2005, p. 26). In addition, few qualitative studies examine the gender digital divide from women’s
perspective and examine Arab women’s experience with technology in their countries and compare it to their experience in the United States. It is significant to add to this area of research and further explore Arab women’s use of the Internet and the level of their digital literacy through a qualitative study. In addition, the study seeks to:

1. Build on the existing literature on gender digital divide and reflect diverse stories from women in the United States (not all women have the same story).
2. Highlight the barriers that women experience when accessing the Internet.
3. Identify/ recommend strategies to improve digital literacy programs in the Arab world.
4. Contribute to the field of gender digital divide by adding a qualitative phenomenographical research that focus on the experiences of women using technology.

Limitations

This study targeted Arab graduate women in a large Midwestern university. The limitation of this study was to find Arab graduate women from different Arab countries. The study was able to include only women from seven countries: Iraq, Jordan, Kuwait, Palestine, Saudi Arabia, Sudan, and Tunisia.

Delimitations

The study will not focus on the entire Arab world, but it is limited to the countries in which their official language is Arabic: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia,
United Arab Emirates, and Yemen. The selection of Arabic speaking countries was previously adopted by other scholars (Mellor, Ayish, Dajani & Rinnawi, 2011, p. 2).

**Definition of Terms**

*Arab women:* For the purpose of this study, Arab national women refer to women who are older than 20 years of age, speak Arabic, and completed their undergraduate education in one of the Arab countries.

*Categories of description:* In phenomenographic research, the researcher organizes and groups the interview excerpts that describe how the participants understand the phenomena into categories.

*Contemporary feminism:* is the form of feminism that flourished by the early years of the 21st century (Bassett, 2013).

*Cyberfeminism:* is the use of online communication technologies such as social media, (i.e. Twitter®, Facebook®, YouTube®) for various forms of issues related to feminism.

*Cyber activism:* is the use of online communication technologies such as social media, (i.e. Twitter®, Facebook®, YouTube®) for various forms of activism to enable faster communication by citizen and the delivery of local information to a large audience.

*Digital divide:* Digital divide is a term that describes the gap between those who have and those who do not have access to the information technologies. According to Organization for Economic Co-operation and Development (OECD) (2001), the term digital divide means: “the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their
opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities” (p. 5).

*Digital literacy:* “Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (Visser, 2012, para. 2).

*E-governance:* The United Nations Educational Scientific and Cultural Organization (UNESCO, 2011) defines E-governance as “the public sector’s use of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective” (para. 1).

*Expatriate, Arab women:* in this research refers to the Arab women who came to the United States for the purpose of education.

*Field of study:* Academic area of study.

*Feminism:* “Feminism is the struggle to end sexist oppression. Its aim is not to benefit solely any specific group of women, any particular race or class of women. It does not privilege women over men. It has the power to transform in a meaningful way all our lives. Most importantly, feminism is neither a lifestyle nor a ready-made identity or role one can step into” (hooks, 2000, p. 28).

*Feminist standpoints theory:* is a theory that rejects the western monolithic view of women in the developing countries and seeks to acknowledge women’s different identities, situations, and struggle that are usually influenced by political, historical, cultural and economic contexts (Goh, 2012, p. 1027).
Gender: refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women.

Globalization: eliminating the barriers and merging countries’ economies to increase trade and investment represented by a single powerful system branded by the global flow of money, people, goods, services, and ideas (Stromquist & Monkmam, 2014).

ICTs: refer to the use of computers, mobile phones, Internet, and other digital devices. They also include but are not limited to the use of social media such as: Facebook®, YouTube®, Twitter®, Flicker®, and Skype® (Bacigalupe & Lambe, 2011, p. 14).

International Students Migration: As defined by the United Nations, “international students who study in the receiving country for more than one year would be considered migrants” (Ratha, Mohapatra, & Silwal, 2011, p. xiv).

Outcome space: the outcome space in phenomenographic research refers to a diagram that explains the relationship among categories of description.

Phenomenography: Defined by Marton and Booth (1997) as a qualitative research approach that aims to “mapping the qualitatively different ways in which people experience, conceptualize, perceive and understand various aspects of, and phenomena in, the world around them” (Marton, 1986, p. 31).

Phenomenology: A qualitative approach that examines the participant's perspective through reflecting on their experience of the world. The goal of this approach is to develop a single theory of experience (Andretta, 2007).
**Pool of meaning:** The pool of meaning usually contains excerpts collected from the interviews, these excerpts in most cases contains all descriptions that the researcher hoped to find in the research (Marton & Booth, 1997).

**Technology:** For the purpose of this research, technology refers to the use of any digital device. Specifically, it refers to the use of the Internet, social media, digital applications, computer programs, and games.

**Summary**

The digital divide is a term that was first used to describe the gap between people who have access to technology and those who do not have. With the diffusion of technology in the Arab world, a new type of digital divide emerged to describe those who have digital literacy skills and are able to access ICTs, analyze, interpret, evaluate, discuss information they access, and those who are only using it as an entertainment tool.

The gender digital divide describes how technology is adding new inequality in the life of disadvantaged women. The digital revolution enabled most people to access Internet through affordable devices. The ability to access helped a lot of women to bypass the first type of the digital divide that describe lack of access and use. The second type of the digital divide, which is accessing useful information, still persists and needs to be addressed.

Digital literacy skills can empower Arab women especially if they found that those skills respond to their needs. They can use them to access health information, learn a language, make a business, or fight for their social, economic, and political rights. Arab
women need to be digitally literate to overcome their rurality, poverty, illiteracy, and vulnerability by accessing the relevant information to their needs.
Chapter 2: Literature Review

Introduction

A lack of Internet access in this age does not mean only lagging behind, it means missing opportunities that can improve, support, and enhance the individual’s life (Sheikh & Abbas, 2015; Badran, 2014). For women precisely, who are vulnerable due to many social, economic, and cultural factors, Internet access can be a tool for empowerment and equality. The lack of Internet access can exacerbate women’s inequality and add to their vulnerability and marginalization, especially if they remain deprived from reaching available online information (Hilbert, 2011).

The term digital divide is used to describe two ends: one that has access to technology and one that does not (Eubanks, 2007; Warschauer, 2003). The term was started to describe the problem of lack of physical access and Internet connection and the lack of the ability to use them (Norris, 2001). The rapid development of technology in the 21st century made Internet access easier and digital devices more ubiquitous (van Deursen & van Dijk, 2014). As a result, the problem did not remain in access and use, but shifted to describe the divide in skills of using the Internet (van Deursen & van Dijk, 2014), the frequency of use (Cheong, 2007), and the type of information accessed Warschauer (2003). To address this new form of the digital divide, providing devices and Internet access might not solve the problem. Digital literacy skills should be promoted to end the digital divide, especially among the most affected group in the world: women (van Dijk, 2005).
This literature review will include the following sections: digital divide, women and technology, and digital literacy and migration. The first section aims to describe how the term digital divide developed and changed over the last two decades. It will also describe the impact of the digital divide and the gender digital divide on developing countries. The second section of the literature will provide an overview on women’s status in general and Arab women in particular. Two theoretical perspectives that can be used as theoretical frameworks to address the gender digital divide: feminism and phenomenography will be introduced in this section. The third section will explore the term digital literacy and how migrants, especially women, who are digitally literate utilize digital technologies for better integration and empowerment in the communities of the host countries.

**Digital Divide**

The term digital divide first appeared in the year of 1996, by Lloyd Morrisett to highlight that the digital revolution is enabling some people to have access to information while excluding the rest (Eubanks, 2007). Since then, research and debates have been conducted to reflect the cause, impact, and extent of this gap. There are several definitions of the digital divide that differ based on the type, level, place, and factors shaping the divide. There is no consensus on what the term exactly means (van Dijk, 2005).

The most prominent definition focuses on the unequal access and use of ICTs. “The digital divide refers to the unequal access of citizens to information and communication technology (ICT), and unequal possession of the skills and experiences
needed to optimize this technology” (Abu-Shanab & Al-Jamal, 2015, p. 91). According to OECD (2001), the term digital divide refers to “the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their opportunities to access Information and Communication Technologies (ICTs) and to their use of the internet for a wide variety of activities” (p. 5). Internet penetration increased in many countries and access to the Internet became possible via different devices (OECD, 2001). Providing physical access and the Internet connectivity is not the only problem (Bonfadelli, 2002). The quality of access and type of service affects performance of online activities (Norris, 2001). This creates a new form of digital divide, this time targeting a larger number of individuals around the globe.

Norris (2001) believes that the digital divide is a phenomenon that has three dimensions. The first dimension is global divide. This dimension describes the gap between developed and developing countries. The second dimension is social divide, which describes information gap between the rich and poor in all countries. The third dimension is online democratic divide, which describes people who have access but do not use online tools to engage and participate in the public life online.

Warschauer (2003) believes that using the word divide implies that there are two parts: a part that has access to the Internet and a part that does not. Warschauer (2003) believes that this describes a social inequality problem not a digital problem. He emphasizes that focusing only on Internet access and the use of it is only one set of the resources needed to bridge the digital divide. There are other resources needed such as digital resources (e.g., material that can be accessed online), human resources: (e.g.,
digital literacy skills to use the computer and online communication), and social
resources that can provide support (e.g., community and other social institutions).

Similarly, Cheong (2007) indicates when men and women are connected; men
use Internet more frequently to search for information while women use it less
intensively and frequently. This difference in nature of use is deepening the digital
divide (van Dijk, 2005). Along the way, the same inequality experienced in the real
world among people from low socioeconomic status will be moved to the Internet world.
In other words, as van Deursen and van Dijk (2014) states, “when the Internet matures, it
will increasingly reflect known social, economic and cultural relationships of the offline
world, including inequalities” (p. 507) unless more technology inclusion plans are in
place.

**New form of the digital divide.** Van Deursen and van Dijk (2014) believe that
the ubiquity of technology devices and access to the Internet in the 21st century has
closed the digital divide. Another type of divide has been created instead, which is a
divide in use and skills of the Internet users (van Dijk, 2005). Although the majority of
people are able to access the Internet, van Deursen and van Dijk (2014) believe limited
education, skills, motivation, knowledge, and low socioeconomic status can affect the
nature of use for people. They emphasize the fact that not all that is accessed on the
Internet is beneficial (van Dijk, 2005). Bonfadelli (2002) states that educated individuals
are active in using the Internet and are able to seek information. In contrast, the less
educated are not accessing information and are connected to “entertainment functions of
the Internet” (Bonfadelli, 2002, p. 65). Education and Internet usage skills can offer more
chances and resources to users rather than just entertainment and passive consumption that the majority of people experience online (van Dijk, 2005).

**Divide in technology skills.** Skills of users also define the level of the digital divide. Van Dijk and Hacker (2003) identify three categories for digital skills. First are the instrumental skills, which refer to the ability to operate and use hardware and software. Second are the informational skills, which indicate the ability to access and search for information. Last are the strategic skills, which refers to the ability of harnessing the use and access of information to one’s own need (p. 319).

Access and use are not enough to ensure that users will reap the benefits from the Internet and use it effectively. Some users are unable to use the Internet as effectively as they need. It is essential to equip those users with informational and strategic skills and limit the deepening of the digital divide in order to “prevent structural inequalities in the skill and usage of ICTs from becoming more intense” (van Dijk & Hacker, 2003, p. 326). Even if those users are of limited educational backgrounds, ethnic minorities, or older adults, they can still be supported and encouraged to use ICTs efficiently through designing attractive applications that resonate with the needs of these users (van Dijk & Hacker, 2003).

**Gender digital divide.** One dimension of digital divide is the gender digital divide, which is used to reflect the gap between men and women in the use of technology and accessing the Internet. Almost worldwide, in developed and developing countries, there is still unequal access between men and women in using technology (Abu-Shanab & Al-Rababah, 2010; Cooper, 2006). Some agree that the low economic status of women
and the high illiteracy percentage in most parts of the world are the reason for this Internet gender digital gap (Goh, 2012). Others believe that women may not be comfortable in dealing with technology in the first place and claim that women experience anxiety when using computers or the Internet (van Dijk, 2005).

Norris (2001) emphasized the importance of investing in human capital to accelerate Internet adoption. He states, “the development of human capital – meaning the investment in digital skills and capacities through education, training, and lifetime learning – represents one of the most important factors that might facilitate Internet access” (p. 58). Digital inclusion strategies for women are needed. To bridge gender digital gap, we need to increase the number of women who are digitally literate so they can access ICTs and benefit from them. Programs that aim to introduce women to the field of ICT, Internet, or technology in general should be based on women’s needs and interest. Elnaggar (2008) explains:

Programs designed to introduce ICT to females are much more likely to be effective if they are designed on the basis of women-centered demand-driven than if they are technical solutions supply-driven. Projects of the latter kind risk becoming experiments that will last while there is external support but are unlikely to be sustainable or result in appropriation of the technology. (p. 290)

Focusing on software and new devices to show what technology can offer is not a good plan (Elnaggar, 2008). Elnaggar adds that training programs need to be relevant to women and should include skills of using, managing, producing, and disseminating information through technology not only using it passively. “Rather than being forced to
ICT usage against their will by an external force, it seems that women naturally enjoy the use of digital communication wherever they get the opportunity to do so” (Hilbert, 2011, p. 14). In other words, women have different needs, teaching them how to better use relevant technology that can enable them to enhance what they are doing will make them interested and engaged.

**Types of Technology**

In the past, computers were used to perform complicated calculations or to analyze large sets of information (Cooper, 2006). The rapid advancement of technology revolutionized the use of computational devices. A 2012 report for the International Telecommunication Union (ITU) states, “growth in the mobile market will continue to be driven by prepaid services, more affordable devices, and the increasing availability of mobile-broadband services” (ITU, 2012, p. 3). Markets are continuously reducing prices and increasing features and simplifying use. More technology and computerized devices are used with fewer needed skills (Bassett, 2013). Despite the low incomes of some, smartphones are in the hand of many people. Touch screens, translated texts, voice recognitions, and many other features are accessibility tools built into devices to help users. Bassett (2013) explains, “expertise might be said to have been reprivatized on the one hand even as it has been democratized on the other” (p. 212). The invisibility of technical work that made computing accessible to all is coined with a privatization process that made only a few experts responsible of programing and coding and high technical skills. Bassett (2013) believes that the advancement in digital technology eliminated one of the basic barriers that hindered women from using the Internet. The
author adds that women’s growing access and use of many computational technologies is closing the gender digital gap in the West.

Levels of Digital Divide

People differ in their willingness to adopt new ideas or innovations, as new ideas are usually perceived as risky (Rogers, 2010). People who take risk and try new innovations usually spread it within their social network, which in turn will encourage more people to adopt it (Rogers, 2010). Rogers (2010) defined four factors that affect diffusion of new innovations: innovation, communication channels, time, and nature of the society or social system where the innovation will be introduced. With the Internet, communication among people is more rapid, efficient, and organized. This improvement in communication decreases the time needed for innovations to spread among people. For example, diffusion of the automobile invention needed 56 years; whereas, cell phones took 14 years.

Building on Roger’s theory, Hilbert (2011) explains how the digital divide levels vary with the type of technology used (e.g. mobile phone, computer). He states that new technologies need time to be adopted by people. Introduction of each new technology means a new digital divide, or as he explains it “each new technology diffuses through the social network once again, creating a new divide every time” (Hilbert, 2011, p. 721). Hilbert (2011) adds that the diffusion of new technologies depends on the nature of social network and the characteristics of each person in these networks.
Impact of Digital Divide on Women

The use of technology around the world has amplified the gender divide (Primo & Khan, 2003, p. 5). Dixon et al. (2014) state, “as digital technologies have increased in prevalence and importance, a digital divide has emerged along the lines of previously existing social divides” (para. 1). Gender digital divide, if not addressed, can increase women’s marginalization and gender inequalities. ICTs have the potential to empower women and equip them with tools that can improve, develop, support and transform their status (Primo & Khan, 2003). Women in developing countries face two levels of challenges that hinder their ICT use. The first level is related to poor infrastructure, Internet availability, women’s ability to afford Internet cost, and women’s literacy (Abu-Shanab & Al-Jamal, 2015; Badran, 2014). The second level is more profound and is caused by gender roles that are socially and culturally constructed in developing societies (Abu-Shanab & Al-Jamal, 2015; Primo & Khan, 2003; & Sheikh & Abbas, 2015).

Divide in the system. To find out the impact of interventions on low-income women in rural areas in New York, and to explore how they perceive the term gender divide, Eubanks (2007) conducted a longitudinal action research study that lasted five years. Ninety women participated in a drawing exercise to find out how they perceive digital inequality and how they reflect on digital divide terms. Eubanks (2007) found that these women had doubts about technology due to “the image of computers as the route to social and economic progress and these women’s own experience of technology as exploitative, intrusive, and limiting” (Eubanks, 2007, p. 14). Women were not able to
imagine that these complicated computers could change their life and lead to social progress (Eubanks, 2007).

Eubanks (2011) concluded that the digital divide is not confined by the act of distributing and accessing computers. He was more concerned about the relationship between women and computers, or as he described, “one piece of the high-tech equity puzzle that is generally overlooked when we try to imagine ‘technology for people’ is the relationship among technology, citizenship, and social justice” (Eubanks, 2011, p. 23). Through an examination of women’s feedback, he was able to determine that women were critical about technology programs and the term digital divide. They rejected the bridge idea to close the gap and they rejected being seen as have nots or as people without resources, emphasizing that women have other skills, strengths, and resources to share with others. Women offered other names for the digital divide such as “systemic divide” or “people’s divide” (Eubanks, 2007, p. 8) to indicate that technology is not the solution for the social problems. Women believed that it is better to address the social inequalities that exists in the society such as economic exploitation, racial prejudice, greed, and classism (Eubanks, 2007). Before planning interventions to bridge the gender digital divide, policy makers and technology proponents should be aware of perceptions that women have about technology.

**Connect women to their needs.** Aiming to decrease the gender digital divide, Goh (2012) conducted a study on rural women in West Virginia, one of the poorest states in the United States located in the Appalachia. The situation of women in West Virginia is similar to many other women in developing countries. They live in poverty, rurality,
illiteracy, gender segregation, and male dominant societies that value housework and child care for women (Goh, 2012). As a result, they had no experience in using technology or accessing ICTs. The study focused on the social and cultural impact on accessing ICTs for those women. The framework used in this study adopted a third world feminist standpoint and in this framework, the author aimed to find out why those women were experiencing the digital divide and how they defined effective use of ICTs.

Many ICT projects in poor areas have faced some barriers that can affect a women’s full participation. Some of these barriers listed by Goh (2012) included: childcare, household work, education levels, unemployment, or the poor language. Such factors still hinder women in many areas from accessing ICTs. Most of the women, as Goh (2012) stated had no working experience in the past and were only taking care of the children and house. A few were working in jobs that do not require computer skills; hence, they did not obtain any training on how to use computers.

Goh’s (2012) sample was purposefully selected and consisted of 92 women (majority were over 50 years old) enrolled in four courses. The courses lasted for maximum 16 weeks and taught basic computer and Internet skills. The women had no previous experience in using ICTs. Observation, informal interviews, and semi-structured in-depth interviews were conducted for 20 sessions, which lasted over 14 months. The study found that women were eager to learn how to use computer and the Internet because they felt isolated. They realized that the Internet is becoming a major communication tool in this age. They wanted to use the same language that their children and their grandchildren were using to communicate. Goh (2012) emphasized that efforts
to bridge the gender digital divide should not be about providing Internet and teaching women how to use computers only. In addition, Goh (2012) states that ICT programs targeting women have focused on political and economic empowerment, literacy programs, and few have focused on improving women’s social lives as mothers and caregivers. She adds that digital inclusion programs should realize women’s needs and expectations. Planned programs should respond to these needs in order to get positive outcomes and to accelerate women’s inclusion to the digital world.

**Different technology to different needs.** To enhance rural women’s life through use of ICTs, the Swedish Program for ICT in Developing Regions (Spider) conducted six projects in five developing countries: Kenya, India, Bolivia, Vietnam, and Rwanda (Wamala, 2012). The projects used different ICT tools and platform that suit women’s needs and environment. They varied in their nature from empowering indigenous leaders, to providing safe virtual support environment for domestic violence victims. There were also projects that focused on women’s livelihood, basic training, and enhancing their daily practices such as basket weaving. Wamala (2012) provided an analysis of the impact of this project. The analysis showed a strong interest from the women’s side for learning how to harness ICTs to improve their life, learn new skills, and preserve their traditional activities. Wamala (2012) explained that, “by employing a bottom up learning approach, women were encouraged to learn by doing” (p. 29). Each project aimed at teaching women parts of technology that resonated with their needs. Connecting ICT skills to what women are doing in their daily life made women engaged and increased their interest to learn and understand how technology works.
Despite their limited knowledge. There were some barriers that faced each project such as poor infrastructure, women’s illiteracy, and limitation of old age (e.g., such as poor sight for small devices). All these barriers did not discourage them from learning and using ICTs. With some support, they were able to learn and benefit from technology (Wamala, 2012).

Digital Divide in the Arab World

Overview. The Arab world is “spread throughout two continents Africa and Asia” (Lord, 2008, p. 12). It consists of 20 countries and “these countries are wildly diverse by almost every measure” (Lord, 2008, p. 12) including income, size, stability, population, and modernity. Located in the Gulf Area in the Arabian Peninsula, the Gulf Cooperation Council (GCC) consists of 6 of Arab countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates. They are the richest countries in the region. Most of GCC countries are sparsely populated and are made up of newer modern cities (Lord, 2008).

Other Arab countries: Algeria, Djibouti, Comoros, Egypt, Iraq, Jordan, Lebanon, Libya, Mauritania, Morocco, Palestine, Somalia, Sudan, Syria, Tunisia, and Yemen (Lord, 2008) are populous and face many different challenges, politically and economically (Smith, 2011). Most of these countries are poor, lack natural resources, have high illiteracy rates, and have large numbers of unemployed youth (Lord, 2008).

ICTs in the Arab world. In the Middle East, Internet use in government offices, national universities, and research centers started, as Mellor et al., (2011) state in the 1990s. The goal was to help pioneer diaspora who were studying or working out of the
Middle East for long or short time to connect to their counterparts (Anderson, 2000). The Internet service was not intended to reach all community members at that time. Eventually, this diaspora of Arabs in America or Arab-Americans was the reason for bringing the Middle East online through sharing “the cultures, and cultural nostalgia, and interests in networking with their fellow-countrymen, representing often idealized versions of home cultures, and creating ‘virtual communities’ in ‘cyberspace’ of otherwise dispersed, often lonely, expatriates” (Anderson, 2000, p. 424). Using the Internet gave those migrants the opportunity to stay connected with their home countries. This in turn paved the path for ICTs to be adopted by more people in the Middle East.

**Connectivity and Internet penetration.** Connectivity and Internet penetration in the Arab countries depend on the economic status of the country: high-income GCC countries and non-GCC countries. According to Smith (2011), the leading countries in the Arab world in Internet penetration are Bahrain with 88%, followed by United Arab Emirates with 76%. Other countries lag behind with less than 20% in Algeria, Sudan, Syria and Palestine. While the Internet penetration in other countries such as Libya, Iraq, Yemen, and Mauritania is less than 6% (Smith, 2011, p. 32).

In general, the total Internet users in the Arab world for year 2013, Page, Molina and Jones (2013) state is 110 million users. The number is small compared to numbers of users in other parts of the world, 266 million in America and 475 million in Europe. Nevertheless, Smith (2011) thinks that “the growth rates for internet usage in the Middle East and North African countries far outstrip those of many of the more-developed
countries in the West” (p. 32). This healthy growth is expected to reach world records soon (Smith, 2011).

One of the reasons that justify Smith’s (2011) prediction is that some of the large and highly populated countries such as Sudan and Yemen who are currently lagging behind will boost Arab penetration percentage when their Internet penetration rate grows. Another reason for her prediction is that developed countries have already reached the point where most of their population are connected to the Internet. The progress that they will achieve is going to be minimal compared to that of the Middle East.

The Groupe Speciale Mobile Association (GSMA) report states that the use of mobile phones in the Arab world is spreading rapidly. According to the report, this increase in use of mobile phones has changed the traditional ways of communication and interaction among youth and tech-savvy adults. Additionally, GSMA predicts that development of broadband in Arab regions would eventually lead to a reduction in the digital divide, emphasizing the role that use of mobile devices play in connecting people in rural communities to the Internet (Page et al., 2013).

**Internet use in the Arab world.** Despite the growing percentage of Internet penetration in the Arab world, the poor and those who are living in rural areas are still not connected and are still deprived from the wealth of information that they can access online. The availability of computers and high speed Internet are essential to their connectivity, but they are not enough to ensure that people are using the Internet (Mourtada & Salem, 2014). They need to know the advantages of surfing the Internet and how to reach the content that can benefit them and allow them to communicate, search, or
social network. Therefore, it is not sufficient to provide equipment and Internet access only to developing nations (Visser, 2013; Warschauer, 2003; Winter, 2013;). There are other factors that need to be considered to ensure adequate technological environment. Obstacles that can hinder people’s acceptance to ICT should be removed such as language and irrelevant content (Visser, 2013; Winter, 2013). Winter (2013) further explains:

In an Information Society, where the access, creation, manipulation, and distribution of information are key aspects of economic, political, and sociocultural life, a lack of access to ICTs and relevant content puts individuals, regions, and nations at a great disadvantage. (p. 37)

The dominance of English language on the Internet and the Western content can form an obstacle for these people and can complicate their access to ICT and social media (Ali, 2011). Most of the people who are still not able to access the Internet and overcome the basic form of the digital divide in all parts of the Arab world face the same obstacles. Rinnawi (2011) states that there are many factors restricting the spread of Internet use in the Arab world such as, “keeping it as a luxury available to specific social groups and classes in Arab societies, namely, highly skilled professionals from the middle and upper social classes” (p. 124). Rinnawi (2011) explains the factors that limit the spread of the Internet in the Arab world in the following points (p. 135):

1. Political and cultural censorship: main formal and informal obstacles come from socio-religious and political elites who prohibit and fear freedom of expression.
2. Expense: the cost of the Internet service is high in most of the Arab countries considering the low income. As a result, most people who live in low-income countries are unable to afford the cost of devices and service of connecting to the Internet. Rinnawi (2011) states that some studies claim that this high cost is among the policies that aim to control the access.

3. Illiteracy, particularly digital illiteracy: illiteracy rate among most of the population is very high in many Arab countries as Rinnawi (2011) states, “[The Arab world] needs to illuminate digital literacy: people’s ability to deal with digital and new media technologies” (p. 136).

4. Infrastructure: physical infrastructure (i.e. fiber optics) that allows Internet distribution is problematic in most of the Arab world and hard to reach rural areas.

5. Language barriers: the dominant language on the web is English, and sometimes even standard Arabic can be a constraint. Rinnawi (2011, p. 135)

**Arab women.** Not all women in the Arab world form a monolithic group that share the same circumstances, face same challenges, and aspire to same goals. A women’s status in the Arab world differs from country to country. Even in the same country, it differs based on geographic location (e.g., rural vs. urban) and socio-economic status (e.g., rich vs. poor). Poor women form the majority of the women in the Arab world. Because most of them are located in the most populated areas (e.g., Egypt) (Smith, 2011). They lack the privilege of accessing Internet and benefiting from online
opportunities in various fields such as education, health, business, and professional
development (Intel, 2012).

Other factors are gender related and caused by prevailing inequalities among
women in poor communities in Arab word. “The structure of the society dictates that
women should be followers but not leaders. This results in low self-esteem and obligates
them to abide by the rules of a society which tends to give more leverage to men”
(Boujemi, 2013, p. 61). Because of this cultural mentality, Arab women lose many
opportunities that can enable them to improve their status and their family’s status.

**Studies in the Digital Divide in the Arab World**

In a study of 548 male and female college students in Jordan, the findings showed
that a gender digital gap existed even in this country that enjoys a high literacy rate
among males and females of 95.4% (World by Map: Statistics, Maps and Charts, 2016)
and enjoys also high computer literacy and internet penetration compared to other
countries in the Middle East (Abu-Shanab & Al-Jamal, 2015). The study results also
revealed that men were causing the gender digital divide in Jordan by opposing the use of
computer and internet by women. Abu-Shanab & Al-Jamal (2015) state that women in
Jordan are “fully equipped to use the ICT, while men have trouble giving them free
access to the Internet” (p. 103). In addition, the study showed that 70% of the sample
believe that the cultural traditions have a negative impact on the gender digital divide,
and that 74% of the sample thought that the educational system was reinforcing the
In Egypt, the gender digital divide exists and is affecting women’s chances to obtain better opportunities (Badran, 2014). A study by Badran (2014) revealed that neutral gender ICT policies had a negative impact on the gender digital divide. The author believes that, “Promoting ICT training, encouraging ICT-related employment and increasing ICT access and usage for women are all means to increase ICT immersion” (Badran, 2014, p. 88). In his study, Badran (2014) highlighted that despite the fact that there is a large number of females in Egypt who own a digital device, phone, or computers, their computer use is less than men, and the number of females who own a phone is also less than men. Badran (2014) states that mainstreaming gender in ICT policies can empower women and bridge the gender digital gap in Egypt and other countries.

This study was triggered, as the author states, by the statistics published by the Ministry of Information and Telecommunication in Egypt that documents the gender digital gap in ICT access and use (Badran, 2014). Statistics show that the number of men who own mobile phones is larger than women and that public Internet points such as Internet Cafes and IT clubs are accessed mostly by men. Badran (2014) further explains that the reason might be, “customs and traditions that can prevent females, especially in rural areas, from visiting public ICT clubs and using the Internet outdoors in a public place” (Badran, 2014, p. 78).

**Mentoring and training opportunities.** Elnaggar (2008) states that training programs should be targeting women at all levels (e.g., policy makers, users, technicians). “If policy makers are unable to do so, we might end up merely solving yesterday’s
problem and the gender digital gap will remain or even widen” (Elnaggar, 2008, p. 291). This means that training should also be gender-sensitive, providing some strategies that facilitate women’s participation on those training opportunities, such as conducting the training where women live, organize training for women only, provide mentoring opportunities, and ongoing support for them if needed.

**Technology, gender, and stereotype.** One question that appears in the work of feminist scholars concerns the low number of women in engineering (Faulkner, 2001). Technology, engineering, and science are all fields dominated by men as a result of a culture that relates power to masculinity (Bonfadelli, 2002; Cooper, 2006; Faulkner, 2001). Women who attempt to enter this field are surrounded by fear of failure that can negatively impact their performance (Cooper, 2006). Faulkner (2001) explains that “plenty of women now do jobs that are extremely technical, just as plenty of men are technically incompetent” (p. 86). Such stereotypes are socially constructed and reflected in basic institutions such as, family, schools, and media (Kennedy, Wellman, & Klement, 2003).

These stereotypes are a result of a biased attitude that appears as soon as girls enter school and feel that technology and science is a male domain (Cooper, 2006; Primo & Khan, 2003). Teachers and parents play a role in discouraging girls as well from technology (Primo & Khan, 2003). Unfortunately, these stereotypes affect women’s performance when dealing with technology and lower women’s self esteem and self-efficacy (Primo & Khan, 2003). Men on the other hand, are privileged by assumptions that they are better than women in handling technology and dealing with computers.
(Kennedy et al., 2003; Primo & Khan, 2003). In order to remove the negative image that assumes that women are technophobic, or that they believe that technology is a male dominant area, or that they prefer not to compete with men, there needs to be a reflection of women’s efforts and accomplishments in the field of technology (Faulkner, 2001).

**Gender discrimination.** Elnaggar (2008) conducted a study to identify the challenges that women in the Gulf in general and Oman in particular, face in the ICT sector. The findings show a consensus among researched employers in the ICT field that women are “more organized, dedicated, meticulous, precise, persistent, and loyal” (Elnaggar, 2008, p. 286). Despite these characteristics and commitment, results showed that women are discouraged from holding decision-making positions in the ICT sector. In many cases, they were deprived from their right to be promoted or appointed in a high level position even when they had the required skills. Elnaggar (2008) pointed this discriminatory act in his study by stating: “men tend to take advantage of women’s timid nature. When a woman is skipped over in promotion to favor a more ambitious and assertive male, she does not generally object” (p. 286). Objection in a male dominant society can be a tactic to avoid confrontation.

This discrimination against women and underestimating their skills is based on socially constructed beliefs (Faulkner, 2001). Women are usually raised as less privileged than men, thus their capabilities are underestimated. As a result, they grow up thinking that men can do the job better then them (Faulkner, 2001). Faulkner describes the reason for such discriminatory action by men as, “men have generally had greater success than women in claiming skilled status, especially technical competence—including that
mobilized in the construction, maintenance, marketing, and design of technologies” (p. 81). Women were discouraged to compete with men in these sectors, while men were encouraged and had more chances than women to claim success in this field.

Women in the Arab region are lagging behind men, they might be deprived from promising opportunities that can empower them and can improve their life at the personal, family, or community level (Elnaggar, 2008). Access to ICTs can increase women’s self-confidence, empower them, give them information that can advance and benefit them, their family, and community (Biggs & Zambrano, 2013).

Obstacles that faced Omani women in the ICT sector, for example, needed to be addressed first. The first obstacle was that ICT sector is male-dominant and Omani women do not feel comfortable working side by side with men, as gender segregation is part of Omani culture. The second obstacle was the absence of Arabized Internet websites (Elnaggar, 2008). The third obstacle was lack of awareness and policy support, and the unequal access to training (Elnaggar, 2008).

Promising virtual world. The virtual world has become a suitable tool for some women to escape their ‘place’ and go beyond limits of their real world and feel empowered (Hesse-Biber, 2012). Cyberfeminism became a contemporary form of feminism and has flourished in the early years of the 21st century (Bassett, 2013). The goal of these feminists is to connect, support, network, and impact technology and not to just be impacted by what technology is producing (Bassett, 2013). It is through virtual activities that women share their struggle, achievements, hopes, and fear, as well as experience empowerment. In order to recognize how women and girls around the world
are struggling to gain their rights and reach equality, women have harnessed technology to achieve this goal. As Bhavnani (2012) states, “girls and women can experience empowerment through their virtual activities” (p. 147).

The virtual world becomes a convenient tool for women to form social networks where women can collaborate and fight existing inequalities (Bhavnani, 2012). This post feminism wave that enabled women to create virtual spaces and the cyberfeminism sphere are not enough. Women’s goals are not just to use technology. Women’s new wave should be techno-feminism, a wave that looks at more than just simplified use of computers and applications and to aspire to more technical expertise that deal with coding and programing (Bassett, 2013).

**Cyber activism.** Speaking about women in the Arab world highlights the presence of female cyber activists who became visible during the Arab Spring (Radsch, 2012). Most of those females were young, educated, and from the middle class (Faris, 2013). Faris (2013) asserts that youth form the majority of the population in Arab world. Most of these young males and females have access to the Internet and are able to use and employ online tools effectively for their needs (Radsch, 2012). This was proven during the Arab Spring revolution. Women have increasingly relied on their mobile phones to participate and be part of the change that is taking place in Arab world (Radsch, 2012). “The mobile phone continues to be one of the most important tools for cyberactivists – in particular, camera-equipped, Internet-enabled phones - while Facebook, Twitter, YouTube, Flikr, and blogs are the most important Internet-based platforms” (Radsch, 2012, p. 6). Even in countries that have low Internet connectivity
such as Yemen, a number of Yemeni women became prominent during the Yemeni revolution and used Facebook® to connect and unite with other activist (Radsch, 2012).

**Digital literacy.** Digital literacy and media tools are proliferating in this digital age. The relevant digital skills required to use these tools are hard to define as the tools are constantly changing (Visser, 2013). For instance, digital literacy has different names listed by Ng (2012) as: “ICT literacy, information technology literacy, media literacy, net literacy, online literacy, multimedia literacy and new literacies” (p. 1066). Nonetheless, Jones and Hafner (2012) provide a good foundation for understanding digital literacy; this foundation should include “the practices of communicating, relating, thinking and ‘being’ associated with digital media. Understanding digital literacies means in part understanding how these media themselves may affect the kinds of literacy practices that are possible” (p. 13). Instead of defining digital literacy by cataloging the different forms digital literacy may take, they focus on the skillful use of media tools and the interaction with other people to solve social problems.

Most researchers, educators, policymakers, and organizations agree that digital literacy skills should not be confined to the use of digital tools or Internet search skills only (Visser, 2013). Based on the 1996 national report *Getting America’s Students Ready for the Twenty-First Century*, Selfe (1999) suggests that digital literacy consists of two parts: the first part focuses on how computers and other technologies improve student’s learning and productivity. The second part focuses on the social and cultural aspect associated with the use of these technologies. Selfe (1999) states that understanding the role of computers in this age has gone beyond the basic functions, such as storing and
retrieving information, to involve social and cultural functions practiced while reading, writing, and communicating.

Instead of necessary skills, digital literacy research usually focuses on the meaning of digital literacy, what it means to be digitally literate, and how people who lack these digital literacy skills are affected (Meyers, Erickson, & Small, 2013). Jones and Hafner (2012) emphasize the role of digital literacies in our life as changing tools for what we do, how we think, who we are, and how we relate to others. For Jones and Hafner (2012) it does not matter if we use a digital device or a pen for writing, what matters is the awareness we have about the affordances and opportunities of the tool itself. Technology is just the medium and we need to know how to adapt this medium to our needs and social relationships (Jones & Hafner, 2012). Selfe (1999) states, “Literacy alone is no longer our business. Literacy and technology are. Or so they must become” (p. 3).

**Digitally literate person.** To be digitally literate, according to the United States National Education Technology Plan (NETP) 2010, one needs to have skills in three domains: information literacy, media literacy, and digital citizenship (U.S. Department of Education, 2010). Information literacy includes the ability of searching, using and evaluating online information. Media literacy includes the ability of using and understanding media and communication tools. Digital citizenship focuses on the individual’s ability to use technology in a safe appropriate manner, to be aware of online privacy and copyright issues, and to behave in a responsible way (U.S. Department of Education, 2010). What matters in these three domains are the user’s understanding and
behavior when using the digital tools to find information or reach people. The digital tools are just a medium with which we engage. More importantly, it is the skills in dealing with these media and technologies that affect our behavior, thinking, and action (Jones & Hafner, 2012).

Jones and Hafner (2012) assert that we need to “understand both the potential for technology to control us and our potential to exercise control over technology” (p. 99). To reach this understanding, Jones and Hafner explain that it is important to realize that technology has affordances and constraints. However, mastering digital literacy is not only about understanding the affordances and constraints of that technology we access, it is also about users understanding themselves, their needs, and their creative skills (Jones & Hafner, 2012).

**Globalization, Migration and Information Technology**

**Globalization.** Globalization and ICTs form the 21st century world dynamics. Globalization eliminated the barriers between countries and economies to increase trade and investment (Stromquist & Monkman, 2014). It allowed them to merge in a single powerful system branded by the global flow of money, people, goods, services, and ideas (Stromquist & Monkman, 2014). The major goal of this system is the constant search for access to natural resources, cheap labor force, and new markets (Stromquist & Monkman, 2014). ICT’s role in connecting people to different opportunities in all fields: business, education, technology, and research increased migration process around the world (Hamel, 2009). Globalization, (ICTs), and migrants became interrelated and made an
impact not only at the economic level, but also on the political, social, and cultural level (Stromquist & Monkman, 2014).

**Migration.** Reports show that the number of international migrants is growing every year. According to Ratha, et al. (2011), the number of international migrants around the world is more than 215 million. This number has never been registered previously as the report says. To depict how vital and dynamic is the migration process in this digital age, Fortunati, Perttierra and Vincent (2012) state, “it is as if humankind decided to put itself on the move” (p. 4). Another statement also describes this increasing number of migrants by stating that if they were to form a country, it will be one of the top ten countries in the world in terms of population (Fortunati et al., 2012).

International migration patterns are usually shaped by many factors (Fortunati et al., 2012). Some factors work as pushing factors such as wars, poverty, famine, political unrest, and natural disasters that push individuals out of their home countries to seek a better place. Other factors work as pulling factors that motivate individuals to leave their home country to seek better living conditions. Cainkar (2013) defined some other factors such as: geographic proximity, family reunion, economic conditions, and social networks. He adds some factors that focus on the host country policies and opportunities such as visa availability, social policies, and work opportunities.

According to Ratha, et al., (2011), Middle Eastern migrants in 2010 were 18.1 million (p. 29). However, the number might be more or less; it is hard to record the exact number. Migration movements are hard to be predicted due to any unexpected events (e.g., natural disasters, political, drought) that could occur and cause a large number of
people to move to another place. Such events can cause changes in the migration data’s accuracy, for that reason we cannot rely on outdated information (King & Raghuram, 2013).

Cainkar (2013) believes that an accurate data on Arab migrants is hard to obtain and numbers available are random. He adds, “terminology and measurement tools vary according to who is doing the counting and how they construct their categories” (p. 127). Thus, before looking at the numbers we need to know who collected the data and how did they define migrants and whom they excluded.

After 2010, due to the political instability in the Middle East and North Africa region that was caused by the Arab Spring, the migration patterns increased (Fargues & Fandrich, 2012). Most of the Arabs migrate to seek job opportunities, to gain a skill or training in a certain area, to pursue their education, and some wish to experience the western culture and lifestyle (Fargues & Fandrich, 2012). An essential part of the lives of those immigrants in this globalized age is the use of ICTs to stay connected. This became possible as digital connectivity prevailed in this age (Hoffman, Novak, & Venkatesh, 2004).

There is a growing attention of the importance of preparing and enabling the environment and the people to the use of the Internet. “Refugees and asylum seekers made up 16.3 million, or eight percent, of the international migrants in 2010 … The Middle East and North Africa region had the largest share of refugees and asylum seekers among immigrants (65 percent)” (Ratha, et al., 2011, p. X). The use of ICTs, “has become indispensable in contemporary social life” (Hoffman et al., 2004, p. 38). ICTs
play an important role in the immigration process. For example, it helps migrants choose their destination, find relevant opportunities for living, remain in touch with their families, participate in cultural or community activities. Additionally, it provides them with opportunities for skill development, entrepreneurial work, or virtual activities.

**Migration and ICTs.** ICTs are becoming a part of contemporary migrant’s life. They enabled migrants to play a powerful role in co-constructing their societies (Fortunati et al., 2012). ICTs refer to the use of computers, mobile phones, Internet, and other digital devices (Fortunati et al., 2012). They also include but are not limited to the use of social media such as: Facebook®, YouTube®, Twitter®, Flicker®, and Skype® (Bacigalupe & Lambe, 2011). People are increasingly relying on the Internet to perform activities, receive services, connect with others, work, study, and entertain themselves. In other words, “technology has become increasingly domesticated” (Hoffman et al., 2004, p. 38). Hoffman et al., (2004) believe that the activities that people care to do every day such as reading the news and checking email became indispensable. For the same reason, they consider that Internet is becoming indispensable in the lives of many people around the globe. In addition, a decade ago, Hoffman et al., (2004) predicted that the Internet revolution is leading to an era of enhanced connectivity that will have dramatic global impact. They believed that “The Internet continues to be an information and communication tool, but the types of information sought on the computer have expanded considerably” (p. 38).

Hoffman et al., (2004) presented a number of studies to illustrate how people are increasingly satisfied with the Internet, and how the Internet is being used by all
community members regardless of age, race, and gender. They also explained how it became essential to many daily activities such as: home and financial management, planning, banking, shopping, receiving government services, participating in community activities, contacting friends and relatives via email, and searching health information. Hoffman et al., (2004) stated that studies proved that students are also heavy Internet users and that accessing the Internet enhanced their educational experience and managed their academic life. “The Internet is so pervasive in the lives of this generation it has become a natural extension of themselves; college social life has been fundamentally transformed by the Internet” (Hoffman et al., 2004, p. 39).

**International students’ migration.** Migrants are defined by the United nations (UN) as “international students who study in the receiving country for more than one year” (Ratha et al., 2011, p. xiv). When the international students migrate they contribute to the economy of the host country. The Organization for Economic Cooperation and Development (OECD) (2008) report explains how global economies are competing in this globalized age. The report shows how developed countries tend to invest in education and research, especially in Science Technology Engineering and Mathematics (STEM) subjects.

The research outcomes are translated into innovative projects that can increase economic value and solve global challenges. The report states that this is the reason why policies of developed countries are attracting highly qualified international students and migrants. As a result, the number of international student immigrants around the world is increasing. According to the UNESCO Institute of Statistics (UIS) the number of globally
mobile students “increased slightly to 1.3 million in 1990 but by 2009 had tripled to 3.4 million” (UNESCO-UIS, 2011). The main global destinations for international students are: United States, United Kingdom, Australia, and Canada (Choudaha, & Chang, 2012).

Geddie (2013) states that what manages international students’ migration flow to developed countries is their personal skills and how they contribute to the national research agendas rather than the financial contribution made through their fees. Most of the resources that discuss migration topics do not give the growing phenomena of international students’ migrants the needed attention (King & Raghuram, 2013). King and Raghuram also add that even the studies that provide information on international students’, “become quickly out of date because of the volatility of some of the flows” (p. 132).

Geddie (2013) conducted in-depth interviews to explore the factors that underlie international student’s decisions to stay or return back to their home countries after post-graduation. The participants included 47 graduate students enrolled in the science and engineering department at London College and the University of Toronto. The students were from diverse nationalities. Institutional leaders and policy-makers were also interviewed.

The research findings emphasized that social and family ties play an important role in the decision the international student makes when it comes to going back home or staying in the educational host country. Although the professional experience that they acquire makes their immigration more globally desirable, some students expressed how the decision is instead shaped by the needs of their parents (Geddie, 2013). The study
showed that some social and family factors pull international students to their homelands such as in the case of aging parents or a spouse left behind.

There are other scenarios that go beyond the binary option of staying in the host country or returning to the homeland. An example Geddie (2013) provides is the dual science partnership. In this scenario, partners might be in different places and each one of working in a career that requires specific skills. When one of the partners needs to move with the other, the problem is no longer just about remaining in the host country or leaving home, but it is also about a third option; moving to a new location where the partner is settled. Another example Geddie (2013) provided is a closer third destination. While some international students choose to go back and take care of their aging parents, and some decided to stay to support them financially, other students thought of migrating again to another place that is not too far from their home so they could visit their family more frequently.

The availability of some of the services in the host country is another factor that affects the international students’ decision. Geddie (2013) noticed that some of the student care about having good public schools for their children and others looked for good welfare plans for their parents. Research funding is also one of the factors highlighted in the study as a factor that encourages students to remain in a country after graduation. The policy makers in the host countries, Geddie (2013) states realize the importance of creating flexible supportive social policies for migrants and their families. He explained how the host countries made strategic changes to migration regulation policies. The purpose of these changes, he adds, is to encourage international students in
science, technology, and engineering and math (STEM) fields to remain in the country after their graduation. International students can be part of the educational skilled labor force and can contribute to the research and innovation agenda.

King and Raghuram (2013) mapped the related literature to international student migration and highlighted the difference between mobility and migration. They listed factors that define each and highlighted the difficulty in defining the authentic migrant student and on what bases international students can be described as migrant. Mobility, according to King and Raghuram (2013), usually entails shorter time movement and higher probability of returning to home country. King and Raghuram gave an example of Erasmus programs as a mobility case for an international student. The goal of this program is to encourage students exchange programs for a limited period. On the contrary, they explained, long-term movement for students who plan to pursue a degree program, can take more than three years, and qualify the student to be described as an international student migrant. Plans of international student’s migrants to return to their home country are usually not clearly predicted (King & Raghuram, 2013).

King and Raghuram (2013) provide other factors that define categories for international student’s mobility besides the length of the stay and the type of the program. They explain that the topic of the study also affects the International student’s migration experience and circumstances. An example they give is that the STEM fields can provide more opportunities for students to advance their research or receive job offers.

Migration and gender. The number of migrant women around the world is increasing and it is forming half of the number of world migrants (Fortunati et al., 2012,
Women usually play an important role as transmitters of tradition and cultural values in forming new communities (Tona & Whelan, 2009). Geddie (2013) states that a number of feminist migration scholars believe that some women become empowered when they migrate. He explains:

The geographic separation and experience of the different socio-cultural and political-economic norms of their host environment may enable a dynamic sense of subjectivity found through the autonomy and independence that involve questioning and challenging the constructed gender and social norms, and expectations of their pre-migration lives. (p. 199).

Tona and Whelan (2009) conducted a study to investigate the role of Irish women in re-constructing communities of international migrant women in Ireland. They argue that communication technologies play an important role in forming support networks for migrant women's organizations. The total sample in this study was 21 immigrant female members of one of the migrant women’s organizations. A number of 18 open-ended interviews and three focus group discussions were conducted. In the focus group discussions, women were asked to explain and reflect on the use of ICTs in their daily activities of the organization.

Although these networks are formed to embrace women who feel isolated because of the language, education, and social barriers, Tona and Whelan (2009) highlight the fact that migrant women are diverse. They explain that women working in these organizations are skilled and digitally literate. Yet, the technology skills of those women are not the same, “social conditions in their countries of origin determine their levels of technology
literacy” (Tona & Whelan, 2009, p. 10). Tona and Whelan believe that those digitally literate women were successful in forming support groups that helped in empowering other migrant women to remediate their vulnerable situation as isolated and separated women in Ireland. The authors also believe that the digital literacy skills that the women in these organizations possess played an important role in maintaining the organization’s activities. Despite the limited resources they have, ICTs enabled them to manage the work effectively.

Gender inequality is still a concern around most parts of the world. When a woman leaves her homeland and migrates to another country, she adds to her vulnerability and she becomes “double disadvantaged” (Garrido, Rissola, Rastrelli, Diaz, & Ruiz, 2010, p. 6). Migrants, no matter what the motivation or reason for their migration is, face many challenges such as: inequality, discrimination, individualization, and isolation (Fortunati et al., 2012, p. 7). However, globalization changed and is still changing international immigrants’ ontology, dynamics, and characteristics through its political, economic, socio-cultural, and technological dimensions. Nowadays, an immigrant woman who arrives in a new community to work or study is not as vulnerable as a woman who moved during the 80’s. This is due to the dramatic technology advancements. Today, technology allows not only countries and economics to be connected and unified in a globalized trade system, but it also connects people, cultures, ideas, experiences, and much more.

**Gender and digital skills.** Globalization and the change in the world trade system resulted in a change of qualifications and skills in the new job market (Garrido et
The information technology had a significant economic impact on women in the developed countries (Castelle, 2010). Castelle imputes the increase of women in the workforce to factors such as the “informationalization, networking, and globalization of the economy” (p. 218). Another reason he mentions this increase is that women, because of specific social conditions, were among the labor force that the market took advantage of due to women’s flexibility as workers.

A study on immigrant women in Europe examined the role of e-skills programs provided by non-governmental organizations (NGOs) in increasing employment opportunities among immigrant women (Garrido et al., 2010). The study states that more than 50% of immigrants in Europe are women, most of them seeking work opportunities. The used framework emphasizes the need of recognizing women’s capabilities instead of focusing on the discriminatory factors and treating them as victims to their social system (Garrido et al., 2010). This approach is built based on the idea that values individuals’ capabilities. It promotes the belief that women are able to learn and improve their status rather than acting like a marginalized disadvantaged individual and wait for help from an outsider (Garrido et al., 2010). The study follows a mixed method approach and was conducted using a survey with open-ended questions. A number of 530 immigrants in five European countries (i.e., Spain, Italy, the Netherlands, Hungary, and Romania) were researched in addition to interviews with the staff of a number of NGOs. The study findings stress the fact that e-skills are essential to increase women’s employment and achieve social inclusion. The findings also indicate that economic, cultural, social inclusion strategies, and improving competencies fostered by NGOs can lead to economic
and social inclusion. For example, workers in the technology field that deal with advanced ICT tools and nanotechnologies would be expected to have high-level skills (Garrido et al., 2010). The skills that Garrido et al.’s study focused on are: digital skills, social and civil skills, language competence, and cultural participation.

**Migration begins by imagination.** Media and ICT channels play an important role in the migrants’ movements around the world. As Hamel (2009) states, “The act of migration begins in the mind” (p. 10). This indicates that ICTs enable migrants to think and imagine their migration process and receive the needed information even before the journey actually starts. Through advertisements, news, or any of the social networks, work opportunities in other countries are shared. Migrants learn about their host country through images and information provided in the web (Hamel, 2009). For people who intend to move to the developed world, Hamel (2009) states, the images are for prosperous and wealthy country. For those from developed countries who wish to go to developing countries, it is always images of poverty accompanied by “much idolized paradise” (p. 10). Hamel (2009) adds that this information obtained via ICTs is usually supplemented by the information that is already communicated to the person through traditional channels such as experiences of friends or family members.

The role of ICTs is not confined to provision of information that helps the immigrants throughout their migration experience. ICTs can be the reason for migration, not only a tool for information for migrants (Hamel, 2009). Hamel explains that the advancement of communication technologies is leading to an increasing need for skilled immigrants that can work in various sectors of this field. He adds, skilled immigrants in
the field of information technologies are among the advantaged workers. Due to the need of their qualifications and experience, they are granted more opportunities to remain in the host country (Hamel, 2009). While this attraction for skilled workers caused brain drain in some developing countries, other countries (e.g., China and India) were able to advance their ICT field through connection and exchange of information among outside and inside workers (Hamel, 2009, p. 13).

**ICTs and digital inequality.** When discussing the vitality of ICTs use in the lives of migrants, we need to be aware that ICTs are not accessible to all migrants (Hamel, 2009). Migration usually happens from low-level countries to high-level (Hamel, 2009). There is disparity and inequality in the use of ICTs among migrant populations around the world (Hamel, 2009). Socio-economic factors (e.g., rich and poor, literate or illiterate) impact the use of ICTs among migrants (Eubanks, 2007). As a result, even if a migrant uses ICTs, the nature of use will vary according to the efficiency and capacity of the migrant. This, in turn, reinforces the inequality between those who are able to access the Internet but have no skills to use it effectively, and those who are able to access the Internet to appropriate ICTs to fulfill their daily needs (Fortunati et al., 2012).

**Appropriateness of ICTs.** Despite the lack of digital resources (e.g. computers, mobile phones) among most immigrants, they become early adopters of ICTs (Bacigalupe & Lambe, 2011). The spread of Internet cafes in many countries allowed people with limited resources to benefit from ICTs (Vincent, 2012). The use of ICTs among migrants, Hamel (2009) states, provide migrants with a number of benefits and opportunities. “Technology has built bridges between migrant and homeland” (Cainkar,
The use of ICTs enabled immigrants to strengthen family ties through sharing news, events, and memories. It also helped to maintain relations with community members and friends in the immigrant’s homeland, reducing nostalgia (Bacigalupe & Lambe, 2011). Regular communication with family and community members means talking in the same language, sharing memories, and discussing the same cultural issues. Thus, ICTs helped immigrants to maintain a cultural connection (Cainkar, 2013).

With the advancement of ICTs, immigrants can even speak with their friends and families over some audio and video programs (Hamel, 2009). Even more, they can virtually attend some special occasions or events that they wish to be part of (Hamel, 2009) such as a marriage of a family member or ritual events. In the Philippines, mortuary rituals are so important to be attended by family members, absence in this occasion make family members who live abroad feel the grief of being away from their families (Vincent, 2012). To mitigate this feeling, funeral houses in Manila made the arrangement that allowed those relatives to attend the funeral virtually through a link digitally mediated (Vincent, 2012).

Besides connecting immigrants to their families and communities, ICTs played a role in providing essential information that supports the migrants in their migration experience. “Many of the millions of people who have moved from their birthplace now use mobile phones and the Internet to maintain familial, religious, political, linguistic, commercial, and cultural connections, regardless of their whereabouts” (Vincent, 2012, p. 101). The advanced features of technology devices enabled most of the immigrants to incorporate ICTs in all their daily activities such as: learning, working, paying their bills,
accessing government services, purchasing goods, contacting their relatives, and getting information about events, news, weather, and direction (Hoffman et al., 2004). ICTs also helped migrants gain support in the host country in different aspects (Bacigalupe & Lambe, 2011). Migrants and nonimmigrants are attracted by smartphone’s applications (Vincent, 2012). They provide different services, reduce barriers, and are easy to access. For example, there is an application that offers education to migrant’s children and another one that provides information to help them understand their rights (Vincent, 2012) in their new homeland. Such applications are developed to respond to the needs of the migrants.

**ICTs impact on relations.** During the migration period, the use of ICTs increased with both the migrants and their families back home. ICTs engage all family members, adults, and children in learning and adapting to the use of ICTs; ICTs have become a tool that connects the family and helps migrant members to keep their identities (Bacigalupe & Lambe, 2011). “What matters most to these migrants is exactly the same as what matters most to non-migrants. That is, their relationship to a few core people whom they love: their children, parents, lovers, siblings and best friends” (Fortunati et al., 2012, p. xiv).

In a qualitative study for Chinese rural workers, Cheng (2012) conducted five in-depth interviews and daily observation for three months in an industrial community in China. The research goal was to capture how ICTs affect the life of rural workers and enable them to benefit from social connections. Face-to-face communication used to be the form of social connection, but with the advancement of ICTs and, specifically, the
prevalence of mobile phones in China, mobile phones are now the new form for social connection (Cheng, 2012).

Cheng (2012) conducted a study on migrant workers who change their job place and are not settled. They meet new people in each job they go to and they maintain their social relationship with others through a social network called QQ. They overcome the difficulty in maintaining the relations they establish in their physical workplace by creating a virtual world that enables them to stay connected with their friends (Cheng, 2012). Cheng describes the impact of this technological communication through QQ by saying, “some workers have started to adopt this kind of technology to escape the boredom and sadness of a dull and aimless working life” (Cheng, 2012, p. 228). Cheng believes that workers are so thrilled with this means of communication to the extent that they might lose their face-to-face relationships.

Vincent (2012) states that due to the advancement of digital technology in this age, migrants rely on ICTs to communicate in the host country and to connect with families. She states “Many migrants today demonstrate a more robust use of ICTs than that of natives, including Web 2.0, satellite, mobile phones, television, and connectivity on the Internet via services such as Skype or ooVoo” (p. 109). Real life face-to-face communication among workers is almost disappearing. The addiction to the cyber world might have a negative impact on them because “they will feel lost and withdrawn from the real world in which they are living” (Cheng, 2012, p. 228).

Another case is presented by Law (2012) who examined Chinese internal migration for a period of 20 years in Guangdong province. The survey and in-depth
interviews for this study revealed data that show how the use of mobile phones is ubiquitous among Chinese workers. However, in contrast to the general thought of how technology and ICTs are connecting people and helping in strengthening family ties, Law’s finding show that the use of ICTs and new media communication “free migrant workers from both the spatial and temporal constraints of communication” (Law, 2012, p. 216). Law (2012) observed that despite the fact that the family names and numbers were on top of the list of the migrant phone, they were not contacted frequently. Instead, friends at the host cities are the ones who were regularly contacted.

The spread of Internet cafes attracted the workers to other activities: searching for information about a job, playing video games, watching movies, listening to music, updating their blogs, or chatting on QQ. As a result, the feeling of intimacy is decreasing due to the increase of ICT use.

**ICTs and Arab women expatriates.** Arab women who come to the United States might lack the basic digital skills, yet they find themselves soon willing and able to learn the skills they need, whether for their own benefit or their family. In a study for Arab mothers who live in the United States, Al-Salmi and Smith (2015) stated that Arab mother’s digital skills improved because they feel motivated to learn and support their children. Al-Salmi and Smith explained:

Prior to their experiences parenting young children in a new country, the participating mothers’ backgrounds with digital technologies seem to have been quite limited. Mothers reported limited knowledge about the use of the Internet, computers, and tablets largely because their schooling and university education
did not feature the use of such devices. Middle and low socioeconomic status
mothers indicated that they first learned to use a smartphone after they came to
the United States. (P. 54)

Al-Salmi and Smith (2015) stated that one of the Arab women who came with her
children here to the United States found herself obligated to use the computer to support
her children. Her children needed to access educational websites which required the
mother to create an email account to access these websites. In order to do that, the mother
used Google™ to learn the steps. Al-Salmi and Smith (2015) described the experience of
one of the mothers:

in the past, she refrained from signing up in forums, even Arabic language sites,
because they required an email address. Yet when her children asked to use an
educational website at home for the purpose of learning, Hana was motivated to
learn the steps to do both (p. 56)

Summary

Globalization spurred various types of mobility and migration. Migrant’s number
is increasing for many reasons: to pursue education or training, to seek a better or safer
place to live, or to respond to global economy, business, and research needs. From the
minute a person decides to migrate, ICTs play an important role in enabling access to
essential information. ICTs are supporting millions of migrants around the world. Men
and women are harnessing ICTs to mitigate their isolation in the host country and
facilitate their integration in the new community. They can be informed about the
process, the environment, the opportunities, and the culture. When they arrive, they can
stay connected with their families and preserve their cultural identity. However, ICT tools can also distort language, value cyber relations over family relations, and reshape cultural identity. To conclude, in this globalized era, ICT uses among migrants are pervasive and indispensable and entail risk and opportunities for migrants.
Chapter 3: Methodology

Introduction

This chapter includes a review of the qualitative approach selected for this study, which is the ‘phenomenographic approach’; this approach will be further explained to justify its usage in this study. The chapter will include general procedural information on sample selection, instrument, data collection, data analysis, and communicative validity.

Arab women who come to study in the United States come from different places in the Arab world. Some come from developed urban communities that have good technology services, while other come from less-privileged communities in technology than the United States (as cited in Tona & Whelan, 2009, p. 10). Academic work that examines Arab women’s experience with technology in their countries and compares it to their experience here in the United States is limited. Hence, this study is focused on the experience of graduate, expatriate, Arab women who are studying in the United States, their perceptions regarding the digital literacy and the gender digital divide that exists in the Arab world.

This study was conducted in an empirical interpretative inquiry through a phenomenographic approach to understand how Arab women are experiencing the use of technology to improve their life. The research collected qualitative data based on the cultural background of those women and the use of technology they experienced here in the United States and back in their home country.
**Topic Researched**

To explore more about the topic of gender digital divide, the research focused on women’s relationship with technology and their use of the Internet and ICTs. The research did not examine the women themselves or explore the digital divide as a problem. The focus was on women’s experience with technology as demonstrated in Figure 1. The research examined how women described the use of technology, skills needed, and enabling and hindering factors back in their homes or here in the United States as they experience these factors. No prior judgments or expectation or generalization were made regarding all these questions. Each story was embraced as source of information that reflects parts of women’s ideologies regarding technology.

*Figure 1: Phenomenographic Research*

(adapted from Bowden, 2005, p. 13) permission in Appendix E
ICTs can be a source of empowerment for women. Accessing the Internet is not the ultimate goal in this age. Women need to have digital skills that will enable them to benefit from technology and harness it to their needs. The researcher’s approach aimed to identify and reflect the impact of technology in lives of Arab women and to identify strategies that they adopt in improving their digital literacy skills. Their experiences in the United States were examined to determine if it is different than the experiences in their home country and what factors played a role in this difference if found.

**Research Questions**

This study aimed to examine the answer to this main question: How do Arab women studying in the United States perceive digital literacy? To answer this main question there were sub-questions that helped capture women’s digital experiences in their home countries and in the United States.

- What skills do Arab women believe are needed to be digitally literate?
- How do they gain these skills?
- What motivates them to gain these skills?
- Do you consider yourself digitally literate?
- How do they reflect on their digital experiences in the United States and their home country?
- What factors hinder or accelerate Arab women chances to become digitally literate?
- Do Arab women believe that women can benefit from the opportunities that digital literacy offers?
• What do Arab women believe about women and technology stereotypes?

**Phenomenography**

**Appropriateness of the phenomenographic approach.** The aim of this research was to describe how graduate Arab women perceive and understand the use of technology in their lives and how they understand digital divide and digital literacy phenomena from their perspective. Ethnography approaches was examined for this research and it was determined not to be appropriate. The focus of ethnography as Ornek (2008) states is usually on cultures and the main source of the data is usually collected through observations. Phenomenology as well was not found appropriate as it emphasize the individual’s experience Ornek (2008). Instead phenomenography, specifically developmental phenomenography approach, was selected for this research.

In a pure phenomenography, the aim of the research is “mapping the qualitatively different ways in which people experience, conceptualize, perceive and understand various aspects of, and phenomena in, the world around them” (Marton, 1986, p. 31). In developmental phenomenography, the researcher aims to take the research a step further by considering practical outcomes that can influence and improve practice in the field researched (Bowden & Green, 2005; Bowden & Walsh, 2000).

The phenomenographic researcher avoids ‘top down’ approach that starts from building a hypothesis or a theory that needs to be tested (Green, 2005). In addition, any preconceptions that the researcher had from their own experience with the phenomena should not affect the research’s neutrality when collecting the data in order to be able to see other perspectives from the participants (Sandberg, 1997). Phenomenography follows
a ‘bottom up’ inductive approach. The researcher’s own ideas and understanding about
the phenomenon does not matter; what matters is how the participants understand and
reflect on the phenomenon (Orgill, 2002). In other words, phenomenography is
“qualitative in a grounded way as it tries to explore and describe a phenomenon from the
data, rather than trying to fit the data to predetermined categories” (Mann, 2009, para. 5).
They add, “What people think may be clouded by rhetoric that they have been told or
read, whereas, their experiences reveal more about their understandings of the aspect of
the world of interest” (para. 3). Thus, it is important for the researchers to free their mind
from any prior image or conception they have in their minds about the participant’s views
or responses. Failing to do this might lead to overseeing and misunderstanding the real
picture. This will cause the repetition of the same standard ideas and words that people
are used to hearing in similar situations (Mann, Dall’Alba, & Radeliffe, 2007).

Phenomenography as a framework. Phenomenography is not only a
methodology or a theory that provides a solid theoretical framework for this study.
Phenomenography as a framework allows the researcher to examine how others acquire
their knowledge and learn something. “Phenomenography offers both a theory of learning
and a methodology to study learning, and focuses on qualitative variation in learner
meanings and the development of meanings” (Hales & Watkins, 2004, p. 6). This study
focuses on Arab women coming from different Arab countries to obtain a graduate
degree in the United States. They have different backgrounds, different experiences in
using technology in their home countries and in their different departments here in the
United States. Thus, the focus of phenomenography on the qualitative variation of these women’s perceptions on technology serves the purpose of this study.

**Phenomenology versus phenomenography.** There are some common features between phenomenology and the phenomenography approach. There are also some differences that give the phenomenographer a different set of rules to follow while collecting and working with the data in this framework. Table 1 compares the differences among phenomenology and phenomenography. From this table, we can see that both approaches address a certain phenomenon.
### Table 1:

*Comparing phenomenography and phenomenology.*

<table>
<thead>
<tr>
<th></th>
<th>Phenomenography</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual experience</td>
<td>The focus is on the individual’s experience and how they experience the phenomenon</td>
<td>The focus is on the phenomenon not on the individuals’ experience with the phenomenon</td>
</tr>
<tr>
<td>(Stamouli &amp; Huggard, 2007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-dualistic</td>
<td>Non-dualistic approach that values the relation between the phenomena and the individual</td>
<td>Dualistic ontology. The object and the subject are examined separately</td>
</tr>
<tr>
<td>(Trigwell 2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variation</td>
<td>The variation is embraced and reflects different stories about a phenomenon</td>
<td>The aim is to clarify experiential foundations in the form of a singular essence.</td>
</tr>
<tr>
<td>(Bruce, 1996)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second-order</td>
<td>Second-order perspective, the researcher describes the world as understood by interviewees</td>
<td>First-order perspective, the world is described as it is</td>
</tr>
<tr>
<td>(Trigwell, 2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collective meaning</td>
<td>An emphasis on collective meaning and the major aspects of the differences in the experience</td>
<td>The emphasis is on the individual experience and therefore rich description of individuals is needed</td>
</tr>
<tr>
<td>(Trigwell, 2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance-oriented</td>
<td>Substance-oriented, e.g. the phenomenography of digital literacy in my research, can refer to anything that can be said about how women perceive, experience, and conceptualize digital literacy</td>
<td>Phenomenology is methodological and not substance oriented, the phenomenology of digital literacy would refer to something that the researcher might get out of the phenomenological investigation.</td>
</tr>
<tr>
<td>(Marton, 1981)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>When analyzing we arrange the data in categories that describe how different people experience a concept or a phenomena</td>
<td>We identify meaning units</td>
</tr>
<tr>
<td>(Ornek, 2008)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
However, the goal of phenomenography is to understand the participant’s perceptions and understanding of a phenomenon, while the goal of phenomenology is to provide a better understanding of the phenomenon itself.

**Phenomenographic analysis.** In order to conduct the phenomenographic analysis, the researcher should highlight excerpts from the transcripts that support the findings. No further rich description should be made, or else the research might not fit into the phenomenographic category and will require another methodology that looks at the implication or underlying meaning of what the participants said (Bowden & Green, 2005). Although sometimes it is tempting to analyze the underlying meaning of what is said, it is not encouraged as it might lead to a different methodology other than phenomenography Bowden and Green (2005) further explain:

> It would have meant ‘reading beyond the lines’ and speculating about the implications of what was said, rather than just attending to what was actually said. I feel, however, that our project would have benefited from doing this. It would have enabled engagement with some of the richness of the transcripts that a focus on explicitness leaves unexplored. Such an analysis, however, would necessarily have taken United States beyond phenomenography and would therefore have required an alternative methodology. (p. 54)

To make sure that this phenomenographic rule is met, “The researcher can accomplish this by constantly asking, ‘Where in the transcripts does this come from?’ almost becoming their own devil’s advocate (Mann et al., 2007, p. 12). Each category
should be understood by it’s own, and should be supported by excerpts from what the participants have said.

The individual’s excerpts are collected from the individual interviews and they form a pool of meaning. This means that the excerpts now have two contexts one in the individual transcript and one in the collective pool of meaning. It is important to look at the individual context to ensure that the quote is understood correctly and not taken out of context. Once the meaning is clear all the quotes will form meaning units that can be organized and grouped in categories. These categories, although they describe what the participants said, cannot represent one participant because they were reconstructed when the categories were formed. Bowden and Green (2005) explains:

It is easy to confuse, or equate, the category with the individual. That is, mistakenly believe that a single category should equate fully with the perception of a single individual. While this may occur, if, for example, only one participant in the study expresses a certain perception, this is the exception. (p. 81)

**Ethnography vs. phenomenography.** Ethnography, as discussed by Mason (2002), is not just an approach, it is a strategy grounded in ontology. Ethnography has a big influence on qualitative research and many qualitative researchers call themselves ethnographers (Mason, 2002). Although ethnography is practiced differently, there are still common features that shape this approach. It is in general about the study of culture or subculture through focusing on the cultural setting. Observation plays a major role in providing a detailed description (Mason, 2002). There is also an emphasis on the role of the researcher and the experience he gains directly from the field in a naturalistic setting
(Mason, 2002). However, Mason (2006) explains that some researchers follow the ethnographic strategy without calling it ethnographic study. They see this strategy as data collecting method and not necessary tying them to the ethnographic field (Mason, 2006). In all cases, ethnography differs from phenomenography as the latter depends only on the participant’s interviews. The field notes or observation are not a source of information for the phenomenographic research.

**Communicative validity.** Validity or trustworthiness in qualitative research in general means making sure that the researcher follows appropriate processes, asks the relevant questions, and generates relevant findings to the phenomena investigated (Akerlind, 2005) It is achieved by ensuring the relationship between categories shaped by the researcher and the data the he/she obtained from the participants (Ornek, 2008).

Bruce (1996) believes that trustworthiness in phenomenographic studies can be achieved if the outcomes of the study are logical, demonstrate “orientation towards the phenomena studied through the process of discovery and description” (Bruce, 1996, p. 5–31), and if the generated outcomes are communicable.

Sandberg (1994) explains that communicative validity in phenomenographic research is concerned with the researcher’s ability to depict the participant’s experiences and conceptions about the investigated phenomenon. Sandberg (1994) adds that the communicative validity can be achieved by the researcher’s ability to persuasively discuss the findings and pragmatic validity: which means the researcher’s ability to present findings that is meaningful to the intended audiences. There are some points that
the researcher needs to follow in order to achieve the communicative validity throughout the steps of the phenomenographic research.

The first step starts when conducting the interviews. The researcher should tell the participants beforehand the purpose of the interview and the topic that will be discussed. The researcher also needs to explain his or her interest in knowing what the participants think about the phenomenon. Sandberg (1994) believes that it is important to inform the participants that there is no right or wrong answer and that they will not be judged based on what they say. The researcher also needs to encourage the participants to talk about their experience and engage in an open conversation and not to limit the interview to closed-ended questions and answer session. The second step is when analyzing the transcripts; it is important to focus on each text as a whole and not look at parts of these transcripts separately to avoid analyzing them out of their contexts (Marton & Booth, 1997). The third step of the communicative validity is sharing the results with other researchers and professionals. It is important that the researcher communicate how he/she analyzed the data and formulated the results (Sandberg, 1994).

**Bracketing.** Bracketing is an important feature in a phenomenographic study and it ensures that the researcher is freezing his or her own judgment and following a second order perspective. Marton and Booth (1997) explain: “we have to look at the statements, acts, and artifacts to find out what ways of experiencing particular aspects of the world they reflect, regardless of their validity, skillfulness, or functionality” (p. 120). What happens then during all stages of the phenomenographic research: in data collection, transcribing, interpreting, and analyzing is that the researcher thinks and acts and reflects
on the participants’ experience. Marton and Booth (1997) differentiate between
reflexivity in phenomenology and phenomenography by stating:

In a phenomenological study the phenomenologist’s awareness is withdrawn from
the object of experience, and the constitutive acts of awareness are reflexivity
focused (awareness is bent back as it were, focusing on itself), and it is here that
the difference between phenomenology and phenomenography lies. (p. 120)

**Member check.** Interviews in phenomenographic studies aim to understand the
meaning of a phenomena as experienced by the participants in certain time. In this
research, graduate Arab women were asked about their technology experience in their
home countries and in the United States. Their responses described their experiences in a
certain time period in a certain place. Their views might vary in different situations or at
different times. For example, asking the same participants the same questions a year later
might yield different responses that show different conceptions regarding the phenomena.
Bowden (2005) states “meaning may vary within individuals as well as between
individuals, but the range of variation within individuals is likely to be encompassed by
the range across individuals” (p. 81).

**Generalizability and transferability.** This phenomenographic research focused
on how Arab graduate women who study in the United States understand and experience
technology based on their experiences at their home countries and here in the United
States. The purposeful sample and the specific context of this study made the outcomes
represent only the sample defined in this study and hard to be generalizable on all Arab
women. Bowden (2005) states, “no outcomes from phenomenographic research can be
regarded as generalizations or universal statements” (p. 17). The purpose of this research was to describe the variation in the digital experiences of Arab women and avoid generalizations. However, the outcome space can be transferable to a similar group of population with similar characteristics. “A fundamental assumption underlying phenomenographic research is that there are a finite number of qualitatively different understandings of a particular phenomenon” (Bruce et al., 2006, p. 303). To a phenomenographer, all these voices and experiences matter and they were represented in the pool of meaning as described in Figure 2. No focus on the individuals themselves was made; it was only their experiences that mattered. From this perspective, it was acceptable to assume that the outcome of this study might be true and can apply to women who are in similar situations and have similar characteristics.
Data Analysis

Since interviews are the method of collecting the data in this phenomenographic research, the interviews were transcribed verbatim (Marton & Booth, 1997). Marton and Booth (1997) state that data analysis in phenomenographic research should generate categories of description for the different ways in which people experience a concept. There are three essential criteria to form these categories: They need to be logically
related, qualitatively different than the other, and parsimonious (Marton & Booth, 1997; Reed, 2006).

According to Marton and Booth (1997) the analysis process starts with a basic preliminary reading of the data in order to be familiar with the main aspects of the phenomena, to identify significant variation. After that, the researcher condenses the interview answers by keeping the main essence of the dialogue. Then the researcher classifies the similar answers together. At the end of this phase the researcher will have a “pool of meaning” (Marton and Booth, 1997, p. 133). This pool of meaning contains excerpts collected from the interviews. In this pool of meaning, boundaries that separate individual voices will be abandoned, thus each quote will have two contexts (Marton, 1998): one that belongs to the individual’s interview and one that belongs to the pool of meaning. This pool of meaning usually contains all descriptions that the researcher hoped to find in the research (Marton & Booth, 1997).

**Coding.** The researcher color coded extracts from the pool of meaning and they were grouped in categories based on existing similarities in these quotes. Coding in phenomenographic research is conducted to find the variation in the interview transcripts and not to find one single pattern (Marton & Booth, 1997). It is important as Marton and Booth (1997) and Bruce (1996) highlight to capture the experience of the participants and to realize the meaning that they tried to express not only focus on the linguistics. Through this process, the researcher formed the categories of description. This process requires constant iteration to form the categories, the process described by Marton (1986):
Quotes are sorted into piles, borderline cases are examined, and eventually the criterion attributes for each group are made explicit. In this way, the groups of quotes are arranged and rearranged, are narrowed into categories, and finally are defined in terms of core meanings, on the one hand, and borderline cases on the other. Each category is illustrated by quotes from the data. ... As the meanings of categories begin to form, those meanings determine which quotes should be included and which should be excluded from specific categories. The process is tedious, time-consuming, labor-intensive, and interactive. It entails the continual sorting and resorting of data. Definitions for categories are tested against the data, adjusted, retested, and adjusted again. (p. 43)

The last phase was separating the experiences into levels. Reed (2006) explains: “The results of a phenomenographic analysis are a hierarchical set of categories of description describing the variation in the way a phenomenon is experienced” (p. 1).

This hierarchy of the categories was formed based on logic and not on the importance of one category over the other (Marton & Booth, 1997; Stamouli & Huggard, 2007). Marton (1986) adds, these categories are related logically. For example, complex categories are usually inclusive to other simpler categories and that would be the reason of making them on top of the hierarchy.

Marton and Booth (1997) state that analyzing the data and the formation of the categories of description represent the variation of experiences collectively. For example, in this research, all individual’s voices and perceptions about digital skills that are needed to make the person digitally literate collectively formed the variation of categories. The
individual voices were dissolved in the collective category or as Marton and Booth (1997) describe:

It is a stripped description in which the structure and essential meaning of the differing ways of experiencing the phenomena are retained, while the specific flavors, the scents, and the colors of the worlds of the individuals have been abandoned. (p. 114)

**Research Validity and Trustworthiness**

To ensure that communicative validity is achieved in this research, the researcher informed the participants about the topic of the study and the purpose of the interviews. I also explained that there was no right or wrong answers. The purpose was to see the variation in Arab women’s views and experiences (Sandberg, 1994). I also ensured the validity of this phenomenographic research by analyzing the transcripts without taking the responses out of their context (Marton & Booth, 1997). Working with MAXQDA11 software enabled me to look at the pool of meaning with the ability of locating the actual interview that the segment was taken from. This enabled me to ensure that responses were not taken out of their context.

The interview question of this research generated data from the participants that show the qualitatively different categories that describe how Arab graduate women understand the digital literacy phenomenon. Bruce (1996) believes that trustworthiness in phenomenographic studies can be achieved if the outcomes of the study are logical and communicable. The categories of this research are logically related and show the variation of responses and demonstrate orientation of the phenomenon studied.
Data Collection

Participants. A purposeful sample was selected for this research from different colleges at a Midwestern University. A number of 23 participants were interviewed; three for the pilot stage and 20 were valid to be used in this study. Trigwell (1994) explained that a sample size of 15 to 20 could allow the categories to reach a saturation point in phenomenographic studies.

The participants in this study were graduate, expatriate, Arab women who came to the United States to pursue their higher education. They were from: Iraq, Jordan, Kuwait, Palestine, Saudi Arabia, Sudan, and Tunisia. The majority had scholarships from their governments, only two had funded scholarships and another two have graduate assistantship from the university.

All women were well educated. Some of them came to United States with a good level of English language, but the majority joined the English language center at the university. Some lived in rural areas and some in cities. These differences added the breadth required to capture the variation among Arab women in this phenomenographic study without affecting the homogeneity of the sample being all Arab women from the same region, speaking the same language, having the same educational level and currently living and studying in the same university. Stamouli and Huggard (2007) state for phenomenographic studies, “the sample should capture as broad a range of relevant population characteristics as possible” (p. 184). The selected sample shared gender, language, levels of education, and to some extent the cultural and educational background of the Arab world.
All selected participants met the defined criteria for this study, all are from one of the defined Arab countries, speak Arabic as their mother tongue language, they completed their undergraduate education in their home countries and are currently in the United States to get a master or a doctoral degree. Completing at least a semester in the United States make them viable participants for this research. The age of the 20 women in this study ranged from 25 to 45. Each participant was provided a pseudonym.

**Participant recruitment.** I used a purposeful sample for this study and I followed the snowball technique to recruit my participants. Snowball sampling is used to identify a specific group of people that cannot be selected randomly. The technique as described by Beins and McCarthy (2011) is a:

> Chain-referral sampling technique in which one person from a population of interest identifies another person from that population to a researcher who contacts that second person, then that new individual refers yet another person, for as many stages as desired by the researcher. (p. 276)

All participants were selected from the same University to ensure that they all are in a similar technology environment and are having similar opportunities and facilities around them in their classes and the campus as well. I started by identifying some of the women I know and at the end of each interview I asked them to suggest another graduate Arab woman that they might know.

**Selection criteria.** The purpose of this study was to understand how Arab women who come to the United States understand digital literacy. It was important to set criteria
for selecting participants who can reflect on these two different context for using technology.

- They should be from one of the Arab countries defined for this study (Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen).
- They should be a graduate student enrolled in a Master or a PhD program.
- They must have completed at least high school at their home country and spent at least a semester in the United States.

**Interviews.** Interviews have been the most commonly used instrument in phenomenographical studies (Marton, 1986). Phenomenographic interviews differ from other interviews conducted in qualitative research because they focus on the participant’s experience with the phenomena (Bruce, 1997). In this research, the phenomenon is the digital divide, and the focus will be on how the participants experience or understand digital literacy to bridge the digital divide. As emphasized by Bruce (1997), the focus should not be on the participant or on the phenomena but how the participant’s experience is related to the phenomena.

I conducted one-on-one interviews with each participant. The interview protocol had semi-structured questions with few prompts to help the participants: understand the questions, reflect only on their experiences with technology, and reflect on the differences of their technology use here in the United States and in their home countries. To help the participants talk about their experience, Säljö (1997) states that results of
phenomenographic research become more interesting when people are asked about a specific experience or achievement that they can relate to in their life, rather than asking them abstract questions.

For example, instead of asking the participants in this research to define digital literacy, it is better to ask them about a specific experience with technology. Asking theoretical questions about a phenomenon usually generate standard and less varied responses. Moreover, asking about clarification will appear as if testing someone’s knowledge (Marton, 1998). In talking about a personal experience, participants can feel comfortable talking about their experience more and can give detailed description that help the phenomenographer to find more variations. All participants in this study were asked to talk about their first experience with technology and the Internet and how it helped that experience develop, and if it helped them in the process of getting here to study in the United States.

**Institutional Review Board (IRB)**

To protect the participant’s rights, an Institutional Review Board (IRB) was obtained from the Midwestern University before contacting the participants or conducting the study. A signed consent form was also obtained from the participants that explained the topic, that interviews were audio recorded, that their identities were kept anonymous and replaced with identifiers. The data collected was kept in an encrypted, secure, and locked location not accessible to the public.
Organization of this Study Research

After receiving the IRB, the interview process started in May 2015 and continued in the fall. Each interview was transcribed upon its completion. The interviews were recorded on an iPad and transferred to the computer and saved in a secure encrypted file. Then they were transcribed and moved to MAXQDA11® qualitative data analysis software. The data was coded and the data within each code formed the pool of meaning.

Pilot Study

Following the phenomenographic methodology guidelines, the process started with a pilot interview with three women from three different countries. The pilot study examined Arab women’s experiences in using digital technology in their countries and in the United States and how this experience shapes women’s conceptions about digital literacy and the digital skills needed for someone to be digitally literate.

The purpose of the pilot was to test the quality of the instrument used for this phenomenographic study, which was based on semi-structured interviews. It was necessary to know if the prepared interview questions are adequate to gather the information needed, and to find out if the answers to the interview questions would yield the information the was needed to know to learn about graduate Arab women’s experience with technology. It was also a way to know if analyzing this data would enable me to see the qualitatively different ways women understand digital literacy.

Analyzing Data for this Study

Since interviews are the method of collecting the data in this phenomenographic research, the interviews were transcribed verbatim (Marton & Booth, 1997). The main
interviews were conducted between May and August, 2015. The data was transcribed verbatim in Microsoft® Word documents. All the documents were then uploaded to MAXQDA11®: the qualitative data analysis software. Transcribing the data took place after all the interviews were completed as suggested by phenomenographic researchers “It is much safer to wait until the interviews are complete before beginning the analysis” (Bowden & Green, 2005, p. 20).

Pool of meaning. The analysis process started by reading and rereading each interview as a whole. Important statements, comments, phrases, descriptions, and stories were highlighted and given a code that is related to the phenomenon studied in this research, which is digital literacy. These coded segments formed the pool of meaning. “The pool of meaning contains all that the researcher can hope to find, and the researcher’s task is to find it” (Marton & Booth, 1997, p. 133).

The step that followed was reading the pool of meaning several times in order to define the categories of description for the phenomenography of digital literacy among Arab graduate women. At this point, I was able to define the categories and the structural relation between these categories that form the outcome space of this phenomenographic study.

The description of the categories defined in the research is taken from the pool of meaning that contains the interviewee’s transcript. No additional thoughts to explain or contemplate on what the participants have said were used as it is not appropriate in phenomenographic studies (Mann et al., 2007).
The analysis started by reading through ten transcripts. Reading ten transcripts at the first stage make the data more manageable (Trigwell, 1994). The data analysis in phenomenographic research should generate categories of description for the different ways in which people experience a concept (Marton & Booth, 1997). In MAXQDA11, some of the statements that pointed to the participants’ understanding of digital literacy were highlighted as shown in Figure 3. Rereading the transcripts made it possible to define some codes and from that the significant statements were labeled with the one or sometimes more than one code.

Figure 3: Screen Shot for Coding in MAXQDA11®
To organize the codes, a code title that matches the questions was created. Then sub-codes that demonstrate key aspects of the relevant question were also created. All these coded segments form the pool of meaning. By clicking at each code a pool of meaning was formed to work with. The responses were grouped and the repeated answers were eliminated. A visual map in MAXQDA11® was drawn to help generate some categories for that specific question as shown in Figure 4.

*Figure 4: Screen Shot for Visual Organizing of the Codes in MAXQDA11®*
The Researcher

I am a graduate Arab female student studying in the United States. My focus on gender digital divide and the importance of digital literacy in the life of women is influenced by my work experience in my own country, Yemen, and my higher education in the United States. I worked in Yemen in the field of: human development, gender equality, and women empowerment. I worked for eight years with international organizations and was part of teams that implemented programs that aim to improve women’s status, enhance their life skills, and empower them at the social, political, and economic level. My higher education in fields of international development, gender and women studies, and instructional technology shaped my interest about the current research. On top of that, my life as a student and expatriate in the United States enabled me to realize the vital role that technology can play to advance people’s life; this in turn spurred my interest in technology as a tool for empowering Arab women. I started by empowering myself and building my own digital skills in order to support others. I saw technology as the 21st century power that each and every woman in the world should benefit from, no matter where she is, what is her background, her level of education, or goals. Yet, I know that there are many challenges in the Arab world.

Technology and Internet access are concepts surrounded with obstacles that result either from governments, infrastructure, family rules, economic situation, or lack of awareness and interest. Even when the mobile use flourished recently in the Arab world, it was mostly used for fun and entertainment with no further knowledge of how to benefit from its potential power. In my research, I wanted to find out if Arab graduate women
who come to study in the United States were able to gain digital skills. If so, how did they do that and why? What do they think these skills could add to their life? My strong belief that technology is the literacy needed for this age can impact my research in general. I am aware of this bias and I found that the phenomenographic approach helped me set aside my assumptions, beliefs, and pervasive knowledge on the ground, literature, or stereotypes about the topic. In this research, my aim was to listen to what women experience, think, and believe. I wanted to know their real perceptions away from that which appear in media, commercial world, and outdated information in this rapidly changing digital world.

Summary

In summary, this chapter provides a description of the empirical, qualitative methodology used in this study, which is developmental phenomenography. Developmental Phenomenography is a theory and a framework used to describe the qualitative variation in the participant’s understanding to a certain phenomenon. The chapter also discussed the data collection method and approach used in this study and presented how MAXQDA11 data analysis software was used for analyzing and coding the data.
Chapter 4: Study Findings

Introduction

This developmental phenomenographic study aimed to find the qualitatively different ways Arab graduate expatriate women in the United States understand digital literacy. The study also aimed to highlight the factors that made their experience here in the United States different than their experience in their home countries. The research outcomes will propose strategies to contribute to the efforts of increasing Arab women’s use of technology in the Arab world.

The research was conducted at a Midwestern university with the purpose of exploring what digital literacy, as experienced by Arab graduate women studying in the United States, means to them. The study also explores how do they compare their digital experience here in the United States to that in their home countries.

The university and K12 schools mentioned in this research study do not represent all universities and schools in the United States. The university and schools in this research represent high tech learning institutions that provide needed digital services for their students and have effective online communication channels with students. Thus, women interviewed in this study were able to have an experience that might be different than other places in the United States.

The same is true within the Arab world, institutions that women are talking about might represent only what they have in their area or region. However, there are 20 women interviewed for this study from seven countries in the Arab world. Having more
than one woman from the same country did serve the purpose of this research, and made variation visible even within the same country.

**Research Questions**

This study sought to examine the answer to this main question: How do Arab women studying in the United States perceive digital literacy? The following are sub-questions that helped in answering this main question

- What skills do Arab women believe are needed to be digitally literate?
- How do they gain these skills?
- What motivates them to gain these skills?
- Do you consider yourself digitally literate?
- How do they reflect on their digital experiences in the United States and their home country?
- What factors hinder or accelerate Arab women chances to become digitally literate?
- Do Arab women believe that women can benefit from the opportunities that digital literacy offers?
- What do Arab women believe about women and technology stereotypes?

**Data Analysis**

The participants were from different disciplines, enrolled in masters or doctoral program. Half of the participant are married women and have children, the rest are not married. The interviews were conducted in different places, in the library for most of them and few at their department’s halls. The interviews were recorded on an iPad and
transferred to a personal computer and saved in a secure encrypted file. Then they were transcribed verbatim and moved to MAXQDA11® software for analysis.

According to Marton and Booth (1997), the analysis process starts with a basic preliminary reading of the data in order to be familiar with the main aspects of the phenomena. It is important to identify significant variation, important statements, comments, phrases, descriptions, and stories that were highlighted and were given a code. It is also important to only keep the codes that are related to the phenomenon studied in this research which is digital literacy. After that, the codes should be condensed and similar codes should be grouped together. These coded segments formed the pool of meaning. “The pool of meaning contains all that the researcher can hope to find, and the researcher’s task is to find it” (Marton & Booth, 1997, p. 133). Individual voices will be abandoned from this stage and each individual code will be part of the pool of meaning, thus each quote will have two contexts (Marton, 1998).

Coding in phenomenography should define the variation in the interview transcripts and not to find one single pattern (Marton & Booth, 1997). As Marton and Booth (1997) and Bruce (1996) highlight, it is important to capture the experience of the participants and to realize the meaning that they tried to express not only focus on the linguistics. Through this process, the researcher forms the categories of description. This process requires constant iteration to form the categories. As Marton (1981) states, each category should be supported by quotes from the pool of meaning. The data should be tested more than one to make sure that all variations in the pool of meaning are captured and that the quotes belong to the related category.
After defining the categories in the pool of meaning for the main question of this study, the last step involved defining the outcome space, as shown in Figure 5. The outcome space is a diagram that explains the relationship among these categories. The outcome space in this study is developmental progression. The term developmental progression as explained by Laurillard (1993) means that the categories of description are successive and each one has more explanatory power.

\[\text{Figure 5: Outcome Space - Categories of Digital Literacy (Developed by the Researcher)}\]
How Do Arab Women Studying in the United States Perceive Digital Literacy?

**Categories of description.** Categories of description represented in Figure 5 form the outcome space of this phenomenographic study. The categories were formed based on the participants’ answer to these two questions:

Q 1 - How do Arab women studying in the United States perceive digital literacy?

Q1-1 What skills do Arab women believe are needed to be digitally literate?

The data analysis revealed five main categories for the way Arab women in the United States understand digital literacy and the skills needed to be in each category. They start from the basic skills: basic computer use, basic searching skills, and having an email account. The skills then increase and move the digitally literate person to another advanced category. This hierarchal structure ends by the awareness category that requires critical thinking for using technology in the 21st century. The categories are:

1. Digital literacy is having basic technology skills.
2. Digital literacy is being connected
3. Digital literacy is a lifestyle
4. Digital literacy is a contextual need
5. Digital literacy is being aware of the Internet culture

**Digital literacy is having basic technology skills.** Digital literacy is seen as a basic need defined by basic use for computer or any digital device. Being able to turn it on and off without the help of others and being able to do a basic search online. A person in this category is familiar with using word document, have email account and can type.
These basic skills can be of a different levels depending on familiarity of the person in using these skills.

Ruba defined digital literacy by saying: “digital literacy is, you basically have the basics, it is more than one level, but it starts from having email, laptop, phone, and you can turn on and off your devices and log in and out of your accounts”. To be digitally literate, Hana suggested the person should have at least two skills:

I guess if someone can pull up Google™ and search for something is one, and use email that’s two, because in this age using email is # 1 skill. These two skills are the most important things that differentiate digital literate from digitally illiterate person, if you lack one of these two you will be considered digitally illiterate.

For Sala to be digitally literate means to know something about everything in the world of technology, she says: “I think it means knowing basic thing about everything. Knowing what exist and what for, knowing how to use YouTube®, Google™, social media, and get basic information about most of the common things”.

A digital literate person for Leen is a person who knows the basics of using computers, while a person whose knowledge is limited to social media and phone applications might not fit in the digitally literate category. She stated:

First thing I think of is the use of computer and the use of computer applications and programs. The person needs to know how to use the basics, how to open computer, create a new file, and type, save, search for information. Because knowing these skills will make me able to search for what I need to know and
learn other skills I don’t yet know. I don’t consider a person using the phone digitally literate.

**Digital literacy is being connected.** Digital literacy is seen as the ability to use and understand the digital devices for connecting and communicating with others through email and social media. A person in this category finds digital communication a vital source in this age that connects people to what is happening in the world, their communities, family, school and work. There is also an interest and willingness to learn and explore new devices, applications and programs.

In addition to the basic skills mentioned in the previous category, Amal added the skill of using social media, she said:

I feel in this age anyone have to have an email, Microsoft® software and can access Internet and use computer, and know how to use his phone and social media applications like Facebook® and Twitter®. All of this is needed for a digitally literate person.

Those who are not yet part of the social media, Jori says, can feel excluded from the conversation: “now when you sit with people, all their conversation will be about social media so if someone is not aware of what they are talking about it means they are digitally illiterate and will feel lost among the rest”. While Samia believed that those whom their relation with technology is limited to social media only cannot be considered digitally literate. She suggested:

My older sisters have social media accounts so they use technology, but their use is not like my younger sisters who started to use it for doing their homework and
to search for information online. So although they are all using technology, I can’t say that they are digitally literate.

The use of some people as she explained in the Arab world is limited to applications that helps in connecting family members and friends. While her younger sisters are learning how to use it effectively in doing their homework and searching for information. Unfortunately, most of the public schools in the Arab world lack this technology preparation and students therefore rely on ad hoc chances of learning something new through friends or family members.

**Digital literacy is a contextual need.** Digital choices depend on what the person is interested in and what he or she is currently doing. For students, digital literacy means different set of skills than what is needed for a photographer or a blogger. The set of skills are expected to make the person harness digital tools to facilitate the work he or she is doing and to save the time and effort.

To prepare for her classes and obtain information before class Rula said:

I also found a great help in YouTube®. If I need to learn about anything, I just type the subject and add Master level so I get to the right information I need. I listen to the YouTube® lecture and write down some notes such as the new words or concepts so I don’t get lost in the lecture if I heard them. Then when I go to the lecture I will feel already familiar with the topic and this really helps me a lot.

Digital literacy skills as defined by Farah are based on the personal use and need: “Digital literacy is the minimum level of skills that you need in your life or in your academic life”.

When Farah was asked about what she means by the minimum level and how to define it she said:

The basic search in the Internet and basic use of technology tools that will enable you to reach the information that you need in your field. Being a student, you need to be able to communicate online, access resources online, use the computer smoothly. These are the basics that can allow you to improve your skills more if you want, or at least help you survive as a student in this digital age in this digital environment.

To be digitally literate Riham thinks a person needs to have the will to learn and to depend on herself to explore and use digital devices:

I think everyone who is interested in learning how to use digital devices they only need to bring the device and explore even without a learner, so I think stop relying on others to use the digital device and reach a stage that makes you able to search and learn what you want when you need makes the person digitally literate.

Mary described how it is possible now for a person in this age to improve themselves and she said:

Now you can’t say I don’t know how to do something, even if you never heard of it before, everything you want to learn is there online, so we just need to sit and explore. Just type how to on YouTube® and you can find different people explaining, so you can just follow and learn at your own pace.

**Digital literacy is a lifestyle.** Digital literacy in this category is seen as a lifestyle for the 21st century that we live in. A person in this category should be familiar with
using technology at all levels and be comfortable and confident in using it without help from others. It is an inevitable life style for this age that helps with learning, communicating, shopping, banking, finding places, making life choices, learning new skills, staying connected, and excelling in work and school. A person in this category prefers to use online solutions for most of the work or actions she needs.

If the use of technology reaches a certain percentage, Amina says it means that the person is digitally literate: “digital literacy means using the technology in your life by 90% and those who do not use it for more than 40% in their life are digitally illiterate”.

Some of the women came from rural areas where Internet, despite its presence, was something of no value to them. Now after being in the United States for a few years, they have become dependent on it and they consider it part of their daily life.

Despite her minimal use for the Internet before she arrived to the United States, Lara says: “I started to get used to it and now it is part of my life. If there is no Wi-Fi, I feel that I can’t function!””. Hana thinks that it is necessary for all students here in the United States to be digitally literate, she explained:

Life here is different, if someone does not know about computer and he don’t know how to use digital devices, then how can they live here? It will be very difficult. Now I can tell if you don’t have these skills here you will be very ignorant, it is not a nice word and you will be so behind. And for everything I guess you will feel very handicapped.

**Digital literacy is being aware of the Internet culture.** The last category is inclusive to all the other skills mentioned in other categories. What is added is the logical
and critical thinking in dealing with technology in any form and for any reason. Tala thinks that a digitally literate person should be a person who understands the logic of using digital devices, she stated:

Someone who can use technology to facilitate some life issue and someone who can use logic in using the technology so even if he is not familiar in using a certain device he had the background that will enable him/her to use other devices.

It also means the wise use of technology as Dana said:

You might see a huge spread of technology in the Arab world, where I live, everyone around me have devices, with no exception. My kid is asking me for an iPhone every day but I did not approve his request yet as I think that it might harm him more than benefit him. so when we are able to use these devices in a useful way, we will become digitally literate.

Digital literacy according to this category also means being able to judge the credibility of the resources we access. Dana suggested:

I feel in the United States it is changing from being digitally literate to having the culture of Internet use. I feel few in this age are not aware of using the computer and the phone, even kids, nowadays everyone has a device in their hand but how are they using it? I think this is the true illiteracy that we have in our communities … Everyone now is able to use a digital device, but what I have more is the critical thinking and the ability to judge the resources we need to work with.
Tala also supported this comment and said:

So many women are heavily relying on the Internet in many things in their life. So it is a number one for educating people, but the question is: are all people able to define the credible resources and decide from where to get reliable information?

Tala also emphasized the point of credible resources, and added that:

Digitally literate person is a person who can differentiate between credible resources or not, person who use technology to reduce time, effort, and money and to benefit the society in general, to increase his knowledge and simplifies his life and find a way to benefit and create positive impact on the society.

Digital literacy in this category also means accepting and acting by the rules and ethics of the Internet, Dana explained:

I personally think to be digitally literate you need to be able to switch your use of technology and make it beneficial rather than waste your time. And to benefit, you need to know the rules of using media in ethical and humane way. In this age it is hard to secure this goal, no matter what effort the state takes to restrict access, there is still possible access to everything. So when we secure this Internet use culture and make it a source of benefits for the community where we live, then we will really be digitally literate.

Jana’s definition for digital literacy focused on accessing the Internet wisely to keep the user safe when searching for information or services:

Digital literacy could mean teaching the person how to use the technology in the right manner, using the right way, to guarantee his fair and risk free use. And
being able to use the Internet without being subject to losing his privacy and security. If we have digital security, we can continue education and build that trust with technology. We will be able to select good reliable resources because the internet has some fake and not true resources the person should be able to identify and avoid for his own security.

**How Do Arab Women Gain Their Digital Skills?**

To learn how Arab, graduate, women gain their digital skills, the participants were asked to reflect on their approach for learning new digital skills. Figure 6 represents the various approaches that women followed to gain digital skills. They either searched online for the relevant information, asked a person for support, found their best approach to self-learning, or attended a training or information session.

*Figure 6: How Do Arab Women Gain Their Digital Skills (Developed by the Researcher)*
Search online. Google™ and YouTube® are major resources for Arab graduate women to improve their digital skills. To improve their typing skills, they used typing applications. To learn how Blackboard®, Photoshop®, or any other program works, they usually searched in YouTube® for explanatory videos and learned on their own, at their own pace. Riham noted: “most of the time I open Google™ and write my question, how to do something, and I prefer visual explanation or videos, so I go to YouTube® often as well. So I see, learn, and follow”. Farah provided this explanation: “I needed to learn math, because I took an economic class, so YouTube® was very helpful in simplifying difficult concepts and walking students step by step at their own pace”.

Ask (family /peers). Family members are usually the major source of support for some Arab women, Samia said:

I usually like to ask my husband because I know he already explored. I only learn what I need and I don’t like to explore everything. So if he is around me I would just ask and get what I want.

Hana mentioned that her classmates were a great help for her when she arrived to the United States: “when I was first asked to do a presentation, I had an American friend and she used to teach me so many things. Actually, I learned a lot from her”. Maya also mentioned: “because I am in an environment where people around me are all graduates, support is always there when I need something”. Women who had difficulty in using technology prefer asking and getting directions; it made them more comfortable in using it. Samia explained: “I’m not computer savvy, I need someone to show me and repeat for me”.
Jori wondered why some people would waste their time trying to figure how to do something with technology. She explained:

I like to ask immediately for help, I hate wasting time trying to find the answer myself, I feel I don’t have that time, and in the first place I am using the technology to get things done faster so why to waste my time!

Amina also preferred to ask when she needed help in order to get a roadmap that she can follow:

When we use a new program for example, you need someone to ask for the first step. So when I study or read book or try something I need someone especially at the beginning to tell me this is the line and I can go from there and improve myself.

**Self teach.** For some women like Ruba, who previously had some knowledge from their home countries about the world of technology and had some digital skills, self-teaching was their approach for improving their digital skills. Ruba is one of those who preferred to teach herself, she stated:

I would say I owe it to myself, you might think I am a snooper but this is not the reason, the reason is that I am always shy to ask somebody if I don’t know anything, I fear the reaction of people and that they would just laugh at me or something if I don’t know how to use mac or something, so I would rather go and do it myself instead of putting myself in this kind of situation. Now it is not that I don’t ask people at all, I do sometimes, so this not something that I will not do at
all, but it is minimal to me teaching myself how to do it, and it is more of you know, I don’t want you to know that I don’t know that.

**Explore.** What made self-education possible most of the time is that the design of digital devices is improving and becoming more simple and intuitive. This helps Arab graduate women to learn and explore more. Riham provided this statement about exploration:

I feel that these devices are designed in a smart way that encourages people to use them and explore their functions. Just touch the screen and it will do something for you. Each swipe is a function that makes you feel that you learned something that you are able to use. The devices attract you and make you curious to play and explore. Even my grandparents are now using a smart device: to chat, write text messages, take photos. The quality might not be as good as others it might not be a clear or stable image, but they know how, and I can't say they are illiterate, they read their news from the smartphone. So I think anyone who is interested in learning how to use digital devices only needs to bring the device and explore even without a teacher.

In addition to the simple intuitive design, Dana mentioned that even the programs and application are more user friendly:

I think most of the programs now are designed in an easy way, not in a complicated way so it allows the majority of people to use it. I feel that some of the programs I am using if my child is watching me he can do it himself: it is not
that difficult. But what you do with it is what matters. What are you going to use it for? So yes, this is my approach, use it!

Reading long user guides and manuals is not very common these days. Leen shared her experience and said:

When I first arrived, I thought that there is no way of improving except by joining a class, or reading a book about what I need to improve my skills in. But now it is different, now if I want to learn anything I just go ahead and try it. I notice it is easier and faster. So for example now there is a program I feel it is complicated, so it is not the best approach to go and read about it or ask another student, all of this doesn’t help and might complicate things. But what helps is to bring the data, and try to enter your data. If you faced any problem, either open the help tab or Google™ what you need to know and apply it immediately, you will find yourself within few hours using it.

**Mimic.** Being in the United States gave some women the chance to look at how people around them are using their devices — when, why, and where. It is more effective to see practical living examples to learn something, and that is what happened with some of them. Hana, for example, said:

Each time I will ask my friend about something she will go online open Google™ and write my question, how to do this or that. I realized that I can do the same thing and find the answer by myself. Now if I need anything I just go online and find the answer. I guess Google™ is my best friend now!
Comparing between people around her in her country and here in the United States brought something to Riham’s attention, she said:

I learned this from them since I came here, first thing to do as soon as I open my eyes is checking my emails, it is their main source of connecting with people you know, with your business and community. So if you have appointments, you have community activities, or safety news, all will be sent to you online. While in my country, they have email and they check it, but it is not the same use like here.

**Practice.** For graduate students in an American university, the need to use the Internet for checking email, searching information, and obtaining academic resources is inevitable. This use is not occasional; it is occurring every day on regular basis and it the source of improving women’s digital skills. Lara noted:

I had to use the Internet for everything, so it became a habit to check my emails daily, do my homework online, check Blackboard® announcements daily, anything and everything now is online.

**Orientation.** Other women benefited from the orientation sessions or the training workshops that the university prepares for new students. In addition, some courses start by making sure that all students are aware of the library services, use of Blackboard®, and for that they do a quick class orientation, which also had a positive impact on the Arab women. Hala stated: “In the beginning I had an orientation class that was really helpful, they taught us how to search for resources in the library, how to use Blackboard®, and it was really helpful”.
What Motivates Women to Gain These Skills?

One of the research questions was to ask the women what motivates them to gain new digital skills. Figure 7 summarizes women’s responses.

*Figure 7: Why Do Arab Women Who Arrive to the United States Improve their Digital Skills? (Developed by the Researcher)*

**Interest in technology.** Some of the graduate Arab women showed interest in keeping up with the new trends in technology, new devices, new applications, and new social media programs. They are even interested in transferring this knowledge to people around them here in the United States and to their families when they go back to their home countries. They find it important, helpful, and fun at the same time. Amal explained how she always searched for new tools or applications on her mobile phone, she said: “Whenever I need something or think of something I immediately go to the app store and look for it, and there is always an application that help you”.

**Influence by others.** Improving the digital skills of some women was a result of looking around them at the digital skills of people here in the United States. For example, impressed with the fast typing skills of people around her in the library, Salma said:

The first thing I noticed is their typing speed, they don’t even look at the keyboard, so immediately I started searching for program that teach me how to improve my typing skills, like iType, to improve my skills, but I feel that I am still far behind and it seem that this is something they learn at school.

Lara was influenced by peers and friends around her, from her home country, it triggered her interest to be at their level, she said:

I was also looking at some of my friends, their skills were much better than me and I was aspiring to be like them, I said if they are able to do it I am sure I can learn as well and be as good as they are.

**Academic need.** Another reason for improving digital skills for Arab graduate women was to fulfill a need in their field, major or in their department. If the course is online and there is a need of using Blackboard® they need to learn this skill quickly. Ruba stated that she did not like Blackboard®, but having some courses online made her use it several times so her skills improved. Hana is planning to learn Photoshop® because it is required by her department for sending quality images. She said:

I don’t know anything about Photoshop®, I am using a microscope and it is connected with a camera and sometimes I need to send these images to my advisor to look, to see if I am doing the right thing, so he told me since he has the same program he can open it, but he told me this is not the right way. Because
other people might not be able to open it and it is better to learn and use Photoshop®.

The need is not limited to the academic knowledge, but even to the personal and family needs. The need to search a recipe, learn organizing tips for home or office, childcare, or any other topic of interest. Amina stated: “Whenever we think of anything in these days, we go to the Internet. And not only for learning and study, sometimes even for cooking so it is for everyone and for everything”.

**Interested in education.** Ruba described how she has little choice of deciding to be or not to be digitally literate in this age, she said:

If it is up to me, I like primitive life! But if I am living in this society and I am living at this time when internet, technology, and digital literacy is a required skill, then I have to be and I have to conform, I have to abide to find my spot to work. Because if I just want to be the hipster no one will hire me and I will not learn anything, just because I wanted to work and wanted to pursue my degree and studies I have to conform with globalization, which is not a bad thing, it is a good thing.

**Lifestyle.** Sala said that when you arrive to the university here in the United States, they give you your ID number and it becomes the main channel for communication with them, you cannot ignore using it daily. In addition, other social and business services are also online; avoiding using them will waste time, money, and effort.
Here the norm is to be familiar and fluent in using the technology and accessing everything online, so you find yourself learning something new every day, and you get better with the continuous use.

**Do Women Consider Themselves Digitally Literate?**

The participants were asked if they consider themselves digitally literate and their responses varied. For example, Rula said:

If we are talking in general, I am digitally literate. If you are talking about my field, I would say no. In our field there are so many professional programs that I am aiming to learn, but did not get the chance to do yet. They are on my list of things to do soon. But before getting those skills I can’t say I am digitally literate person while others around me have better skills related to our field.

Ruba was surprised by the question and she reluctantly said, “Oh, me! Hmm, yes, I hope so”. Sala described her needs to be digitally literate and said:

I still look to be better. I want to be able to easily access the information I want, when we are in class, some students are able to get the information they are looking for so quickly. I can’t do that, and I am still not as fast in typing so I don’t feel I am in a good level in technology.

Salma said, “Yes, but I am hoping to get better!”. Confidently, Jana said, “Yes, I do consider myself digitally literate”. Hana said, “No, I still need to learn many things and search faster, type faster, and improve in doing many things with technology”.
How Do Women Reflect on Their Digital Experiences in The United States and Their Home Country?

To compare Arab graduate women’s experience with technology in the United States and their home country, women were asked about their experience when they first used technology in their home country then they were asked about their experience in their university in the United States.

Table 2 combined women’s responses that described their digital skills in their home countries and in the United States, and categorized them in five levels.
Table 2:

*How do Arab graduate women reflect on their digital experience in the United States and their home countries?*

<table>
<thead>
<tr>
<th>How was their skills upon arrival</th>
<th>How is it now</th>
</tr>
</thead>
<tbody>
<tr>
<td>They only had Email and computer - no previous knowledge from school - did not have enabling technology environment - slow in typing - cant’s search well - not aware of using online services - not part of social media.</td>
<td>They learn everyday - there was much to do at all levels - their skills are significantly improving - they have the interest to learn even more and improve their skills.</td>
</tr>
<tr>
<td>Had satisfying skills to their needs gained from school, but the use was very limited by choice. Mostly for fun and social media and basic search - Email rarely used - slow in typing - Internet services not encouraging, it was not something essential in their life - not part of the culture, no need for it - (Not tech savvy and not interested in being one).</td>
<td>Skills are improving with daily practice in order to catch up with their peers and not fail. The use for other skills like media and communication is selective.</td>
</tr>
<tr>
<td>Good digital skills – had professional development training before - had support from family members – had Practical use in previous job or school – lived in a technology enabling environment.</td>
<td>Focused on learning and improving skills needed in their field - learn new software, nothing is hard, if you have the basics you can learn everything and search for what you want.</td>
</tr>
<tr>
<td>High level of digital skills and have technical experience (computer engineer / coding) - had the skills at university as undergrad. Find no difference in digital skills level between their skills and the people here in the United States however, the services in the United States are impressive to them: Online services, academic technologies, facilities, and online social services.</td>
<td>They started benefiting from the convenient available resources and Internet services, keen to improve their skills in what they do, took the chance of learning all possible skills and benefit from each update, new device, new social media channel, be on top of everything and encourage people around them</td>
</tr>
<tr>
<td>Had good digital skills, had practical experience, had critical thinking skills and ethical concerns. Focused on improving technical skills.</td>
<td>Wise use of technology and integration in the system and benefiting from technology. Critical and selective in what to learn</td>
</tr>
</tbody>
</table>
What Factors Hinder or Accelerate Chances of Arab Women to Become Digitally Literate?

Answers to this question generated responses that reflected Arab women’s digital experiences in the United States and highlighted the differences in the use of technology in the United States and their home countries. These differences consisted of different factors that were possible to classify into three categories: School, Society and Business services. These three categories also included the differences Arab graduate women found in the use of technology in the United States and their home countries.

*Figure 8: Factors that Affect Digital Literacy from Arab Women’s Perspective.*

(Developed by the Researcher)
Role of schools. One of the major outcomes was how school plays a big role in preparing students for the digital age. The responses pointed to K-12 education in the United States and how it supports students and how this support is extended until college.

The school category includes themes that focused on:

- School preparation
- School facilities
- School support

School preparation. The participants frequently mentioned the role of school in preparing K-12 students to use technology in class. They were impressed with the skills that the students in United States schools get from early age such as keyboard typing skills, creating Google™ accounts, using online search for school projects. Hana shared her experience with her daughter and said:

Here they are doing a good job, they start from the middle school or high school even in elementary, my daughter returns from school and tell me that she spent an hour using the computer and she says that they let us do this and that. And I say this is still early for you, she says no they told us it is the right time, So I guess they start building their digital skills from elementary level!

The digital preparation for kids in school here in the United States is not in the form of computer classes; it is a practical use for the digital tools, which means that schools are equipped with needed technology to be used in class. Dana shared her thoughts about this and said:
What I felt, because I have children in elementary level, that they care about building the digital skills for students from the elementary level. They realize that there are basic tools that need to be in hands of people in this age, and these tools can help people later to improve themselves. It will be easy for them to access the information they need in the college and out of college. So for example my kids now have Google™ account, and they created it through the schools not me!

This digital preparation for students from early age made them assume that any educated student should be aware of the basic digital skills that even elementary students know. The truth is that some women came from tough places where basic skills did not include computer use or Internet. Hana recalled her experience when she arrived to the United States and said:

When I arrived I did not know many things, and I did not find any help, that is one thing I complain about, they think we already know everything. I heard that here in United States they use technology starting from middle school or high school, so they can’t imagine maybe that I am a graduate student and I don’t know these basic skills, how will they know.

It is a problem if they know as well that a person from the Arab world does not have technology skills, or still used to do some of the things in the old traditional style, they might be judged as being illiterate, and not just digitally illiterate. Ruba was concerned about the cultural gap that she feels sometime, she stated:
Because you know here in America, they assume that all people live in their standards, or just if we don’t have a computer it means to them we don’t read we don’t write, so there is that sort of a gap.

In the Arab world, preparing students to use technology at school is not the norm in some countries. No signs of technology use in some schools, in some places. Ruba described schools in her home country and said: “The academic system in my country or educational system we don’t use technology that often, it is not digital it is not technology it is still the chalk and blackboard® and handouts, and classroom”.

Other schools in the Arab world care about teaching students how to use the computer and some programs. However, this education is usually in the form of theoretical computer classes. The experience that Arab graduate women had here in the United States made them aware of how important practical learning is. Dana said that being here in the United States made her notice how using the technology is the best way to learn it. She shared her plan of applying this approach when she goes home to help others, she said:

For example, I have brothers who still go to school, I see now how I can make technology part of their life and this is not by giving them a theoretical class on how to use the computer like what they have now, but by making them practically use it. So instead of giving the student computer class, it is better to make all homework for other classes in the form of typing, printing, searching for information to involve practical computer learning.
Dana referred to the lack of preparation for teachers and the lack of technology plans in some schools in the Arab world, she explained: “I think part of what limits technology integration in our schools is not preparing a cadre responsible mainly about the academic technologies, and at the same time, not having plans to develop these skills in students from early stages”.

Another reason for this problem might be that Arabic is the main language used in schools, so assignments should be in Arabic, and in this case, asking them to use the Internet for doing their homework is not helpful since most of the content on the Internet and the academic resources are mostly in English. Sala compared between results received when using English language compared to the Arabic language and said:

For example, if you type now in the search box any word or topic in English, you will find different kinds of resources, websites, books, journals, magazines, in addition to some organizations. If you search in Arabic, you will not find but forums and websites and they are not reliable.

Hana pointed out that the problem is not limited to K-12 schools only, even some universities are not taking effective role in providing the enabling environment for students to use technology to advance their academic performance. It is the student’s own responsibility and decision to use or not use the technology as long as they are able to provide the work required and include sufficient resources. Hana states:

So even in my university there, I completed the master and did not have access to the Internet. And now some people connect and pay by themselves the Internet cost to get access to papers but they still cannot get much because our university
is not like here providing free access to some journals. There you are on your own.

This lack of school support in some places lead to self-acquisition of some of the digital skills. Although this sounds an easy task, but it doesn’t always end with good results. Hana described her experience upon coming to the Unites States, she said:

I knew I am going to which state, so I just searched for it, and I saw pictures of electricity wires and that old house and I said to myself, look at this, this is very old, it doesn’t look like the United States, I did not see good pictures, I did not know how to search obviously.

Not all the Arab countries have good technology classes for their students. Some completely lack the resources, others have limited resources, and there are private schools that seem to be more advanced than schools in the United States. Rula explains how private schools in her country are teaching high-level technology skills for children, she stated, “Some kids now even in elementary schools know how to use AutoCAD®, Photoshop®, languages, and these are private schools”.

**School facilities.** The public and school libraries here in the United States are equipped with digital tools that encourage visitors to use it, at the same time it offers the support when needed. This service is available for graduate students and community members as well. It is also provided for K-12 schools. These available facilities allowed all students, whether they have access to technology at home or not, to be part of the system that depends heavily on technology. On the contrary, in most of the Arab countries when computers exist at schools they don’t become accessible to students.
There needs to be someone that allow the students to use it usually a teacher or a librarian. To describe how it is hard sometimes to access available resources in some universities, Leen stated:

In college, I was working with my group on our term project. We pulled up some resources from the library and we needed to scan them because we could not rent all of them. But the responsible lady was not there, she was on leave, and we ended up writing by hand some of the information we needed from the resources and went home and worked on the project individually.

The digital access here in the United States is facilitated even to community members, while in Arab world some community members are excluded from the system as a result of initiating e-governments and e-services. To describe how some women are not prepared to use the e-government services to get their benefits, Dana said:

Here in the United States they have a very nice approach, their public libraries offer help to those who need it. Anyone can enter the library and get access to the Internet and get help. I think it should be solved the same way. Social institutions need to thinks of similar cases to this woman who has no skills in technology and they should not forget them when think of facilitating things to the rest of the educated level.

**School support.** School support is greatly appreciated. The school system, the teachers, and other school services provide adequate support to the student here in the United States. For newcomers or for those who need support in specific area, there is
always orientation or training sessions that can help them. Mary shared her thoughts about support in the United States compared to that in her home country and said:

The professors here are very helpful, if you ask about something that they don’t know, they look with you and read about it to help you. And this cannot happen in my country; you can’t ask about anything, you cannot even discuss your grade with a professor because next time you might fail the class! So here you have more freedom to do what you like and learn whatever you are interested in.

**Role of society.** Most of the women felt that being in the United States helped them learn new digital skills or practice and improve the skills that they already had before. They believe that the society plays a role in encouraging all citizens to be digitally literate because most of the citizens have a commitment to using the technology, use online communication effectively, and use and appreciate the online services.

**Social services.** There are many social services provided online in the United States: school, tax, bank, utility, medical, mail services ... etc. Arriving to the United States forced most of the women from the first day to use and improve their skills such as: online searching, filling online application, attaching documents, uploading images, taking screenshots or saving online application. Lara explained how the frequency of using technology increased here in the United States and said:

I was not using technology as I should, I was not aware of how to benefit from it and get information I need, my knowledge was very simple and basic. I did not need to use it in the first place. It was just simple search when you need very specific thing, while here you can access all services online.
Ruba explained that despite initiating some e-government initiatives in her country the use is still limited, she stated:

We still have to go and stand in line to pay our bills, it is trending now that everything can be paid online but when I am speaking to my parents, they tell me that they still go to the post office to cash their retirement monthly check.

Amina explained how the services here in the United States are making life easier, she said:

I have kids at school here, I can check their progress on my phone through the school application, but in my country, I have to go to school whenever I wanted something. The same for other services, here you can pay electricity, water, and everything you need online, while in my country we still need to go physically there. Only Banks that have online services and not all people rely on it.

Commitment to use technology. The online services exist and may be continuously increased and improved in the United States because there is commitment from the citizens to use these services. At the same time, the availability of these services continuously increases citizens’ skills in using the Internet and benefiting from what is offered online.

In Arab countries, online services are rare and weak and this could be because there is no commitment from the citizens to use these services because not all citizens are prepared to use technology. Salma stated:
I think people in the Arab world are either ignorant about these services or they might be aware but they don’t want to learn how to use it. Or maybe they know how to use it but they simply don’t trust online services.

Trying to understand the reason for this refrain for using online services by people in her country, Salma added:

I feel that there are many reasons, but the most important factor I think is commitment. People here, as a nation, are keen of remaining #1 as the greatest country in the world. We as Arabs should have this mentality too, so commitment is that we lack as Arabs, we need to commit to harness technology to advance our communities, but in fact, most of people are reluctant to seriously make the effort and change.

Farah wondered why people still prefer the traditional way of doing things and ignore online options that can save them time, she explained:

If you need to get an ID for example, wouldn’t it be better if you check online what is needed before you go? Some people know this, but avoid doing it because they are not used to. There is a need to push yourself and train yourself to accept change, learn, and use technology to become a digital person. So you need to change your mentality and think differently. People here they don’t like to waste their time.

If the surrounding environment is supportive and people are aware of the importance of using the Internet, it could be easier for women to use it. Recalling a story of a woman she knows in her home country, Jana said:
I know a woman; her brother simply did not allow her or her sisters to get Internet service. When she was married, her husband was the person who helped her and encouraged her to learn. So I think it is important to have a supportive people around you.

**Communication.** Online communication in the United States is very efficient and effective. Sending emails is expected as a means to communicate with different people for different reasons. Most of the time, people are committed to respond or acknowledge receiving the email.

Hana explains how online communication is affecting her willingness to learn more skills:

Here they are used to sending emails and documents online, but in our country we need to go and hand things hand by hand. You need to go and return so many times for the same purpose. Today I went to a place on campus to request something, few hours after leaving them they sent me an email saying that my request is processed and they told me that it was sent to another office and I can now follow up with the other office without having to go back to them. So this makes your life easier. So this factor of online communication in all life services is also important and it is pushing me to learn and be better in technology.

Dana explained how difficult in most of the Arab countries to receive a response by email:

I am trying now to communicate with people in my university back home to complete some documents and I find that some professors respond next day some
respond in two weeks after I forget what I wanted from them. Not all people realize the importance of online communication, that’s why they don’t check their emails on daily basis; they don’t expect someone will communicate with them via email. And It is shocking I know, to be a staff member abroad trying to communicate with your university online and you are not getting any response this really strange but this is reality, why, I don’t know!

*Communicating through social media.* On the other hand, informal communication through social media applications like Facebook®, Twitter®, and WhatsApp® is very common in the Arab world, in every country, and among all level of the population. Beside the purpose of connecting with others, these applications are used as educational, business, political, cultural, and entertainment platforms. For example, Twitter® and Facebook® have become a tool for sharing urgent news, services, alerts, and even news regarding political crises such as wars and riots updates. Instagram® is used as a business advertising platform for small private business for many women and recently for large companies. Facebook® is used as an announcement board for courses in some countries to overcome the absence of government support to provide more professional Learning Management Systems and overcome the lack of technical skills for the staff and students. Tala shared how Facebook® was used in her country:

I have seen some of my friends who are teaching in universities have Facebook® pages for their class as an announcement board. They share news about homework, lecture timings, if there is a delay or things like that; I saw that these pages are used in a good way.
Amal highlighted how social media is connecting her not only with people but connecting her to places, events, and services. She said: “Facebook® and Instagram®’s commercial use is popular in all parts of the world. You can rarely find a business here that does not have a presence online”.

She added:

I focused on Facebook® and Twitter® because in this age any person any business and place exist in Facebook® and twitter®, look at the restaurants, university, people everywhere this is our Facebook® address this is our Twitter® account, so it became part of our life and you will miss many information if you are not part of these communicates.

Farah pointed to the easy access for social network applications, she said: “We have access in my country, we have the Internet, but it is very weak, so you can connect with people, but to download papers or learn something in YouTube® you cannot do that”.

**Connecting.** For most of the Arab graduate women here in the United States, they said that they usually rely on social media to stay connected with their families and friends. There are a variety of tools that suit the personal needs and comfort: Voice, chat, video, and synchronous and asynchronous communication tools. To describe how social media tools are connecting her with her family and friends and keeping her updated about what happens in her home country, Dana said:

Being away from our countries make us more involved in social media. Even if you know that it might be a waste of time; yet, you still need it to know local
news in your country and what’s going on. Because we are far, it can be a source of providing us with brief news, cheaply, and easily. So you have to use all these programs what’s up, Facebook®, Tango®, Twitter®, all of these programs I did not had to use back home and did not need it as much as I did here.

Even for women who plan to come to the United States, social media allows them to connect with other students who are already in the United States through online forums, or student’s associations that allow them to ask for information before they arrive to the United States. Rula noted:

I personally benefited a lot from the Internet during this experience of coming to the United States, before I come I needed to had TOEFL® exam, there are many books, but by connecting to the Iraqi education group I was able to find some recommendations for good or important books, e-books, I was also able to find information about few things that I need to do to complete my file such as the health certificate from Iraq and other certification document so this really made things easier for me and saved our time and effort by being able to see other people’s experiences.

Even at the local level, social media is also playing an important role in the Arab world, Rula explained:

All people now are aware about different social media tools, young and old, and especially Facebook®, I feel that people became addicted to the use of Facebook®, they need to check it every day every time. To be honest, in this tough situation we live in, it became the main way of communication to keep
people aware of how other friend and family members are doing specially that people are migrating to neighboring countries, so Facebook® made it easier for everyone to stay connected.

**Role of business.** Business is playing a large role in increasing the online services and is an important factor for inviting all citizens to the online system.

**Internet services.** In the United States, Internet services have good coverage, affordable prices that suit the user budget, and speed options that respond to the needs of most of the interviewees. Being connected all the time made the women able to use the Internet more, explore more, and enjoy using it with less trouble. Samia said:

[The] Internet here was a big leap for me! First of all, I noticed it is very fast, in my country when I think of using it is very slow, hard to use it more than one time, but here it is open and I use it for long hours without realizing how much time I spent. I feel like I discovered new thing. It is not like the Internet we have. It was difficult to connect and kind of discouraging you from using. Here it is different, I really felt I am exploring something for the first time.

Dana stated:

The Internet is cheaper here. Because you take a package so your phone comes with a data and this is cheaper than buying a separate data for you phone. The data is expensive there, here I can get unlimited service for $ 49; It is impossible to get this price there for unlimited access. It is cheaper and faster while in my country even when they tell you pay a certain price for a certain speed, you don’t get that speed and it is not fast.
Being used to the service that she has here in the United States, Lara shared her attitude about the service back in her home country and said:

When I travel to my country now for a visit, I complain about the data there I feel I am used now to fast Internet and I am demanding the same service.

Farah expressed the difficulty in finding even public access, she said:

So where I live, it is hard to find a place where you can find Internet like Internet café or library, there is nothing, maybe in the city, but not where I live. And even if you find the coverage will not be as good as here so I think the government should address this.

Maya, on the other hand, praised the Internet connection in her country and said:

My country is a high tech country; some families have a very fast speed Internet.

For example, my Internet connection here in the United States keeps disconnecting and whenever I Skype® my family and a problem happens we know that it is from our side!

*Online services*. Business services are also a factor that encouraged women in the United States to use online services. Vacation preparation, travel, hotel, food, shopping etc. helped women to obtain needed services. Amina stated: “I have small kids, so planning my vacation and reserving the hotel before we go is something essential for me, I also look at the travel time by car through Google™ map and avoid long distance destinations”.

Online services also helped some women bypass the communication problem upon arrival to the United States, Lara said: “It was embarrassing to go to the restaurants
and order food at the beginning; they don’t easily get what I am saying. So I used to order online and get my food with less trouble”! Jori talked about the progress in online services in her country, she stated:

I feel there is improvement because I see them realizing that they need to do something. So each individual business (shopping or small emerging business) creates an account on Instagram®, this is what they know, but if you search them on Google™ you will not find them, or information about them, although they know that they need to have an online presence, they are not doing it efficiently like here.

*Shopping services.* Shopping services in the United States was source of admiration for all the participants without exception. Even those who are in a more developed countries praised the fast service and the ability to replace and exchange or return a product. Part of the appreciation is the ability to look at reviews online about the products, or see how it works, or compare prices. Jori said:

What I liked and found impressive is the online shopping, how fast is it and how everything is available online. Maybe they are starting this service at my home country, but it is still very basic and limited products. And you find also small business through social media and you have to wait for long to get what you ordered.

Reviews, rating products and services, and sharing experiences is also an admired part, for Salma, she shared her experience:
I also use YouTube® to evaluate products or look at someone’s experience about something. I once wanted to do a laser surgery, I was very scared because eyes are so sensitive, so I looked for videos for someone’s experience. I found on YouTube® a person who filmed his whole experience 15 minutes. He entered and completed the surgery as nothing has happened, so I felt that it is a safe procedure and it is not painful and I felt calm.

Do Arab Women Believe that Women Can Benefit from the Opportunities that Digital Literacy Offers?

Many women highlighted how social media applications are helping women in their home countries to make a business online and improve their family income. In Arab countries where women’s movability in some areas is still limited, online options make a big difference to women. Jana said:

The last two years, many women decided to use their skills in art, painting, cooking, and design. They started to benefit from social media channels to market their products. And this is really great and I wish this can help them improve and grow their business. For example, she can learn more techniques that help her take what she does to a better level, they can learn online or she can complete her education if they did not, because of marriage and having kids.

Social media did not only give Arab women a chance to increase their income, it also helped women be independent in managing their business. Riham explained:

Internet provided them with opportunities to create their own business. Many women in my country started their business through Facebook®, Instagram®, and
this gave them independency. They are not relying any more on their brothers or husbands to establish the business, they are now proactive in solving any problem they might face and be responsible of managing their own business.

**Risks of using social media.** The lack of awareness by women concerning online privacy, safety, and the lack of business safe solutions for transactions in the Arab world might be a source of risk. Jana clarified this by saying:

Some women are using the Internet for business to sell their products; however, the lack of services and awareness of secure way to do the money transactions can make their accounts subject to risks or hacking. So, although she has some skills; yet, she can still face some problems and incidents that can threaten her life.

**Social media and women’s online identity.** Despite this wide use of social media by the majority of the Arab population, there are still general cultural concerns related to women’s online identity and image. Almost in all Arab countries, there are some women who are still reluctant to put their photos online or even in some cases, write their real name. Amal stated: “In my country, not all women can put their picture on Facebook®, it has negative connotation. Many married women hesitate also to put their pictures; usually they will put their kid’s photos”. Salma commented on the risk of posting personal pictures on social media sites in her community:

There are some people who post their pictures in Facebook®, and this happen in all normal communities, they don’t mind it, they are not against personal freedom, while in our communities, if a girl thinks of posting her picture in Facebook® it is over for her, she will be sick from how they will discredit and defame her.
Even some of the Arab women who come here to the United States cannot easily change the mentality of those people who see women’s exposure to the world as something negative. Salma explained: “Technology and development are sometimes misunderstood in our communities, ‘she developed’, ‘she went to study abroad’ ‘she uses the Internet’ means that she is now aware of wrong information, no, in fact technology exists to help us rise intellectually”. Jana thinks that family resistance to the use of technology in general and social media in particular is a result of traditional beliefs, she said:

Some people fear and reject women’s use of technology because it is not acceptable in my community that women be part of public spaces or public events and be known by others. That’s why we see so many fake names online among people whom we know, they prefer remain unknown and avoid trouble.

**Entertainment.** Although using social media is an essential part of the skills that Arab women thought are needed to be digitally literate, they emphasized the appropriate use. Dana expressed her fear about the use of social media in her country, she said: The use is limited to entertainment and gaming and it became a cause for wasting time rather than a source of information and benefit. Hana also commented on social media use in her country:

That was my concern, because I can tell after coming here I learned a lot, but I was very sad when I went back to my country and saw how everyone was using just Facebook® to share pictures and chat and that’s it. I told them there is many things you can learn using technology. They don’t know even how to use
Google™ how to search for information, how to look for answers for their questions. They are 100% using it for Facebook® and sharing pictures and to communicate with friends.

There are usually some family members who oppose the use of technology at home, limit the hours of use, or the type of use. Jana said:

For example, there are many applications in smartphones that I can use here such as chatting, I use it to talk and stay connected with my friends with my family, but, when I go home, my brother might say don’t open this program because it is so and so, he would not realize that I can use this program appropriately, so I think it is important to be aware of the positive side of technology, and realize that it is us who can use it in a good or bad way.

**Political use of social media.** The political use for social media is pervasive in the Arab world. It is used to spread news and independent political views that increase citizen’s awareness. In some places around the Arab world Twitter® and Facebook® news is more trusted than the official channels. Hana explained how people in her country are relying now more on Facebook®

But now Facebook® come to play, people are sharing what they want, and everyone is looking around and building his knowledge the way he wants not only through the main two official channels. So news now is spreading very fast in few minutes.

However, not only real news is shared, rumors and fake news is copious and can be sometimes devastating. Rula said:
Awareness is important to ensure a good use for the Internet. Because rumors, lies, and wrong news spread fast with the use of Internet. I feel my city collapsed because of rumors and the ISIS were able to take over and control the city. Twitter® and Facebook® played a huge role in defeating the city so quickly. If there were no Internet and social media this wouldn’t have happened.

What Do Arab Women Believe About Women and Technology Stereotypes?

The stereotypes in the literature refer to men’s ability to use computers more than women. It also refers to women’s fear of using technology or computer, and claim that women are not interested in using technology in the first place.

Women in this study were not asked directly about stereotypical beliefs; however, their responses explained the problem from their perspective. When asked if there is a difference between men and women in technology use, Jana answered: “No at all, as long as they have Internet, they can both use it effectively”. Jana then pointed that any difference might be caused by the fact that men control women’s access to the Internet and not due to incompetency: “I think some women are still facing resistance from their families to have accounts in social media, it is a big ‘no’ for some people to be part of Twitter® or Facebook®.”

Jana also pointed out that some women have no access because their family is against this use and think that it is against religion, while in fact the reason is tied to the traditions not religion, she further explained:

This rejection is not for religious reasons, I think it is only part of the tradition and that idea that women should not be part of public events or be part of any activity
that could be known by others. I think most of women have good intention and they look for learning opportunities, especially those who have limited access to chances outdoor. So the Internet provides this chance of knowing what is happening in the whole world.

Hala added:

The usage of the Internet is equal for both genders, men and women. It just depends on the person’s situation. But generally speaking in the Arab world, most men, either a parent or any sort of relative, discourage and sometimes even prohibit women to use the Internet. This all depends on the families’ traditions, and even their trust among each other. There are more social obstacles to using the Internet than economical obstacles.

The reason might be different interests among men and women as Rula thinks:

In Iraq, no difference between men and women in the first place. All are equal and women enjoys same opportunities just like men in all fields worked in all fields in the parliament, universities, field Engineers. However, I feel that men in general are more attracted to technology than women. Therefore, we see more men using the Internet and playing digital games. And this is I think is due to the lack of Interest from some women not because there are more opportunities for men.

The difference in use Rula states can be due to the different interests and responsibilities:
I think there is a difference in what they access, men are focusing on entertainment, Facebook®, YouTube®, and games. While women, in my case I have no time to waste. Most of the time I use it for important and serious things not only for fun.

**Summary**

This chapter presented the finding of this phenomenographic study. The responses of interviews with 20 Arab graduate expatriate women studying in the United States showed the variation in their understanding of digital literacy and the difference in their relation with technology usage here in the United States and in their home countries. The outcome space consisted of five qualitatively different categories of description that describe the ways Arab graduate women experienced technology. These five categories describe digital literacy as a basic need, a contextual need, a need to connect, a lifestyle, and as an awareness of the Internet culture.
Chapter 5: Discussion

Introduction

The goal of this phenomenographic study was to explore how Arab women understand digital literacy and how they compare their experience here in the United States to their experience in their home countries. Qualitative data was collected from 20 Arab graduate women at a midwestern university in the United States. The study examined how women define the term digital literacy and their approach and motivation to gain digital skills.

Phenomenography, a qualitative research approach that show variation in experiences, was used to highlight the different ways people understand a phenomenon around them (Marton & Booth, 1997). The phenomenon studied in this research were digital literacy, and how Arab graduate women in the United States understand this phenomenon.

Categories of Digital Literacy

Most of the Arab graduate women interviewed in this research spent at least one semester in a graduate college in the United States. The findings show that they are aware of the importance of being digitally literate. They are also aware that digital literacy is essential to succeed as a student here in the United States and that it is also important to succeed as a citizen in the 21st century.

The essential skills that all of interviewees mentioned as a starting point is using a digital device, having an email account, and being able to connect to the Internet. Some of them believed that how comfortable a person is using these three things does not affect
if a person is digitally literate or not. While others believed that being comfortable in using these three skills is important for being digitally literate. The person should turn on and off the devices, log in and out of an email account, and connect to the Internet without external help.

Some women saw technology as something essential for their life. A necessity that life would become hard without it. The technology connects them with others, brings the world news into their hands, teaches them, and provides them with services that would otherwise be difficult to obtain. In addition, they enjoy using technology and they felt technology made their life easier. The technology enabled them to go to places easily, order goods online, and learn how to do things they never did before without support. Salma stated:

I am sure that we did not reach the level of using the technology the way it is used here in the United States, but what I am sure of is that if I go home I will continue using these skills, it became part of my life.

She added:

I will for sure teach those who are around me such as my brothers and sisters who are still in high school and sometimes they need resources. They struggle to know specific information about a topic, now I can show them that they can explore and search what they want online before they go to the library so they can go and get without wasting the time, or watch YouTube® if they want to learn something that they did not get in class.
There are other women who use technology in their daily life, but they do not enjoy it. They are indirectly forced to use technology to obtain goods and services. It is hard for a student to avoid using technology and it is hard to find a job without having digital skills. The women realize the value of technology and understood its importance in life. Yet, they did not like the overuse of technology here in the United States. They miss their communities where they watch the television together to hear the news rather than reading it online and go to the kitchen to watch their mothers and learn a recipe instead of learning it on YouTube®. They even mentioned some of the health disadvantages associated with the increased attachment with technology and the digital devices, such as back pain and eye problems.

**Digital Literacy Model**

The digital literacy model defined in Figure 9, is based on how Arab women understood and described their experiences with technology in their life. The figure shows three phases that can describe the digitally literate person. Imaginary lines (shown as dashes) are used to indicate the looseness of the boundaries between the phases. These lines indicate that women can move to the next level or remain where they are if no more skills are gained or acquired. Below the first line the person is digitally illiterate and over the top line a digitally literate person with a sound understanding of the use of technology in the 21st century.
Phase 1 – Exploring and learning the basics. A digitally literate person, as the figure shows, starts with the basic phase. A digital person in phase one is a person who can use a digital device and connect to the Internet, search for information, and can use basic features in Microsoft Word®. A person in this phase can remain in this phase if he or she is content and has no intention or interest in learning new skills in technology.
Phase 2 – Pervasiveness. This phase describes how a person gains more digital skills. Either from connecting with others through social media or through learning something needed or required for a personal career or interest. This phase entails more frequent use of technology to the extent of possibly adopting it as a lifestyle. For example, basic technology skills can allow a person to connect to social media applications on a digital device and learn some skills such as editing images. The same basic skills can allow another person to use the Internet as a learning tool and develop different set of skills.

There is a two-direction arrow between the contextual need and the social media category because there are so many Arab women their first interaction with internet is through social media, on the other hand, social media might not be the Internet gateway for other women. It is possible that a person uses social media at a later time to connect with others. Similarly, if a person started using social media, he or she might develop a certain need to learn a specific skill, so there is a possibility of moving from the social media category to the contextual need. In this category, the use of technology is still reasonable, not excessive.

Everyday use of technology whether for learning, connecting with others, or using any service through the Internet might lead some people to adopt technology as a lifestyle. They use it to perform necessary activities in their life such as connecting with others, learning something new, searching for information, and business activities. This frequent use of technology and reliance on digital devices to perform daily activities
moves the person to the lifestyle category. It is worth mentioning that this lifestyle can be either positive or negative.

In general, many participants referred to the positive connection with technology here in the United States. They believe that technology is a tool to help students, professors, workers or community members to be more productive, organized, able to follow different news and events, and able to save time and money with the smart use of different services online. On the other hand, the use of technology in the Arab world had a negative connotation because it is used excessively for entertainment and social media; thus, it can rarely lead to a wise use of technology. Whereas, the positive lifestyle can make the person more familiar with technology and eventually ready to move to Phase 3.

**Phase 3 – Awareness.** A person in this category is comfortable using technology and is aware of the affordances and limitations of using technology. It is important in this category to decide what to use, what to avoid, how to be critical in the digital world, and a wise consumer and producer if possible. The arrows in the awareness category that point to the lifestyle indicates that being aware of something might lead the person to go again to Phase 2. The reason is that there are so many skills that a person needs to develop in the digital world before using technology and being aware of issues such as: privacy, copyright, online safety, and other issues.

There are other routes that people can take to build their technology skills and increase their level of awareness of the Internet culture, either through focused education and gaining knowledge, or through communicating with others through social media channels as described in Figure 9 with the two arrows at the sides of the figure.
This digital literacy model starts with the first phase that contains the basic skills of using technology and can take the person only to in one direction, which is adding more skills. Whereas, Phases 2 and Phase 3 have two direction arrows that form a cyclical learning process to indicate that the skills are continuously developing due to the wide spectrum of skills in the digital world, the constant change, advancement in technology tools, and the skills needed to use these tools. However, being aware of the Internet culture is not an automatic result of Phase 2. The dotted lines in most of the arrows in the figure indicate that it depends on the person’s willingness to gain more knowledge and move from one phase to the other.

The five categories of description as defined in chapter four:

- Digital literacy as basic technology skills
- Digital literacy as being connected
- Digital literacy as a contextual need
- Digital literacy is a lifestyle
- Digital literacy is awareness of Internet culture

**Digital literacy as basic technology skills.** A person in this category is digitally literate because she has the basics that enables her to use technology. The three basic skills that are needed to be digitally literate are: using a digital device, logging to the Internet, and having an email account. The women considered this category the starting point that can take the person to the next level in their digital skills.

Almost half of the women in this study were in this category when they arrived to the United States. They had computers, they knew how to type in a word document. They
had email, for some it was just for fun and sharing some entertaining news. They also had
a basic knowledge about the Internet and how to do a basic search. Few had higher skills
based on their profession and type of work.

According to how women defined a digitally literate person, a person in this basic
category is considered digitally literate. However, according to the United States NETP
(2010), they are not. To be a digitally literate person according to the NETP a person
needs to have skills in three domains: information literacy, media literacy, and digital
citizenship (U.S. Department of Education, 2010).

**Digital literacy as being connected.** Social media and communication channels
helped most of the women in their journey to the United States. Women were able to
connect with the academic departments through Skype® and contact friends through
Facebook® to ask about certain services such as transportation, hotel accommodation,
travel procedures etc. This communication bridge made their journey less vulnerable as
women traveling alone to a foreign country. The use of social media and communication
tools remained vital in their life as students in the United States and kept them connected
with their families and relatives.

All women expressed how technology connected them with their families and
friends. Technology plays an essential role in mitigating homesickness and culture
They use it regularly to stay connected to what is happening in their homeland, whether
to get updates on news, events, or occasions. Social media and other communication tools
were essential for this purpose. As expatriates, they used technology as well to facilitate
their integration in the new community. For some women, social media and communication tools were a channel for learning new digital skills and learn about new trends in technology (Ratha et al., 2011).

Rub a described that even after she leaves the United States she will not miss opportunities in her field:

So even my dad told me ask your advisor to send you news of conferences in your field, and I said no need, he share everything on Facebook® and all of the students get the information from there. So these who resist being part of the social media lose the opportunity and advantage of sharing many information. So instead of sending email to every student, it is there on his page for anyone who wants to apply and attend, and I keep telling my friends that they need to add him so they stay updated.

The growing number of Arab users for social media, especially, Facebook® and WhatsApp® made some governments and institutions think of utilizing this tool for educating their citizens and raising their awareness. They even used it as a crowdsourcing tool. For example, the United Arab Emirates social media campaign seeks innovative ideas from the public to solve educational and health problems (Mourtada & Salem, 2014).

**Digital literacy as a contextual need.** In this category people consider technology as a tool for learning and gaining knowledge. They start developing more online searching skills and they rely more on Google™ and YouTube® to find information and learn how to do certain things they need in their life. If they are students,
they search for relative information to their education and if they are teachers they will look for resources they need, and so on. Depending on personal interest, the person develops more professional skills that he or she will need in their academic or job career (Mourtada & Salem, 2014). Digital literacy as a contextual need means that women tend to learn more specialized programs, software, devices, or applications that serve their need in any field. Even housewives who might develop web design skills to grow their home based business.

At the same time, the complexity of technology use develops with the person according to his or her own need. A student in physics department has different needs and different tools to learn and work with than a student in the art department. YouTube® is offering a great help for people in this category as it covers a wide range of interests that suits most of people’s needs: from very simple things such as listening to music, or learning how to cook some dishes, to more complex educational lessons such as coding or learning a new language. People in this category are aware of the educational power of the Internet and are able to teach themselves what they think is an essential skill for their progress in their field.

Moving to the United States and joining a graduate program was the starting point for a new relationship with technology for most of the women in this study. Before arriving to the United States, they were all keen to learn more about the university they will study in and the city where they will live. Depending on the skills they had, some were able to locate the campus address and look at reviews for food near campus, housing, and sign their lease online. Others contacted people from their country through
online student forums. They felt more comfortable getting the information from others simply because they were not yet prepared for the full online experience. With time, they became more capable of searching and gaining information effectively, and they started to rely more on technology and constantly improve their skills at all levels.

**Digital literacy is a lifestyle.** Some women pointed out that technology became part of their life and they cannot function without it. It became part of their lifestyle. This lifestyle started from the minute they arrived to the United States. They utilized technology to track the means of transportation they were taking, searched for locations, saw notifications in their email etc. They were able to check their child’s progress in school online, or use the school mobile application. They were able to pay bills for almost any service online or through their mobile phones. These women continuously learn and the more they learn the more they become connected and dependent on technology in their life.

They realize that the lifestyle here in the United States promoted this type of relationship with technology in order to be productive and attentive to what is happening. Technology became vital in their life and changed the way everything in their life is performed. The daily use of technology in all life aspects became indispensable (Hoffman et al., 2004).

This lifestyle that depends on technology here in the United States is different than the lifestyle that exists in their home country. According to them, technology in the United States is used to make people more productive, more aware of things they need: news, emails, weather, locating places, …etc. While this could also be a lifestyle for
some people in their home countries, the dominating lifestyle tends to be centered on the use of social media primarily for chatting and entertainment (The Arab Social Media Report, 2015). Unfortunately, this can be called addiction to social media more than a technology lifestyle.

**Digital literacy is awareness of Internet culture.** To be in this category, a person needs to be critical in using the Internet. It is important for a digital literate person to know the affordances and limitations of technology (Jones & Hafner, 2012). She needs to be aware of what, how, when, and where to use the technology and to be attentive to the possible opportunities, such as: advancing personal skills that increase work productivity and providing a better tool for performing something easier and faster. At the same time, how to be cautious and aware of possible risks, privacy issues, and unethical behavior. To be in this category you should be highly educated, but not all highly educated people belong to this category. Because the skills in each category are developing incrementally, building on the basic skills of using technology, a person in every category is considered digitally literate based on his environment and what she is expected to do. There should be a reason or an opportunity that moves them to the next level.

The five categories defined in this study are not solid. Those who are in the social media category might use it for fun, learning, or connecting. And those who use it excessively and considered it part of their life might not have a good lifestyle and they might be just be addicted to games or social media and not using it wisely.
How Do Arab Women Gain Digital Skills?

Women gain technology skills in different ways. Some need guidance at least for the starting steps, so they ask a family member or a friend they know or classmates. They find that this is the shortest and faster way to learn, as this will give directly the answer they need and will save time for them instead of spending time looking for the answer or trying to figure out something that others already know. Some think that this is logical as why would we want to waste time if using technology is supposed to save us time. Others think that it is safer to ask someone and save the effort to do more work or explore further.

Other women think that searching online is the best way to gain digital skills. If you need to learn anything, just open Google™ or YouTube® and search. The information is available in different forms, videos, images, or text. Women can choose what works best for them. The same finding appeared in Al-Salmi and Smith (2015) study on Arab mothers who live in the United States. Those women used Google™ for two reasons: search for what they need to learn, translate any word that appears in the description of what they want to learn so they can follow the steps.

As one of the participants highlighted, when she came she was always asking her friends how to do this or that, and she realized that they always open Google™ to answer her question, so she did the same and now Google™ is her main source of finding information so Hana said that “Google™ became now her best friend.” She gained new skills of using online search tools just by mimicking friend.
Thus, mimicking is part of another approach that women follow to learn new digital skills which is self-learning. Women can learn by themselves just by looking at other and mimic, or they can explore and practice something to learn. Some women think that they will learn better and that the information will last longer in their minds when they spend time searching for it or learning it. They might struggle first to learn something alone, but they think that it is worth it as you will be capable of learning more and exploring things that they did not know existed.

For example, asking someone about a feature in a software, might provide the person with the answer directly. If they search for it by themselves, they might spend more time trying to get the same information, but they will know other features in the software and will learn more. In addition, they would be more likely to remember from where they got that information and they will feel confident that they can explore and learn more by themselves.

Few women mentioned training and orientations as their approach to learn new digital skills. They also benefit from the class orientation where the instructor explains how to use some features in Blackboard® or how to access library resources or use specific application for the course. These orientations are helpful for those women as they are focused on exactly what they need. Moreover, most of the women mentioned the other ways such as searching online, asking someone next to them, mimicking somebody, or simply exploring and learning by themselves.
What Motivates Women to Gain These Skills?

Prior to coming to the United States, what motivated women to use technology, was the school projects that they had. They needed computers and Microsoft Word; they needed to search some online images or information for some projects. Other than schoolwork, some mentioned online forums, online recipes, and some social media applications. They did not care to learn something else. They did not know that there is something to be learned, and they did not know about this technology life that they experienced here in the United States.

When they arrived to the United States, they noticed that they needed to advance their skills in other areas. Typing was the first productive feature they noticed that they needed to develop. Some women were encouraged to learn typing, some were embarrassed to be in classes that involved typing something, they started to develop these skills by taking typing lessons online. Other women had to develop their searching skills, they needed to observe what others do and learn some strategies from people around them. Therefore, their first motivation is to improve skills that they use in public in order to avoid embarrassment.

Women also noticed that gaining new skills is simply inevitable because of the community pressure. Being in a graduate college in the United States, means being able to use online communication effectively in order to use Blackboard® or other learning management systems to access your learning materials, have searching skills to do your projects, and be able to access library resources to do relevant research. The more you are
comfortable in using these skills the more successful you will be in working with others and exploring ways to teach yourself or even seek support.

Most Arab graduate women realized that living in an environment that depends mostly on technology push people to learn, practice, and use technology effectively. They need to use it or they will feel that they are missing information and opportunities. For most of them, gaining these digital skills was a must and failing to adapt with this digital environment might result in academic failure. Technology can simply facilitate the access to information and opportunities (Sheikh & Abbas, 2015; Badran, 2014, winter, 2013).

Some women mentioned that Internet connections are great in their country and they have digital devices. However, the society is not yet prepared to have digital citizens and digital students similar to the United States. If you need to contact a person you need to personally meet face to face. Traditional communication is still the norm; traditional education is still preferred. This problem of using technology effectively is negatively affecting even the online learning in some Arab countries (Mirza and Al-abdulkareem, 2011), there is still lack of commitment to online learning and online communication. However, as Mirza and Al-abdulkareem state “the wheels of change have finally started turning” (2011, p. 92). A change at the government level and support from educational institutions can help in creating the technology awareness than can lead to better use of technology among all citizens.

Do Women Consider Themselves Digitally Literate?

Women in this study were asked to define digital literacy and then they were asked if they are digitally literate or not. Most of the participants hesitated to say, “Yes, I
“I am digitally literate”, it seemed that they were intimidated by the question and by the term digital literacy. Even those who defined digital literacy as having the basic skills of using computer, email, and can access the Internet, which they already have. The term digital literacy seemed something more professional to them and most of them said modestly, “we hope we are but there is still room for being better”. It seems that in their mind, being digitally literate means being expert in using the technology although for them to give this title to someone did not include having a high level of proficiency. It is worth mentioning that both questions occurred at the end of the interview when the participants already defined the digital literacy term according to their understanding.

Self-esteem is a major problem that might affect Arab women’s attraction to develop their digital skills. This specific question explained how women underestimate their skills in the technology field, and even when they know, they hesitate to say that they know. They think that what they have is not enough and they need to be better. Even when there is no definition of that better stage. Boujemi (2013) emphasizes that women’s low self-esteem will make her subject to male dominating rules. They can be simply denied opportunities to gain digital skills that can connect them to better opportunities. Moreover, they can underestimate their ability to use technology effectively and this might result in them refraining from using it in the first place or avoiding participation and engaging in opportunities that might interest them just to avoid embarrassment or unexpected situations. “This results in low self-esteem obligates them to abide by the rules of a society which tends to give more leverage to men” (Boujemi, 2013, p. 61).
Because of this mentality, Arab women lose many opportunities that can enable them to improve their status and status of their daughters and other women.

For example, Ruba did not want to try and solve a problem with the projector that was connected to a PC in the class, when she was looked at, she simply said “Sorry, I only deal with Mac computers”. This excuse made her feel better than saying, I don’t know how to use it. She admitted that she hates to ask, simply because “[she] doesn’t want them to know that [she] doesn’t know”. She avoids asking people for help to avoid people’s reaction, she thinks that they might just laugh at her or think that she is not good enough to use the technology, so she prefers to explore things on her own rather than asking even if this will take longer time.

Women often have low self-esteem. That was visible in this research when they were asked if they are digitally literate or not despite that all participants were highly qualified and comfortable using technology. This low self-esteem in women is not limited only to technology but as highlighted by Elnaggar (2008) were visible in them refraining from taking leadership roles in their work environments despite their experience and the leadership skills they have.

It seems also that the cultural gap affected women differently. Some women were able to ask, learn, and enjoy being in a new community. Yet other women were reluctant to do the same because they felt that their skills are underestimated. Negative stereotypes about Arab women show them as non-educated. This cultural gap made them feel that they lack basic digital skills that allows them to be part of the host community. Women who are challenged by this image become online self-learners.
How Do Women Reflect on Their Digital Experiences in the United States and Their Home Country?

Each woman pondered about something to compare what makes technology here different that her home country. When Jori was asked about the difference in the use of technology in her home country and in the United States she said:

A huge difference. First thing when you enter any professor’s office here you will find him facing two if not more computer screens, and they have something to do in each one, in my university in my country it will be just one and not used effectively! If not shared with other colleague! And that was when I was a student there three years ago, I don’t know if things improved or no in the university now.

Most of the women were concerned about how people in their countries waste their time on the Internet. The focus on social media and entertainment was one of the complaints that participants mentioned in this study. Some of their responses point to the reasons behind this type of use. Technology and internet use face many different obstacles in the Middle East (Ali, 2011, Rinnawi, 2011). Low Internet speed in some Arab countries makes browsing the Internet exhausting task while Facebook® and other social media applications such as Twitter® and WhatsApp® are easy to use, and work with low bandwidth. Moreover, the women think that some of these obstacles is due to the lack of early technology integration in classrooms in the Arab world.

The low income of people in some Arab countries does not allow them to have Internet service and they rely more on phones, they are more affordable and suit their
limited budgets. This strong relation between the technology and entertainment and social activities with technology made technology in the category of media, games, and entertainment. This limited and superficial view about technology that some people have is a result of technology’s absence from formal educational institutions that should promote the positive use of technology.

In many Arab countries, online communication is not the best way to connect with a formal entity. Some women mentioned that even as scholars here in the United States they face difficulties in communicating with the education department in their home countries, and they end up calling them by phone to follow up on some issues.

Upon contemplating about their experience in their home countries and here in the United States, women mentioned that there is — or there might be — a progress in the use of technology at all levels in their countries. At the university level, some women mentioned that their siblings are taking courses online through Blackboard® and can listen to some lectures online an experience that they did not have when they were in their countries.

**What Factors Hinder or Accelerate Chances of Arab Women to Become Digitally Literate?**

To answer this question some women focused on school preparation for students from an early age, especially mothers who had children who attend school here in the United States. They saw that the schools here prepare their children to gain skills which they never learned in school before in their home countries, not even their younger siblings, who are currently in schools there. For example, Jori mentioned: “the computer
class at my time was memorizing from the book not practicing and my brothers are now still using the same”.

This preparation can be seen in school services, school activities, and even the school communication with parents. In some of the Arab countries the learning environment is still traditional, communication is face to face, assignments are submitted in class through handouts, and the use of technology in best cases will be to project a PowerPoint presentation. Such environment does not encourage students to learn or explore technology as a tool for education. The same continues at the college level.

Campus libraries or public libraries are available here in the United States and equipped with computers for student or even community members. Those libraries offer support as well for users. While in their home countries, they lack these technology services, even when they exist; they are not practically used and utilized like here in the United States. Leen explained:

In the university I used to see computers in our library. They were always empty. I did not ask if I can use them. I did not expect that it is allowed for us to use them. Most of the time we relied on hardcopy resources, because this is what our teacher cared about.

Thus, the reason why there is digital gap in the skills they have and skills of other students here is because of the poor educational environments they were in and the lack of school digital preparation. Other women found no gap at all in the digital skills they had in the United States. They said that they had even better skills than some of the women here. Because in their countries schools care about technology and care about
preparing students to be digital citizens. Other women were self-learners and depended on themselves to get the skills they need.

However, this group of women who had digital skills focused on the technology services that exist in the United States that allowed them to have better and more advanced digital experience. They praised the speed of the Internet service here, the online communication, and even other business services such as banking, shopping, housing etc. Among the advanced services in the United States, women highlighted the online shopping. All the women agreed that it is hard to get such service in their home countries. Although there are some projects here and there, it is not yet as reliable. Dana said: “shopping is not as good as here to buy online and have things arrive to your home and be able to change if it was not the quality you expected. All this is not yet happening there”.

**Willingness to change.** Technology can easily change the life of an individual, but it is not as easy to change the mind of a person to make him adopt the use of technology in his life, especially in a technology-idle society. Bridging the digital divide in the Arab world, as women in this research suggest, needs to start by changing people’s mentality towards the world of technology and Internet. Providing infrastructure and equipment are not enough. Teaching people theoretically how to use the computer is also not enough.

In the Arab world, it is still a burden to learn something new and people could see it as risky. For example, many people might find shopping online an unwise action because they don’t trust online websites. Farah explained:
Some people know that there are online services but they avoid using it, therefore, there is a need to push and train yourself to accept change and learn and use technology to become a digital person. So you need to change your mentality and think differently.

The online services are convenient, fast, and competitive here in the United States. Such services are a result of an organized and planned public services that ensure that banks, post offices, private business are all functional entities and are committed by regulation to service and protect customers here in the United States. Such situations are still not perfect in the Arab world due to reasons that vary in each country such as the income status, security situation, and level of education (Mirza & Al-abdulkareem, 2011).

Do Arab Women Believe that Women Can Benefit from the Opportunities that Digital Literacy Offers?

Many women used technology as a channel to increase or create an income through small-scale businesses (The Arab Social Media Report, 2015). They relied on social media for these projects. Instagram®, Facebook®, and Snapchat® are the most used applications for this purpose. These applications allowed them to present their crafts or projects to others who requested their products. These small-scale projects flourished in the countries of all the participants of this study.

Other women found job opportunities online and were able to work from home and increase their income without having to leave their small kids or require approval from the husband to leave the house. Jana shared her sister’s story and said:
My sister was able to work from home through a mobile company; she had to fulfill certain hours and answer certain number of calls during the day and then she is done. So she was able to improve her income without having to leave her house and kids alone.

There are other opportunities that benefited the participants themselves. Such as knowing about some scholarship in their countries through social media and using the Internet to look for more information and apply for these scholarships. Other women learned new skills online such as graphic design and were able to sell their designs online and gain some income. Some used programs to support them in learning English, or improve their typing speed. Different online opportunities and different skills benefited women and helped them improve their status and gain more confidence in their ability to search for the needed skill, information, or opportunity they want. Sala said: “Technology opened doors for women in this age, even those who are not highly educated. They access the information they need and build their knowledge in areas that they are interested in”.

It is worth mentioning that some women despite having good skills are willing, when they go to their home countries, to apply for Cambridge International Certificate in IT Skills. They said it is a required certificate that provides better job opportunities for women who have it. More than one woman mentioned that she had siblings who work online in phone companies or banking services. It is very convenient for them as they can work, have income, and be close to their young children who need care.
What Do Arab Women Believe About Women and Technology Stereotypes?

When participants of this study were asked what they believe about difference between men and women in technology use they did not mention any difference. They confidently stated that women had intellectual ability in using technology, digital devices, social media application, and the Internet as much as men. They pointed out that interests, time allocated for use of the internet, and priorities might be different, but that should not mean that men are more capable of using the Internet more than women. It could mean that in the Arab world, men usually have more spare time and less responsibilities than women and therefore they can spend longer hours on the internet using social media or playing video games. These statement support the research done by Antonio and Tuffley (2014) who attribute this use of technology to the socio-cultural factors that works for women in some places and against her in other places.

However, in some cases women face difficulties if her use of technology is controlled by a male in the family. Sometimes it is the father, brother, or husband who restricts the use of Internet for females in the family. Even those who do not completely restrict the use are worried from the use of the Internet because of the negative image they have about it. This image is gained by the continuous speeches of religious men who warn people from the negative impact of Internet on the society and on the values and traditions (Mirza & Al-abdulkareem, 2011). Most of the women in this research did not face any of these problems.
It is generally noticed that people behave differently when they go out of their communities. Geddie (2013) states, some women become empowered when they migrate. He explains:

The geographic separation and experience of the different socio-cultural and political economic norms of their host environment may enable a dynamic sense of subjectivity found through the autonomy and independence that involve questioning and challenging the constructed gender and social norms, and expectations of their pre-migration lives. (p. 199)

There are less restricting factors and more enabling factors that lead women to have different experience than that in her home country.

Migration experiences proved to be positive for many women around the world (UNFPA, 2006). They gained more experiences and ideas that can positively affect their level of participation and engagement in their home countries and can also impact gender norms in their countries (UNFPA, 2006). The experience was richer when the host country allows them to gain digital skills. Technology gave them more access to knowledge, and knowledge is power, so they felt more powerful with technology and less vulnerable as a new member in a new society.
Chapter 6: Reflection, Conclusion, and Recommendations

This phenomenographic research focused on graduate Arab women who came from their countries to the United States to gain their higher education. These women arrived with different levels of education and digital skills. They faced the challenge of being away from their own country to a high tech country with different culture and lifestyle in a higher education environment. Despite this challenging situation, they learned and excelled in a relatively short time with minimal guidance and support.

All women were challenged with technology and their reaction to this challenge was different. Some felt that technology empowered them. This source of empowerment was a result of a combination of being an expatriate in the United States, a graduate student, and a digitally literate person. They were excited and impressed with the use of technology. Some were burdened with this challenge. They tried to limit the use of technology to what they needed only. So they took only what they needed, what contributed to their academic advancement and what could make them a digital literate person, aware of the important features and uses of technology. At the same time, they became more selective in using technology and especially the mobile applications that did not serve their need or the trending social media programs that are used by their friends and family.

Variation in Arab Women’s Digital Literacy

The phenomenographic approach I chose allowed me to see both the similarities and the differences in these women’s responses. Variations in their digital skills, digital experiences, and their understanding of the factors that affect women’s digital literacy in
the Arab world, based on their experiences as graduate expatriates here in the United States. Women’s understanding of digital literacy varied and showed different relation towards the use of technology:

**Appreciative.** The women were impressed with the advanced use of technology as a lifestyle in the United States. They were thrilled with the e-services provided, the Internet speed, the wide availability of Internet in public places, and the easy access to all sorts of information. In general, they valued technology features and affordances.

**Acceptance.** Some women accepted the use of technology here in the United States, at the same time, they feel it is a burden and they miss the lifestyle in their home countries where less technology is used. They have good technology skills and they know how to benefit from the productive features that technology provides for them as expatriate women here in the United States (e.g. online communication). Yet, they value less technology use, less relationship with equipment, and being less dependent on technology.

**Awareness.** Technology is a tool, they are aware of its affordances and limitations. They are very selective on what to take from it and when. They maintain a good digital literacy balance that helps them take what suits their needs. They are aware of technology risks and ethical use.

**Real use of technology.** The role of technology in the life of most women grew significantly when they decided to come to the United States. Previously, the technology use was limited to emails, searching few topics, and using some communication tools in best cases. The minute they decided to come to the United States a different type of
technology use started including how to search for reliable sources of information, how to reach specific services, how to scan, attach, and upload. They started to consider English websites and use online translation to understand the content found on these sites. A different skill set started to develop. Need-based skills grew more when they arrived to the United States and had to cope with the obligations, requirements, services, and expectations.

The Hidden Curricula

The academic life at the United States provided Arab women with another dimension for the use of technology. It was not a choice whether to use technology or not. Technology was part of the new academic setting they moved too and was a whole new shock besides the cultural shock. Before arriving to the United States, they heard the term cultural shock. They were expecting different language, different food, and different social and cultural life. The use of technology was not part of the cultural shock agenda.

Women did not expect this fast paced learning process that is coined with technology skills, no matter what the class subject is, it was a hidden curriculum that they needed to learn on their own. Bergenhenegouwen (1987) explains “The hidden curriculum in university can be described as the whole of informal and implicit demands of study and study achievements that are to be met for someone to complete units of study. The teachers’ informal demands are made partly consciously and partly unconsciously” (P. 536). It was the student’s responsibility to meet the academic expectation and learn the skills needed to fulfill this expectation.
Women needed to work hard to cope with this technology based environment to avoid failure. Pascarella and Terenzini (2005) explain how student need to make the effort to succeed in an academic environment: “One of the most inescapable and unequivocal conclusions we can make is that the impact of college is largely determined by the individual’s quality of effort and level of involvement in both academic and nonacademic activities” (p. 610). Part of this effort in both the academic and nonacademic activities need some technology skills that women had to learn and master such as accessing university information, library services, and online resources.

Prasad (2005) also emphasize the role of a dynamic organization on student’s behavior. He argues that dynamic organization usually encourage student’s interaction and participation. Prasad states “Office rituals, organizational policies, managerial styles, and new technologies are all meaningful in the sense that they evoke a variety of emotions and responses to them”. Prasad’s (2005, p. 22). Women who arrived needed to cope with the new academic environment.

They needed to manage their time effectively in order to meet deadlines, pay bills online to avoid fines and extra charges. They were expected to use the university website, the learning management system used in the university, submit an assignment, or respond to administrative online email. They needed to type fast in order to avoid embarrassment in class. These new set of challenges and forces were introduced to them instantly. They did not have time to think before they automatically started using and adopting the technologies needed to overcome these challenges.
To be a successful graduate student in the United States, you need to be a digitally literate person. Women were building their digital skills daily without prior intention. As explained by (Hubbard, 2010) “New students must determine the degree of fit between their own traits and attributes and the human aggregate of the environment. This will help determine attraction to, stability, and satisfaction within the setting. Students will either adapt their behavior, move to remake the climate, or seek a new and more congruent environment (leave)” (p. 31). Women in this study decided not to leave, and instead adapt to the new society that they moved in. This new technology based academic environment had hidden curriculum with continuous challenges and quests. It was women’s own responsibility to improve their skills to the level that satisfies them, using the method that works for them.

**Consumers and Producers of Digital Information**

Digital literacy does not stop by being able to access, benefit, and critically consume online resources. It is important to participate in this digital culture by sharing materials and news, and images, creating websites, videos, blogs etc. In the Arab world particularly, since 2010, when most of the revolutions started, many women participated in those revolutions by being active online. They took a salient role in highlighting women’s achievement in their communities, fighting for women’s rights, and sharing news. Bloggers, visual reporters, and YouTubers (people who create a YouTube® channel to produce videos) flourished in the Arab world to disseminate messages through technology (Al-Rawi, 2014; Radsch, 2012; Radsch & Khamis, 2013). Technology for
these women means a tool for creating, producing, and sharing the news or opinions they have and not only consume what exists.

However, among the participants of this study, few women mentioned their interest in producing digital projects (e.g., videos, images). It appeared that the role of digital world to these women was mainly to consume information, learn from available resources, connect with others, and for few of them produce materials for class only.

**Technology in Schools**

Schools in some Arab cities care about educating students in the areas of languages and technology from first grade; yet, not all schools in Arab countries have the same standards. Interviewing more than one woman from the same country made this fact visible as some women from the same country had different experiences at the school and university level.

Some women’s skills were better than others. Their skills depended on the city they lived in, the university they attended, the work experience they had, and at what stage of their life they started using digital devices. For example, this research interviewed four women from Iraq, each one of them lived in a different district in Iraq and each one had different experience with technology and came to the United States with a different level of skills and digital knowledge. This difference ranged from having a very basic idea about the Internet and limited ability to use it to very advanced digital skills in using the Internet and social media.

In other countries, such as Saudi Arabia, the Saudi participants in this study emphasized the fact that in their country most of the population is connected to the
Internet. However, most of them were not introduced to the Internet or technology use through schools. They usually use the technology as tools for entertainment and fun. Many women remembered using them for chatting in forums, sharing pictures, downloading music, and playing some games. Some families’ resistance to the use of technology is based on the fact that most of the time spent with technology was not beneficial. Only the educated families realized that it could be a tool for improving education, finding information, and communication. Thus, they encouraged their daughters to use and benefit from technology.

**Influence of English Language**

The English language role in supporting the use of technology among women who arrive to study in the United States cannot be underestimated. The use of technology alone in their home country was not effective as women mentioned in this research. The low Arabic content online is a significant barrier that affects finding information and advancing personal skills on the Internet (Ali, 2011, Rinnawi, 2011). Arriving to the United States did not only provide better technology environment but forced these women to use the English language to search for information. Hence, they discovered another face for the Internet as some of them tried to explain. The experience in using the Internet here in the United States and their home country was not the same, Samia said, “I feel like I discovered new things”. Hana also mentioned, “Here the experience with the Internet is different, I really felt I am exploring something for the first time”. Although this different experience with technology might be a result of a number of factors such as Internet services in general, available online services, or the need to use it in their daily
life, English was an essential supplement for those graduate women to effectively use technology.

However, this positive influence can be negative if a person does not know English and as a result, will miss critical information upon arrival to the University. In the universities in the United States, for newcomers or for those who need support in specific area, there are always orientations or training sessions that can help them. These orientations explain the university’s technology services and support for new students to enable them to access the university or library resources. However, sometimes these services are not well utilized partially because the students arrive with low level of English so they do not get the purpose of the orientation or they think that there are complicated procedures to use them.

The language barrier remains there even when the student tries to search online for information that they do not understand. That is because only 1.5% of the content online is in Arabic (ITU, 2012). Because of this lack of Arabic resources online, Dana highlighted the difficulty of finding reliable resources in Arabic: “If you search in Arabic, you will not find but forums and chat rooms, it is only comments and personal opinions, the Wikipedia also is in its very early stage”. Jori believed that technology helped in solving even the language problem by the ubiquitous English teaching tools online and online translation:

When I was applying for the visa to the United States with my friend, we both did not know English very well and the questions were so hard. We were translating
online, it was a struggle because sometimes the session ends before we get the answer so we were repeating the process until we knew the questions by heart.

**Gender Digital Divide**

The gender digital divide is the unequal access and use of the Internet among men and women (Hilbert, 2011). In a study for college student in Jordan, a country that does not suffer from digital divide in access or skills, the findings showed that there is a gender digital divide. The findings of this study indicates that male students, of an urban college in Jordan, denied women’s right to access the Internet. They did not reject her use of computer, but not to connect to the Internet. The study pointed that culture, traditions, and educational systems in Jordan control women’s access to technology (Abu-Shanab & Al-Jamal, 2015).

Mary, a participant in this study with a Master in computer science came to the United States to find a better opportunity. In her country, she was assigned to clerical work and denied by men in having a fieldwork that can develop her skills and satisfy her ambition. It is common to see men in the Arab world underestimate women’s ability to perform well in technology and engineering. This socially constructed stereotypes starts in families from an early age, in schools, in media, (Baruch, 2014; Kennedy et al., 2003) and in work as well (Elnaggar, 2008).

Abu-Shanab and Al-Jamal (2015) emphasized the need to raise people’s awareness to end gender bias. It is also important, they stated, to have a gender neutral educational systems. Eubanks (2007) also emphasized the need to address the underlying
factors that affect gender digital divide (e.g., social inequalities) before planning any interventions to bridge the gender digital divide.

Despite the existence of the gender digital divide in the Arab world, some families were able to bridge this divide and empower both genders together. The ability of Arab women to travel alone depends on their nationality and the level of awareness and conservativeness of the women and her family. Women in this study did not mention any behaviors that show that their use of technology was limited. In fact, with half of the women in this study being married and are accompanied by their spouses, some of them mentioned that their husbands were the source of support when they needed help in technology. Jana said: “My husband taught me at the beginning because my English was not good at that time, so he explained for me many things and showed me how to search for what I need”. Similarly, Samia said:

I usually like to ask my husband because I know he already explored what I am about to learn. I only learn what I need and I don’t like to explore everything. So if he is around me I would just ask and get what I want.

It is very important as to have a supportive environment: with good Internet connection, a digital device, and surrounding people also should be aware of the importance of using and communicating through the Internet.

**Social media.** Many people in the 21st century are part of some social media application. They use it as a source for information, learning, connecting with others, participating in discussions, to grow their business, or simply to enjoy their time looking at things they like. Some of the women expressed concern about how most of the Arab
world’s relationship with technology is limited to entertainment in social media. Most of
the women in this study agreed that people in the Arab world are attracted to social media
tools to stay connected with others in their community. The high illiteracy rate in some
countries, the limited digital skills, the lack of motivation for learning, and the low
socioeconomic status affects how these people use the Internet (Bonfadelli, 2002; van
Dijk, 2005). In many cases this use is limited to games and social media.

The amount of time wasted on the social media applications for entertainment
purposes only created a negative distorted image that made the conservatives fight the
use of technology, especially for women. Women need to be protected from being in
harmful virtual public spaces. Social media in the Arab world made technology, in views
of many Arabs, limited to a virtual world that is filled with social and ethical corruption
that they want to save women from. The result is either: women are denied access to
online opportunities or they use it under fake names.

Some women said that the ease of use of a social media application is inviting all
people from all ages to join and become engaged. Other women said that in these days,
WhatsApp® groups increased and it is including large number of family members or
friends. They share news and information. If someone decides not to join, they will feel
excluded. Other women mentioned that because most of the people in their communities
access it through their mobiles because it is cheaper for them to pay their phone bills
rather than have home Internet network. In fact, many reports and studies show that the
mobile penetration in the Arab world is very high (ITU, 2013) and that this use is largely
focused on social media applications. Accessing social media, some of the participants
stated, is much easier than searching Google™. It needs a stronger connection to access information while accessing WhatsApp®, Facebook® and Twitter® is easier.

Social media channels are proliferating, and most people like to keep up with the trending application, so they are always willing to join and try the application. The problem is that the use of social media is not invested in productive activities, it is only used for socializing with other people who are, in some cases, very close to them distant wise. Cheng (2012) believes that social media communication and phone entertainments might make people lose by time their face-to-face communication.

Limitations of the Study

The expected limitation for this study was to find the targeted Arab graduate women from different Arab countries in the university selected for this study and was able to include only seven countries: Iraq, Jordan, Kuwait, Palestine, Saudi Arabia, Sudan, and Tunisia. Interviewing more than one participant from the same country provided a valuable insight to the variations that exist even within a country.

Recommendations

Most of the participants in this study agreed that schools in the Arab world are not preparing students to be digitally literate. Curricula related to technology is not updated and the computer class lack hands-on projects. The use of computer is not integrated in all the other subjects.

• Schools in the Arab world should integrate the use of technology from an early age equally for both female and male schools.
• Provide the enabling environment such as teacher professional development for both men and women to make computer use effective in schools (prepare teachers, equip school labs, etc.).

• Encourage the use of technology by integrating the use of computer in all subject area disciplines.

• Create online communication channels between the school, students, and parent to contribute to creating the technology awareness and provide access to parents on mobile devices. This would encourage parents to take a greater role in the education of their children.

• Schools should promote girl’s digital education in the same way it is presently promoted for males.

• Schools should improve girl’s self esteem in the use of technology through providing opportunities for girls to use technology on a daily basis for learning. Participants of this study stated that most of the people in the Arab world own a digital device; however, this device might not be used effectively to benefit them. In addition, information is often gained from less trusted and professional resources. This suggests a need for:

  • Develop digital citizenship strategies in school policies;

  • Focus on building girl’s and boy’s vision on the role of technology in our society and how it can be a valuable source for learning;

  • Increase awareness on the proper and ethical use of technology

  • Increase awareness of cyber risks that needs to be avoided; and
• Educate the next generation on the positive side of technology that can help develop their communities and nation.

Another problem highlighted by the participants is that the Internet content in Arabic is very weak. Even more, this content is not formal or trusted. This lack of strong Arabic content and issue of trust hinders women’s use of technology as a source of information. Therefore, it is recommended that efforts should focus on:

• Increase the Arabic content on the Internet
• Increase efforts in teaching English language for students in schools.

In the United States, campus and library orientations have valuable information for new students that can guide them on how to use some electronic services effectively and where to seek support from as some of the Arab women upon arrival do not have English language. Therefore, it is also recommended that institutions:

• Have orientation programs for students that entail some technology information upon completing a certain level of learning English (e.g. using blackboard®, library electronic services)
• Provide handouts that list the services available on campus along with tips on how to access these services.

Government technology plans should focus on creating an enabling environment that can help all citizens be digitally literate. There is no point of building a digital citizen in a place where no technology exists. And there is no point of asking someone to learn something that can’t be practically used.
Poor Internet services are a factor of digital divide. In some of the Arab countries, it is still a struggle to get a good Internet service in some rural areas. Women in this study and also the literature by Badran (2014) states that it is difficult to go to public places as they are usually for males.

- Provide a safe, high tech, free, and women friendly public spaces for Internet usage. These access points should be equipped not only with computers and internet connection, but with qualified women who can help and support other women learn and advance their skills.

Gender equality is very important to solve many problems that affect women, one of these problems is the gender digital divide. The sample of this study are women who were able to thrive in a digital environment, and other Arab women can do the same, but first we “need to banish gender bias from the minds of people” (Abu-Shanab & Al-Jamal, 2015, p. 109). Therefore, to reduce the gender digital divide, it is important to:

- Raise awareness on women’s rights
- Ensure equal access for men and women to all opportunities and services

**Future Studies**

This phenomenographic study explored how Arab graduate women who study in a midwestern university in the United States conceive digital literacy. Future research can replicate this study and change the participant’s:

- Gender, to find if Graduate Arab men have different views on the use of technology in their home countries and here in the United States,
• Region, to find out if women from different countries have similar perceptions to those of Arab women, or
• Academic level, it will be interesting to find out how younger generation perceive digital literacy.

The focus of this study was technology in general concerning the use of digital devices, Internet, phone application, and social media. With the growing sphere of social media and the increasing use of mobile phone in the Arab world, it will be worth exploring how Arab expatriate women are using mobile phone applications, mainly social media to advance their academic or personal life.

Conclusion

Technology is advancing rapidly, there is new technology introduced every day and people need time to adapt to these technologies as Hilbert (2011) states. Hilbert (2011) believes that introduction of each new technology means a new digital divide. Digital divide in this sense will never be closed. What is needed is equal Internet access for all people so they can reach the needed services, opportunities and advance their knowledge in the field that will contribute to their personal or professional satisfaction (Mourtada & Salem, 2014).

The skills of women in this study, before coming to the United States, varied from very low skills to high skills; yet, each one of them benefited from the digital opportunities here in the United States to advance her skills further and benefit from the available opportunities here in the United States. “Rather than being forced to ICT usage against their will by an external force, it seems that women naturally enjoy the use of
digital communication wherever they get the opportunity to do so” (Hilbert, 2011, p. 14). They simply realized that technology is offering them a different promising learning opportunities needed for their success. They are able to learn and join the academic system that requires digital skills; they are also able to enjoy the community privileges of being digitally literate (e.g. shopping, banking). In addition, they look forward to going back to their home countries and to empower people around them by transmitting the digital knowledge they gained in the United States.

To be digitally literate is to have the skills that allow you to use the technology according to your needs. The level of skills needed to be digitally literate depends on your needs and your status. A digitally literate student is different than a digitally literate housewife and than a digitally literate grandmother. The benchmark for all of these starts from: the basic skills of using computer, logging to the Internet, having email, and the ability to search for information online. Having this set of basic tools can allow people to go further according to their needs and interest.

Being comfortable in using technology and digital skills in life gives more confidence to women to transfer these skills and knowledge to other people around them. The gender digital gap can be bridged within their families by educating their family members whether men or women (Intel, 2012). Women can show their family members, who did not get the digital skills from their schools, how technology can be used effectively. The gender digital gap can be also bridged by transforming the knowledge that those women gained here in the United States to their developing country, and in some cases to rural areas.
Women are capable of using technology and building their digital skills when they find a need to do so and when the digital tools and services exist. This study highlighted that digital skills of Arab women vary from no skills to high-level skills. It also highlighted that Arab graduate women who came to the United States with extremely limited digital skills were able to build their digital skills and equip themselves with a very powerful tool that can facilitate their future endeavor.
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Appendix A: Pilot Study

Following the phenomenographic methodology guidelines I conducted a pilot study for three women. The study aim to learn about Arab women’s experiences in using digital technology in their countries and in the U.S. and how this experience shape women’s conceptions about the digital skills needed for women to be digitally literate. The purpose of the pilot interviews was to test the liability of the instrument used for this phenomenographic study, which is the Interviews. I wanted to know if the interview questions prepared are adequate to gather the information needed and I wanted to find out if the answers to the interview questions will yield the information I need to know to learn about graduate Arab women’s experience with technology. I also wanted to know if analyzing this data would enable me to see the qualitatively different ways in women’s digital experiences.

I conducted a pilot study for three graduate Arab women studying in: college of Health Sciences and Professions, college of fine art, and college of Education. The years they spent in the U.S. ranges from 6 months, 5 years, and ten years. The women that spent 6 month had all the details on the travel experience still fresh in her mind, while the women who spend 10 years, hardly remembered any and said that everything was ok. The women who spent 5 years reflected more on the skills she gained in the United States and gave a balanced view about how she struggled at the beginning. She also described how she managed to cope with the changed environments, and worked hard to improve her digital skills.
The interviews lasted around 45 minutes. I started by explaining the research topic and that the interview will be audio recorded using Ever notes application on my iPad. I found that most of the questions I prepared did make sense to the interviewees; however, I needed to add some questions to guide them in describing their experience with digital technology. I also had to reorganize the question in order to walk them through their experience before they arrive to the U.S., when the first arrived, and now in the current time. Spending a time in each stage separately helped my last interviewee recall the information related in that specific period. I also added an introductory question about the participant’s background. I had to ask women I interviewed about their nationality, years they spent in the U.S., and their major.

After completing the interviews, I transcribed them verbatim into a word document. I then imported the three word files into MAXQDA11® qualitative data analysis software to start coding my data. I read the transcripts more than one time. I collected the significant statements I found and moved them to a new document, which I called the “pool of meaning”. In this document I collected statement that stood out in each interview. I looked at all the responses as a whole and defined some categories. I reorganized the categories I found into main- categories and sub-categories that describe the technology experience for those women.

The pilot interviews showed that the interview questions used were reliable to collect information needed from the participants for the research topic. The analysis revealed how technology increased the self-efficacy of two of the women I interviewed. Although they had basic skills in using the technology in their job before they come to
the U.S., they felt that they were not competent when they arrived and they felt that they would fail if they did not cope with the technology life and academic environment they were thrown into. Experiences that added much to their knowledge and made them feel that they are basic digital literate women. At the same time, they are aware that there are higher levels of digital literacy that they seek to reach because they see technology an asset to any person who live in this digital world.

The women who spent 10 years seemed comfortable and aware of the two different environments that exist here and in her home country, however, she pointed out that if the technology advancement that exist here in the U.S. existed in the Arab world, women would have definitely excelled exactly like they did here in the U.S. She also believes that one need to know what he wants in order to decide what skills he needs.
Appendix B: Semi-Structured In-Depth Interview Questions

1. Describe how your experience started in using the Internet?

2. Is there a difference between your experiences in using the Internet in the United States and back in your country?

3. Are your skills improving?
   a. If yes, how?
   b. Why?
   c. Who/what is helping you?

4. What motivates you to use the Internet?

5. Tell me what you mostly do when you use the internet

6. What personal benefit you see in using the Internet?

7. How can you define the term “digital literacy”?

8. What skills you think are needed for digitally literate person?

9. Do you consider yourself digitally literate woman? (Why yes or no)

10. What do Arab women believe about women and technology stereotypes?

11. What factors hinder or accelerate Arab women chances to become digitally literate? (e.g., cultural, tradition, income, age, place, access, education, language, family, peer)

12. Can bridging the gender digital gap through digital literacy accelerate community development at home, and if so how?

Demographic

13. Age
14. Country (rural – urban)
15. Major – department –
16. level /year
17. Degree
Appendix C: Consent Form

Ohio University Adult Consent Form with Signature

Title of Research: Digital Skills of Arab Women in the U.S.

Researchers: Heyam F. Abo Alasrar

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your participation in this study.

You should receive a copy of this document to take with you.

Explanation of Study

This study is being done because I want to explore the different ways Arab women learn and use digital technologies. If you agree to participate, you will be asked to respond to an interview. The interviews will be audio-recorded.

You should not participate in this study if:

1. The main language of your country is not Arabic
2. Your undergraduate degree was not completed in your home country

Your participation in the study will last for approximately one hour

Risks and Discomforts

No risks or discomforts are anticipated
Benefits

This study is important to science/society because it contributes to the field of education and it helps educators hear different stories and understand the different ways that women learn and gain their digital skills.

Individual participants may benefit by reflecting on their own experiences and by being aware of their learning style.

Confidentiality and Records

The study information, interview responses and the audio recordings will be kept confidential by securing the data in a password-protected file. Only me and my advisor Dr. Teresa Franklin, will have access to this information. This information will be destroyed after one year.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Contact Information

If you have any questions regarding this study, please contact the investigator Heyam F. Abo Alasrar, ha255208@ohio.edu - (740) 418 -3231
If you have any questions regarding your rights as a research participant, please contact Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740)593-0664 or hayhow@ohio.edu.

By signing below, you are agreeing that:

1. you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered;

2. you have been informed of potential risks and they have been explained to your satisfaction;

3. you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study;

4. you are 18 years of age or older;

5. your participation in this research is completely voluntary;

6. you may leave the study at any time; if you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Signature_________________________________________ Date ________

Printed Name___________________________________________

Version Date: [May/13/15]
Appendix D: IRB

A determination has been made that the following research study is exempt from IRB review because it involves:

Category 2 - research involving the use of educational tests, survey procedures, interview procedures or observation of public behavior

**Project Title:** Digital Literacy to Bridge Gender Digital Divide: A Phenomenographic Study of the Digital Diversity of Arab Women Studying in the United States

**Primary Investigator:** Heyam Abo Alasrar

**Co-Investigator(s):**

**Advisor:** Teresa Franklin

**Department:** Educational Studies

Office of Research Compliance Staff
Rebecca Cole, AAII, CIP
Robin Stack, CIP
Shelly Rev, BS

15E161

Date: May 14, 2015

The approval remains in effect provided the study is conducted exactly as described in your approved application. Any additions or modifications to the project must be reviewed and approved by the IRB (as an amendment) prior to implementation.

IRB approval does not supersede other regulatory requirements, such as HIPAA, FERPA, PPRA, etc.

Adverse events/unanticipated problems must be reported to the IRB promptly.
Appendix E: Permission to use Phenomenographic Relationality

PERMISSION TO USE COPYRIGHTED WORKS

08/02/2016

Professor Emeritus John A Bowden
RMIT University
Melbourne Australia

Dear Professor Bowden,

I am a PhD student at Ohio University in the U.S. I am doing a phenomenographic study about how Arab women perceive digital literacy. I would like to have your permission to use your relationality graph in my dissertation. The graph below is based on your original graph.

![Phenomenographic research graph](image)

*Figure 1. Phenomenographic research (adopted from Bowden, 2003)*

Please indicate your approval of this request by signing the letter where indicated below and returning it to me electronically. Your signing of this letter will confirm that you own the copyright to the original work.

Very truly yours,

Heyam Abo Alasrar

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By: [Signature]
Title: **Professor Emeritus, RMIT University**
Date: **10/02/2016**