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Nada El Maliki

Illinois State University, nadaelmaliki@gmail.com

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PERCEPTIONS, LEARNER CHARACTERISTICS, AND PREFERENCES OF LIMITED  
LITERACY MOROCCAN WOMEN: THE FEASIBILITY OF ACQUIRING  
DARIJA LITERACY SKILLS THROUGH M-LEARNING

NADA EL MALIKI

106 Pages

This study explored the perceptions, learner characteristics and preferences of Moroccan women with limited literacy skills towards the use of their smartphones to improve reading literacy skills in Latin script Moroccan Darija (LSD). The goal was to generate a range of recommendations for instructional designers, curriculum developers and education policymakers designing literacy programs for the target population. Specific focus was given to the fundamental reading sub-skill of matching letters to sounds (also known as phonemic awareness or decoding) for the Darija language. This study employed target population analysis (TPA) as a phenomenological approach that consisted of interviews with a sample of eight participants.

**KEYWORDS:** women literacy; Moroccan Darija; mobile learning; phonemic awareness; mobile learning technologies

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NADA EL MALIKI

A Thesis Submitted in Partial  
Fulfillment of the Requirements  
for the Degree of

MASTER OF SCIENCE

Department of Technology

ILLINOIS STATE UNIVERSITY

2021

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NADA EL MALIKI

COMMITTEE MEMBERS:

Klaus Schmidt, Chair

Daniel Wilson

Pruthikrai Mahatanankoon

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N. E.

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## CHAPTER I: INTRODUCTION

### **Background of the Problem**

Adult literacy is a major dimension of participation in society. It impacts relationships, social interactions, family duties and institutions. (Erguig, 2019). Being a literate person is one of the key criteria of a fully functional individual in society (Jimoyiannis, 2015). Adult illiteracy<sup>1</sup> rates are higher in developing countries due to education access differences stemming from socio-cultural beliefs or economic factors (poverty, child labor). The highest illiteracy rates are recorded in sub-Saharan Africa, while the lowest are in North America (Boltzmann et al., 2013).

Morocco is no exception. Illiteracy among adults has been a challenge and the government has begun to address this issue heavily through adult illiteracy eradication programs (IEP) (Erguig, 2019). The objective of IEPs in Morocco is to offer residents a literacy program with the objective of reducing illiteracy rates in the country. A growing interest surfaced on the quality of these programs (Erguig, 2019). Government efforts through policy-prioritization of literacy (PPI) were coupled with the active participation of community-based projects such as the mosque literacy programs for women (Erguig, 2017). Despite the implementation of the IEP and PPI, illiteracy remains high, especially among women (Erguig, 2017) as described in Table 1.

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<sup>1</sup> There is a slight distinction between literacy and illiteracy. According to Boltzmann (2013), there are two types of illiterates: primary and functional. In this study, I am pointing to primary illiterates as those “who have never attended school and thus were never been taught how to read and write” While functional illiteracy is associated with specific obstacles in childhood relating to “truancy, inappropriate instructions, repetition of classes and family environment (neglect, drug abuse of parents, abuse, numerous siblings etc.)” (p.2)

For a total Moroccan population of 36 Million in 2018, 26% are illiterate (15 years and older) (United Nations Educational Scientific and Cultural Organization, 2019).

**Table 1**

*Illiteracy in Morocco by Gender and Age Groups*

<b>Moroccan Illiterate Population (2018)</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>
15 years+	6,884,539	2,143,819 (31%)	4,740,720 (68%)

*Note.* Statistics from Moroccan High Commission for Planning (High Commission for Planning, 2018)

Nevertheless, the adult literacy rate has increased from 41.6% (1994) to 73.8% (2018) (Knoema, 2018). Furthermore, the urban-rural chiasm in literacy rates was recorded to be significantly high as shown in Table 2 (High Commission for Planning, 2018).

**Table 2**

*Literacy in Morocco by Gender and Urban-Rural Areas*

<b>Literate Population (10 Years+) (2017)</b>	<b>Male</b>	<b>Female</b>
Total	75.2 %	55.9%
Urban	82.8%	65.6%
Rural	62.5%	39%

*Note.* Statistics from Moroccan High Commission for Planning (HCP, 2018)

There is also an important gender gap in adult literacy in Morocco. This gender gap contextualizes the nature of the literacy efforts needed to design literacy programs that are adapted to the lifestyle and needs of that population. Moreover, the rapid mobile phone growth<sup>2</sup> in Morocco (annual 10% increase from 2010 to 2018) with a 63.7% growth in smartphone holders (2010-18) (ANRT, 2019), suggests that a technology-oriented approach to adult literacy instruction may be the answer to reaching remote populations that have minimal or no access to government run literacy programs. Technology can be used to leverage its key features such as ubiquity and mobility, to overcome socio-cultural and economic obstacles for access to literacy education.

The current project focused on the individual perceptions of Moroccan women because of the high rates of illiteracy among this population. I seek to gain insights into Moroccan women's perceptions regarding the use of mobile-based technology for improving illiteracy rates among this population. Further, I seek to determine the characteristics, learning preferences and prerequisite skills level in Darija and smartphone usage of this population. Research findings could be used to inform the design of reading programs aimed at teaching reading skills of the Moroccan language (Darija).

### **Key Term Definitions**

#### **Mobile Learning**

Mobile Learning, also called m-learning, is the process of using wireless devices (e.g. tablets, PCs, smartphones, laptops) for the purpose of learning while being in mobility or “on the move” (Akintolu et al., 2019; Park, 2011). M-learning includes distance or informal types of

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<sup>2</sup> Not compounded by population growth rate.



learning that take place beyond the classroom or educational institutions. It also applies to diverse learning purposes and learner types (Park, 2011). M-learning complements e-learning which initially started with wired devices (Park, 2011). The most important characteristics of m-learning are portability and individuality (Park, 2011), which enable ubiquitous learning without any time or place constraints. In other words, a flexibility that expands possibilities of learning to new age groups or geographical contexts (Akintolu et al., 2019). The value of mobile learning lies in its disruption to traditional instructional methods. According to Akintolu et al. (2019), m-learning brings a sense of excitement to learners who lost faith or failed in formal, conventional learning environments.

### **Decoding**

Decoding is the process of understanding letter-sound correspondence (phonemic awareness) leading to the reading of syllables, words and sentences based on textual information. Language skills on the other hand, concern the understanding of the meaning behind words (Carnine & Engelmann, 2016). In this research, we explore the decoding skill acquisition of Darija as an important prerequisite to acquire reading competency of its Latin script version<sup>3</sup>.

It is important to note that the proficiency of the target population in speaking fluent Darija as their mother tongue constitutes an important advantage for the acquisition of reading proficiency. Reading proficiency not only requires the decoding of sounds (letter-to-sound correspondence) but also the understanding of the meaning behind read words and sentences.

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<sup>3</sup> Referred to in this study as Latin-Script Darija (LSD).

Hence, reaching full decoding ability is the main missing skill for the target population of women to reach full reading capability in Darija<sup>4</sup>.

### **Limited-Literacy Adults**

Limited literacy adults, also called primary illiterates, are individuals who did not attend any school and cannot read nor write in any language<sup>3</sup> (Boltzmann et al., 2013; Kurvers et al., 2009).

### **Perception**

In this study, I considered the definition of perception as opinions, beliefs and thoughts.

### **Digital Literacy**

Digital literacy encompasses a wide range of sub-skills pertaining to learning skills and attitudes, collaboration and sociability, communication skills, creativity, operational skills, information skills, strategic skills, digital culture and identity. In contrast with the initial definition of literacy as the ability to read and write (Jimoyiannis, 2015). Digital literacy is mentioned in this study as the ability to use smartphones to perform tasks and meet ones' needs (communication, entertainment, information access, business, etc).

### **Research Question**

**RQ1:** What are the perceptions of the target population towards using smartphones to acquire reading skills in Darija (LSD)?

**RQ2:** What are the characteristics and literacy learning preferences of illiterate Moroccan women?

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<sup>4</sup> In either format: Latin script or Arabic script.

**RQ3:** What are the target population's perceived prerequisite skills and knowledge as they relate to reading Darija and using smartphones?

### **Purpose of the Study**

The purposes of this Qualitative phenomenological study design is:

1. To gain insight into the perceptions among Moroccan women with limited literacy toward the use of mobile technology for improving their reading skills in Darija, as well as their mobile technology adoption.
2. To determine learner characteristics and learning preferences of the targeted population to inform instructional strategies.
3. To determine the perceptions of the targeted population with regards to their skill level in Darija and smartphone usage.

### **Significance of the Study**

Although the Moroccan government has implemented IEPs and PPI in conjunction with community-based projects such as mosque literacy programs for women (Erguig, 2019), illiteracy among women in Morocco continues to rise (High Commission for Planning, 2018; Knoema, 2018). Illiteracy is suggested to affect all areas of life and increases the likelihood that an individual will experience poverty, health issues, and isolation (Rotary, 2019). By addressing the research questions within this study, we can gain insights into the perceptions of Moroccan women as they relate to the feasibility of implementing a mobile-based literacy program to address illiteracy in this country.

Further, we can determine the characteristics and learning preferences of this population. Finally, research findings will reveal the perceived skills in decoding Darija and using smartphones among Moroccan women. As a result, findings from this study could be used by practitioners in

the field to inform a mobile-based illiteracy intervention to target hard-to-reach populations with the aim of reducing illiteracy rates in Morocco.

### **Positionality Statement**

This study comes into the context of my personal experiences and observations as a native Moroccan. The inspiration behind engaging in this research stems from the close relationships I developed with illiterate Moroccan women through the several social encounters I made as a citizen but also as a volunteer activist meeting woman from rural to urban regions in different contexts. This diverse exposure enabled me to comprehend the complexity of the challenges they faced due to the close conjunction of their illiteracy with their socio-economic situation. It is in the conversations I held with these women, in the intimate stories they trusted me with that I progressively developed a need to explore this problem. As an undergraduate student, I had the chance in 2016-17 to be the literacy tutor of a group of limited literacy adult women in the middle atlas region of Morocco (Ifrane).

Family responsibilities, hectic work hours, and disadvantaged socio-economic background did not prevent them from forgoing hours from their pay to attend classes. More recently (2018-19), being in close contact with limited literacy individuals (men and women) in Morocco enabled me to observe the positive impact the commonization of technology (especially smartphones) had on the communication abilities of the limited literacy population of Morocco. Hence, the technological dimension considered in this study, being a native speaker of Moroccan Darija, French, and Arabic provided me with field-based information I drew upon in the design of this study.

## Summary

This introductory chapter provided a review of the research project to include a discussion and background of the research problem, presentation of key definitions, presentation of the research questions, purpose of the study and its significance. Chapter 2 will provide an overview of the pertinent research literature on the research topic.

## CHAPTER II: LITERATURE REVIEW

Adult illiteracy rates are higher in developing countries because of issues with access to education and differences stemming from socio-cultural beliefs as well as other economic factors. According to Boltzmann et al. (2013), sub-Saharan Africa has the highest illiteracy rates and North America has the lowest (Boltzmann et al., 2013). Illiteracy is suggested to be linked with increased rates of poverty, disease, and isolation. Currently, the illiteracy rate among Moroccan women is high despite the governments best efforts to reduce illiteracy in the country. I sought to explore the perceptions, characteristics, and learning preferences of illiterate Moroccan women as it relates to mobile technology and learning. The following chapter will provide a literature review regarding the research topic following an introduction of the theoretical framework.

### **Theoretical Framework**

The theoretical framework employed within this study is the Target Population Analysis (TPA) framework (Gibbons, 2013). TPA is used by educational designers to garner a better understanding of the learner to ensure a proper fit between educational design and the learners needs. Specifically, Gibbons (2013) stated the following:

TPA allows a designer to discover the mean value of each population characteristic for the purpose of designing to the mean, but it can also be used to identify variations away from the mean that point to advantageous adaptations to the individual (p. 412).

Gibbons (2013) advances a detailed rubric regarding the components necessary to conduct a TPA. However, the elements of the rubric are dependent upon the goal of the instructional designer. Therefore, some population characteristics and insights may be more thoroughly explored than others. In the current study, certain characteristics are more important

than others for the limited literacy female adult population that will be included in this study in Morocco. The rubrics sub-components were also adapted to mobile learning and the collectivist nature of the socio-cultural context of Morocco. The following section will describe the five main areas of the rubric that were used in this study and possible sub-categories (Gibbons, 2013).

### **Description of Each Rubric Area**

**Demographics (Area 1).** According to Gibbons (2013), obtaining a target populations demographics is an important step in better understanding the populations' needs as learners. Specifically, understanding a target populations demographics is useful in determining the best delivery methods, how to structure exercises and learning modules, how to customize examples, and even how to group information for delivery (Smith & Chilcote, 2020). Examples of demographics of interest include learners age, gender, educational background, technological savviness, and attitudes and biases related to learning and modes of learning. (Smith & Chilcote, 2020).

**Skill in Target Content (Area 2).** This area serves as a preliminary analysis of the skill level of the learner. Specifically, Gibbons (2013) describes this category of the TPA rubric as the existing skills and knowledge in the target content. Gibbons (2013) suggests the following five sub-categories for exploration under this category in the rubric. Namely, determining the learners: (a) skills in content area, (b) confidence in skills, (c) knowledge and content area, (d) confidence in knowledge, and (e) existing non-instructional experience with the content or skills (Gibbons, 2013). This category allows the education designer an opportunity to assess the learner's base knowledge and assess their current skill level or gap in skills. Therefore, this category affords the educational designer an opportunity to create a learner-centered educational program.

**Skill Not Related to Target Content (Area 3).** This category of the rubric affords the education designer the opportunity to ascertain additional skills the learner may have that could foster learning (Gibbons, 2013). Several recommendations for sub-categories were offered with regard to questions that could be asked of the learner to better understand their needs.

Recommended sub-categories include the following: (a) areas of expertise, (b) breadth of interests, (c) depth of interest, (d) motivation for interests, (e) technical (tool skills), (f) cognitive skills, (g) metacognitive skills, (h) self-directed learning skills and attitudes, and (I) typical or favored problem-solving skills and approaches (Gibbons, 2013).

**Educational History (Area 4).** The general educational history category of the rubric allows the educational designer an opportunity to further identify the learners current level of educational attainment as an additional assessment tool (Gibbons, 2013). However, this category includes other elements pertaining to the learner's attitude toward learning, formal instruction and confidence in formal education to name a few. Specifically, Gibbons (2013) suggests the following sub-categories: (a) level of education attained, (b) attitude toward learning, (c) enjoyment of learning, (d) educational history, (e) level of attainment, (f) attitudes toward formal instruction, (g) level of confidence placed in formal instruction, and (h) preferred modes of learning.

**Learning Preferences (Area 5).** Finally, the last category described by Gibbons (2013) is the learning preference of the learner. The learning preference encompasses the learners preferred perceived learning style. The objective here is to consider the learners likes as it relates to how they like to learn. How a learner prefers to learn a new subject is based upon several variables such as their memory aptitude, confidence in their ability to remember new material, interaction preference, and need for redundancy and review (Gibbons, 2013). Hence, Gibbons



(2013) recommends all the sub-categories just mentioned and also includes the following preferences: (a) strategic, (b) control, (c) order, and (d) interaction. Finally, Gibbons (2013) suggests determining learners' rates of new learning, ability to concentrate, and think divergently. The TPA framework is used in the current study and will be further discussed in Chapter 3, methodology where it is curtailed to the current study research questions, problem, and purpose. The following section will review the literature as it pertains to the research topic.

### **Mobile Technology for Learning**

The growth of information and communication technologies (ICT) has a high potential to serve learning purposes, especially for underserved populations in developing countries (Akintolu et al., 2019). One such example is the underserved population of Morocco. The following section will explore mobile technology for learning in the Moroccan context, attitudes toward m-learning, and illiteracy rate of women in Morocco.

#### **Mobile Technology Coverage in Morocco**

The internet penetration rate (internet users aged five and over) in Morocco has significantly increased over the last decade from 39.5%<sup>5</sup> to 62.5% in 2013 (Agence Nationale de Reglementation, 2019). Although, the urban-rural gap in internet penetration rate is still flagrant with 71.7% (urban) and 53.3% (rural) in 2018 (Agence Nationale de Reglementation, 2019). Mobile internet equipment access in urban areas amounting to 82% exceeds the still low rate in rural areas of 57% in 2018. For households, internet access has grown by 181% between 2010 and 2017 (Agence Nationale de Reglementation, 2019).

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<sup>5</sup> Average for rural and urban users.

Mobile technology Equipment (smartphones) has increased among all generations (12 years- 65 years) by 500% since 2011. Mobile phone growth<sup>6</sup> has increased by 10% from 2010 to 2018 while smartphone holders show a growth of 63.7 % (2010-18) (Angence Nationale de Reglementation, 2019). Other mobile devices such as laptops and tablets have observed a 72% increase between 2010 and 2017 becoming more commonly used and accessible among Moroccans across socio-economic groups and has become less of a luxury good (Angence Nationale de Reglementation, 2019). Thus, significant growth in mobile technology dissemination and accessibility across rural urban areas and social groups in Morocco have been found.

### **Issues of Mobile Technology Access and Equity**

The existence of mobile technology does not translate to usability and expected usage behavior. Kukulska-Hulme (2007) suggested that there are several factors that limit the usage of mobile technology. Specifically, Kukulska-Hulme (2007) suggested usage of mobile technology is limited by the learning curve required to manipulate a mobile device, network strength or interruption, network failure, speed, power supply, battery life, and small screen size (smaller text, eye strain). For example, slow internet presents a major challenge for learning as it hinders a continuous momentum for attention (Akintolu et al., 2019). Hence, there is a distinction to be made between access to mobile technology and digital literacy which is the one that allows navigation across applications and interfaces (Akintolu et al., 2019). To overcome such hindrances, Kim (2009) defines a type of m-learning that compensates for an inexistent internet access. Kim (2009) described type two mobile learning to be “pre-packaged content loaded into

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<sup>6</sup> Not compounded by population growth rate.

a handheld low-cost device (smartphone)” or downloadable recorded content from the internet such as video lessons, podcast, animated audio-visual storytelling, eBooks, text-based workbooks or textbooks (Kim, 2009, p. 416).

### **Mobile Technology in Developing Countries**

Mobile technology provides several features that enable a reduction of social disparities in a cost-effective manner such as portability, low-cost, light weight devices that have high computing powers to perform the same tasks as a wired device (desktop computer), and ubiquitous access to instructional content (Kim, 2009). The devices have high content storage and retrieving capacities enhanced through the development of cloud storage and content-delivery applications (Kim, 2009; Park, 2011). Technology enables higher content richness and reach especially for remote, rural, or disadvantaged communities of learners. Without technology, rural inhabitants are unable to access educational or instructional services (Akintolu et al., 2019).

The advantage of m-learning is that it provides the learner freedom to choose when and where to learn according to what suits their lifestyle and daily schedule (Akintolu et al., 2019). For adult literacy programs in developing countries, mobile technology presents several advantages. Mobile devices enable *community centered learning* relevant to socio-economic needs such as running a business, health, or family care (Akintolu et al., 2019). Further, m-learning often becomes more enjoyable over time and contrasts formal learning contexts that may not suit the needs of adult learners with limited education (Akintolu et al., 2019).

## Attitudes Toward M-Learning

According to Black (2003), there are several perceptions towards learning that emerge among adults when considering new technologies for learning. Human presence seems to be the main element that impacts adult learners' perceptions of a given learning setting. Knowing that there are other people online (peers or instructors) following the same learning program, reduces the feeling of isolation and increases that of security (Gunawardena & Zittle, 1997). The quality of instruction was not a factor impacting how adults would perceive the effectiveness of an online learning program. Hence, the lack of human connection or an alienating<sup>7</sup> online learning environment leads to a lack of self-confidence and subsequent disinterest from learning or continuing a program (Willis, 2002). Additionally, overwhelming learners with a heavy load of information or providing limited human support has a similar consequence.

Online learning settings create a *perception of equality* among adult learners as they interact with the content or with other learning participants, creating opportunities of contribution for shy or inexperienced<sup>8</sup> types of learners (Gavota et al., 2010).

Moreover, adult learners perceive an online learning program to be engaging when they are not solicited to memorize, record or keep track of content in order to reach their intended learning goals. Asynchronous online learning environments make the latter possible by allowing learners to access instructional content regardless of time and location (Michinov, 2007).

Akintolu et al. (2019) conducted a study to uncover the perceptions of adult learners from Nigeria towards using mobiles to follow a literacy program.

He found that his researched sample positively perceived engaging in a literacy program using their smartphones. They perceived mobile technology as being “interesting” and “instrumental” in the learning process. Similarly, Sharples et al. (2005) and Dias & Victor (2017) advanced that such positive perception comes from the experiences adults had with mobile phones proving them to be adding value to their lives in contexts such as health and business (as cited in Akintolu et al., 2019).

Mobile devices facilitate other aspects in the learning process because they can help create a sense of community beyond space and time as it supports communication and exchange that may or may not be directly related to the learning content. Such learning communities hence lead to informal relationships that contribute to making learning be perceived as enjoyable and easy (Morrone et al., 2012 as cited in Akintolu et al., 2019).

Learners' perceptions towards learning with mobile technology are influenced by the extent to which they are proficient in using their mobile devices. The more proficient they are the more they find mobile devices useful. The latter being dependent upon the extent to which they use the internet (Poter & Donthu, 2006 as cited in Akintolu et al., 2019)

A research study exploring the users' attitudes toward the use of mobile devices in second and foreign language learners in college suggested a strong and positive association between user's attitudes and mobile learning (Viberg & Grönlund, 2013). Specifically, the study explored the perceptions of 345 student attending college in Sweden and China. Research findings suggest that participants of this study preferred the mobile learning platform because of the individualization m-learning provided. Further, researchers discovered that “technology itself seems to be the most important culture-shaping factor, more important than culture inherited”

and physical age (Viberg & Grönlund, 2013, p. 169). These research findings suggest that technology can outweigh cultural norms and preferences.

A quantitative research study exploring the adoption behaviors of m-learning in both a college student and faculty population in the Arab Gulf region revealed a positive association between users' perceptions and m-learning (Al-Emran et al., 2016). Specifically, the researchers concluded that because of the ample availability of mobile devices and willingness to adopt technology, both student and faculty populations are poised to accept and adopt the introduction of m-learning technologies within the classroom.

Finally, a quasi-experimental quantitative study was conducted on a sample of university students in Turkey suggest that m-learning applications are associated with positive user attitudes and are suggested to promote academic achievement (Demir & Akpınar, 2018). Specifically, 41 students were included in the study and asked to use a mobile-based learning strategy while the control group was subjected to regular in-class lecture. Participants were asked to fill out an attitude survey to ascertain their perceptions of the m-learning strategy and an achievement test was also administered. Researchers found that participants had a positive association and attitude toward the m-learning platform. Therefore, these research findings suggest the feasibility of using m-learning in an educational context. The following section will explore research regarding the languages used in Morocco and illiteracy of Moroccan women.

### **Darija and Mobile Technology Usage**

Thanks to the growth of mobile technology, Darija has observed major transformations in the 1990s and 2000s becoming codified and a written language (Caubet, 2017). Its most common written format started in Latin script given that at the time (1990s-early 2000s), phones and devices available in Morocco included only Latin script keyboards. On the other hand, Caubet

(2017) claims that when given a pen and pencil these same people initiating the writing format of Darija in mobile phones or computers would instinctively write it in Arabic script (Caubet, 2017). The latter may reflect a political or ideological choice to write Darija in Arabic characters to reach more people in society who do not necessarily know French or standard Arabic.

Today, even with the development of Arabic keyboards in almost all mobile devices and applications (e.g. Facebook) compared to the early 2000s, Moroccans find it difficult to type in Arabic and prefer French-Latin keyboards (Caubet, 2017). When compared to other Arab speaking countries such as Egypt, Arabic keyboards' usage in Egypt (60% of devices) significantly exceeded that of Moroccans with only 33%. Nonetheless, the usage of the Arabic keyboard increased especially with the commonization of smartphones among Moroccans (Caubet, 2017)

### **History: Linguistic Context of Morocco**

#### **Languages Spoken versus Official Languages**

The richness of languages in Morocco is a result of the many waves of colonization and immigration that the Maghreb (North Africa) region observed (Maadani, 2012). The native people of Morocco speak Berber, called *Amazigh*, that itself has many variations depending on regions: Tamazight (Middle Atlas and Sahara), Tashlihit (High Atlas) and Tarifit (Rif region). In the 7<sup>th</sup> century, Morocco observed a wave of Arab Muslim immigrants that shaped the cultural and religious landscape of the country. This mix gave birth to a Moroccan dialectal Arabic called Darija.

In the 20<sup>th</sup> century, Morocco was the object of interest of many European countries such as Germany, England, Portugal, Spain and France. Spain colonized the northern and far-southern part of Morocco under a protectorate (1951-1956) while France colonized the remaining

territorial (mid-regions) under a protectorate that lasted 44 years (1912-1956). Thus, along with Berber and Arabic, Spanish and French became languages spoken initially by the Moroccan elite and later by upper-middle classes through the development of a Moroccan education system influenced by French and Spanish. The later languages stayed as the vehicle of modernity and integrated the Moroccan language (Darija).

Today (2020), the linguistic landscape of Morocco is complex as described by Maadani (2012):

Morocco has two main written languages namely Classical / Standard Arabic and French. Amazigh and Moroccan Arabic, the two mother tongues of the country, are used, most of the time, for oral communication (...) The 'Darija', like many languages of the world, carries the memorial footprints (..) of the country: variants of Amazigh, important background of the Arabic (Koranic, pre and post hilalien) and that of Muslim Andalusia, Hebrew, the languages of the Iberian Peninsula and the French (p.33).

Moreover, Darija itself has variants depending on the regional accents and linguistic influences that resulted from the period of colonization.

Conservative parties in Morocco implemented a process of Arabization in two fields: education and the media, which soon made French disappear from the public scene and officialized Arabic and Berber as national languages. Since the independence from France there has been an effort to Arabize curriculums and most recently a conscious initiative to Arabize television programs on national channels. Nevertheless, French is still widely used in the media, in education (public & private), by government institutions and in business (Maadani, 2012) as shown in Table 3.



**Table 3***Language Usage in Morocco by Context*

<b>Speech Type</b>	<b>Language/dialect</b>	<b>Usage Field</b>
Formal Written	- Arabic (Standard & Classical) - French	- The Media - Education - Business (French) - Governmental Institutions
Oral	- Darija - Amazigh (Berber)	- Daily communication - The Media for entertainment
Informal Written	- Darija (latin script OR Arabic script)	- Chat, social media, entertainment, advertisements.

**Progress of Darija and Political Debate**

In the period of 2005-2008, a growing effort made Darija a key dimension in the Moroccan identity as it is the only common medium of communication to all social strata. Initiatives such as the movement called “Nayda” (i.e. rising) emphasized the importance of Darija in conveying a unified identity through music (Caubet, 2017).

In 2013, a fierce debate surfaced about introducing Darija in the curriculums and education system (Caubet, 2017). With the spread of social media (2010s), Darija became more trendy and less related to illiteracy or the backwardness of the mass but the proud language of Moroccans. Until today, there is a recurring call by civil society and the media to officially recognize Darija as a language. The latter is still the object of debate (Caubet, 2017).

## **Latin-Script Version of Darija**

There is no formal coding of the Darija phonemes and characters. Latin-Script-Darija (LSD) has extended characters that are numerical “2, 3, 5, 7,9” to make-up for the Darija sounds (phonemes) and Arabic diacritics absent in Latin scripts and the French language.

In this study, we address LSD from what is used by Moroccans in written communications (including media, advertisements) and we do not explore the phonetic transcription (graphemes) of Darija.

Darija vowels: a,e,i,o,u

Darija consonants: b, d, h, j, k, l, m, n, r, v, w, y, f, s, t, y

Numerical Darija phonemes: 9, 7, 3, 2,5

Special Combinations: ch, gh, kh, sh

## **Illiteracy of Women in Morocco**

As previously stated, adult literacy in Morocco is on the rise and a significant issue. Although the Moroccan government has implemented programs to address the issue, illiteracy rates continue to climb (Erguig, 2019). Governmental efforts through PPI were coupled with community-based programs particularly directed towards women (Erguig, 2017). Despite all these efforts, illiteracy remains high among Moroccan women as illustrated in Table 4 (Erguig, 2019). As of 2018, 20% of the Moroccan population 15 years old and older were illiterate (United Nations Educational Scientific and Cultural Organization, 2019). Unfortunately, Moroccan women consisted of 68 % of that 20% (United Nations Educational Scientific and Cultural Organization, 2019).

**Table 4***Illiteracy in Morocco by gender and Age Groups*

Moroccan Illiterate Population (2018)	TOTAL	MALE	FEMALE
15-24 years	134,010	59,00 (44%)	75,010 (56%)
15 years+	6,884,539	2,143,819 (31%)	4,740,720 (68%)

*Note.* Data about the Moroccan population's illiteracy is from (UNESCO, 2019).

There are several factors that explain the gender gap in illiteracy in Morocco. Before diving into an in-depth analysis of why more women are a target of illiteracy than men, it is important to first understand the root causes of women behind men in other aspects of participation in society and more specifically in the context of developing countries. In these societies, women have historically been married at a very young age. A significant disparity is noted between opportunities available to men versus women which ultimately leads to the dependency of women on their male counterparts (Singh & Samara, 1996).

Research shows that women who are married at a younger age are prone to becoming more focused on their marital life and familial duties. These women subsequently lose interest in careers and education as they never get the chance to formally pursue these options at earlier stages in their lives (Singh & Wulf, 1993). This situation is descriptive of the conditions of women and girls in the Moroccan context. Women are either uneducated or less educated as compared to their male counterparts for a variety of reasons, one of them being the gender disparity as previously discussed. Males are predominantly prioritized to get an education whereas girls are taught to focus more on house chores. Moreover, in rural areas, the lack of

adequate facilities to foster education such as appropriate infrastructure, schools, or transportation exacerbate gender disparities.

Additionally, in urban areas a gender gap in salaries and compensation is observed. Women are largely underpaid in the industrialized urban Morocco as compared to men. Women in rural areas make up at least 2/3 of the labor force of the country. However, almost 80% of women are underpaid as compared to men because their services are not considered to be jobs. Specifically, women's work is thought of as a willing contribution like housework because the areas tended is around the vicinities of their homes (United Nations Educational Scientific and Cultural Organization, 2019).

Another noteworthy factor includes cultural and religious beliefs. Morocco is a Muslim country where many people especially in rural areas practice their believes. In Islamic societies, casual interactions between males and females are not the norm. Many girls especially in rural areas often end up quitting school because of the presence of male peers or teachers. Some families chose to not send their daughters to school for this reason (Morocco, Ministry of National Education, 1998).

It is not surprising that women have limited access to education, and this will prove to be detrimental for the development of any society. Morocco has a higher population of women than men, which already is a human development challenge for the country because of the gender disparity in literacy and education (Hammoud, 2006). When women are not encouraged, or rather facilitated to change their socio-economic standing, the cycle continues. Women do not get to benefit from an education and develop their skills, which ultimately makes them eligible for excessive and cheap labor. Women who do manage to find jobs, only engage in unskilled labor because they are not qualified for better jobs. This exclusion from the opportunity to

contribute to society's development and advancement ultimately is the reason for women not being able to break through the status quo (Skalli, 2001).

### **Conclusion**

There are several factors surrounding literacy through mobile learning in Morocco among the target population of this study. They relate to socio-economic and gender disparities, mobile technology and internet access, rural-urban chiasms with an additional multi-linguistic context that only qualifies an individual as literate based on a multitude of prerequisite written and spoken language formats, (i.e., French, Arabic, Darija, and Berber). In the next chapter, I describe the methodology adopted in this study. This study explored the characteristics, learning preferences, perceived pre-requisite skills in Darija reading and perceptions towards the use of smartphones for literacy learning among a sample of limited literacy Moroccan women. Findings of this study aim to inform instructional practitioners and education policymakers in their design and delivery of literacy programs for the target population.

## CHAPTER III: METHODOLOGY

### Introduction

Illiteracy is suggested to have negative effects on quality of life, health, and suggested to increase the likelihood of living in poverty (Rotary, 2019). Despite the Moroccan government's attempts to mitigate illiteracy as a public health issue in this country, the prevalence of illiteracy rates among Moroccan women continues to climb (Erguig, 2019; High Commission for Planning, 2018). The purpose of this study was to gain insights into the perceptions of Moroccan women as it relates to the use of mobile technology for learning reading skills in Darija. I also sought to determine the characteristics and preferences of the target learners. Findings from this study could be used by practitioners in the field to inform a mobile-based illiteracy intervention to target hard-to-reach populations with the aim of reducing illiteracy rates in Morocco.

The following chapter will provide a detailed description of the methodology and design used to collect the research data. The chapter will also describe the participants of the study, setting, and data collection procedure. Under the data collection procedure, the instrument used for data collection will be discussed. Finally, the chapter will provide a detailed description of the data analysis procedure and ethical considerations. Research Methodology and Design

A qualitative methodology and phenomenological design were used to answer the research questions. Semi-structured interviews were used within this study to obtain a deeper understanding of the lived experiences of participants of this study. The qualitative methodology studies both the explicit as well as implicit phenomenon (Willig & Rogers, 2017). By focusing on the lived experiences of Moroccan women in this study, a thick and rich description of the phenomenon under study was generated. This research methodology and design afforded the opportunity to garner a better understanding of participants complex social environment and their

relationship with the people within it (Creswell, 2014; Yin, 2011). In general, qualitative methodologies are employed to describe, explore, interpret, understand, or generate new theories or hypothesis (Creswell & Creswell, 2018; Yin, 2011). Therefore, the research study used a qualitative methodology and phenomenological design and gathered data through semi-structured interviews with participants to garner a deeper understanding of the phenomenon under study.

### **Theoretical Framework: Target Population Analysis**

As discussed in Chapter 2, TPA was selected as the theoretical framework for the study. As such, this framework was used to develop the interview questions and further used as a lens for the analysis and presentation of the research findings. Table 5 provides a description of the sub-categories used within the interview process. The framework encompasses interview questions that will allow a deeper understanding of learner characteristics, socio-cultural contexts, learning settings, technology and self-diagnosis of skills.

**Table 5**

*Target Population Analysis Areas*

<b>Target Population Analysis Areas</b>	<b>Chosen Rubrics</b>
Demographics	Age, location, family, ethnicity (Berber, Arab or mix), financial situation, aspirations, social status.
Skills in Target Content	Skills, confidence in skill, instructional experience with skill. self-directed learning attitude.
Skills Not Related to Target Content	Interest, tool skill (mobile technology).
Educational History	Education level, attitude towards formal instruction.
Learning Preferences	preferred mode of learning. representation preferences (visual, verbal), interaction preferences, ability to focus.

*Note.* Target population analysis rubrics. Adapted from *An Architectural Approach to Instructional Design* (p.411-416), by A.S. Gibbons, 2013, Ebook collection: Routledge.

The sub-rubrics used to explore the perceived skill level of respondents in Darija decoding were based on the DISTAR reading program that stands for Direct Instruction System for Teaching Arithmetic and Reading<sup>11</sup>. It was developed by Engelmann in the 1980s as a reading program following DI principles for classroom teaching and was soon adapted to a parent teaching book called *Teach Your Child to Read in 100 Easy Lessons (100 lessons program)* (Engelmann et al., 2011). These direct instruction-based reading programs received significant empirical evidence for their effectiveness on reading, phonological awareness, phonemic mastery, fluency, and comprehension (Watson & Hempstall, 2008; Hempstall, 2002). The DISTAR program trains learners on five major performance indicators, including phonemic awareness, phonics, vocabulary development, reading fluency, and reading comprehension (Layng, Twyman, & Stikeleather, 2003). The National Right to Read Foundation, contends that the five performance indicators are fundamental and interconnected sub-skills, which all beginning readers ought to master to become proficient readers. In this study, we focus only on phonemic awareness (decoding) as the most fundamental competency needed for the target population of limited literacy Moroccan women to read Darija. The skill level assessment sub-rubrics used were extracted from *the 100 lessons program* and include:

- Knowledge of Latin-script Darija character names
- Voices Latin-script Darija (LSD) character sounds
- Reads syllables in Latin-script Darija (LSD) format
- Reads words in Latin-script Darija (LSD) format
- Reads Sentences in Latin-script Darija format



## **Participants**

A total of eight participants were recruited into this study using purposive sampling. Participants consisted of eight females between the ages of 28 and 50 years of age. Criteria for participation in the study included that the participant had to: (a) have poor literacy skills or be illiterate, (b) own a smartphone, (c) use WhatsApp for communication, (d) be at least 18 years old and (e) are coming forward to participate voluntarily. Potential participants were excluded or not considered for the study if they: (a) were part of a protected group such as under the age of 18, pregnant, or a prisoner, or (b) suffered from either physical or mental impairment that would prevent them from completing the study from start to finish. All participants of this study met the inclusion criteria.

## **Setting**

Participants were recruited from the Azrou center for community development and the mayor of the Sidi-Yahya Zaer commune. The Azrou center is in the middle atlas region of Morocco in the province of Ifrane and has a predominant Berber population with a high proportion of poverty and underserved communities. The center is renown in Morocco for its history of service for the empowerment of women through literacy and professional development programs. Similarly, the rural commune of Sidi Yahya Zaer belongs to the capital city region (Rabat-Sale-Zemmour-Zaer) and has a predominantly non-Berber population with high poverty rates and underdevelopment alike. These locations were selected as the setting for sampling of the research population because it was believed that the targeted population would be abundant there.

## **Materials and Instruments**

Semi-structured interviews were used to collect the data. As a qualitative study, the researcher is the primary instrument of data collection. As described in the theoretical framework, interview areas and questions were all formulated after Gibbons (2013) TPA rubrics. All interview questions are in Appendix C.

## **Data Collection Procedure**

Prior to data collection, I received approval to conduct the study from the Illinois State University Institutional Review Board (IRB) on August 25<sup>th</sup>, 2020 (Appendix A). I then contacted the Azrou center for community development and the mayor of the Sidi-Yahya Zaer commune to establish a contact for recruitment of participants within the study. Once the two contacts from each location were identified, I sent them the oral consent script (Appendix B) so that they would have a synopsis of the research study to share with potential participants. Contacts at the facilities were informed of the inclusion criteria and asked to reach out potential participants at their facility if they felt they met the inclusion criteria. After two weeks, a total of 13 phone numbers were supplied to me by the representatives at the facilities.

The potential participants were contacted through their most used mobile application (WhatsApp) in Darija. I sent an audio recording identifying who I was and asking them to respond to my audio message if they were interested in hearing more about the study. The initial goal was to create a safe sharing environment that involved self-introductions and clear explanations of the purposes of the study through WhatsApp audio exchanges. After reconfirming their acceptance of participation, I then asked for their consent to participate in the study orally (Appendix B). After I obtained their audio-recorded oral consent on the

confidentiality and privacy of the interviews, a WhatsApp phone call was scheduled with 10 of the participants who showed high responsiveness in the preliminary communications.

Eight participants of the initial scheduled ten were interviewed, and upon observing data saturation and common answer patterns, I choose not to interview further participants. The interviews lasted between 30 to 60 minutes each depending on the response style of each participant (thorough or brief). All interviews were audio recorded for further analysis. I also took notes while conducting the interviews for further benchmarking between participants. I employed audios, videos, and pictures to communicate with participants since this was their preferred method of communication. Text-based surveying would not have been possible in this research setting. Data collection began on October 13<sup>th</sup>, 2020 and concluded on November 30<sup>th</sup>, 2020. Upon completion of data collection, the data analysis procedure began.

### **Data Analysis Procedure**

To better clarify the association between the theoretical framework and interview questions, the following interview questions (IntQ) comprise each TPA area: (a) Area 1 (IntQ1-10), (b) Area 2 (IntQ11-15), (c) Area 3 (IntQ16-18), (d) Area 4 (IntQ19-21), and (e) Area 5 (IntQ22-24)). In order to better illustrate the association between the research questions, corresponding interview question, purposes, and expected outcomes, Table 6 provides a description of the relationship between these variables in the study.

**Table 6***Relationship Between the RQ, IntQ, Purpose, and Expected Outcomes*

<b>Research Question</b>	<b>Interview Questions</b>	<b>Purpose</b>	<b>Outcome</b>
RQ1: What are the perceptions of the target population towards using smartphones to acquire reading skills in Darija (LSD)?	IntQ16-18 (Area 3: Skills Not Related to Target Content)	To gain insight into the perceptions among Moroccan women with limited literacy toward the use of mobile technology for improving their reading skills, as well as their likelihood of adopting a mobile-based literacy application.	Perceptions and likelihood of adopting a mobile-phone based literacy application to acquire reading skills.
RQ2: What are the characteristics and literacy learning preferences of illiterate Moroccan women?	Characteristics: IntQ1-10 (Area 1: Demographics), IntQ19 (Area 4: Educational History)	To determine learner characteristics and learning preferences of the targeted population to inform instructional strategies.	Learner characteristics and literacy learning preferences
RQ3: What are the target population's perceived prerequisite skills and knowledge as they relate to reading Darija and using smartphones?	Literacy learning preferences: IntQ20-24 (Area 4: Education, and Area 5: Learning Preference) IntQ11-IntQ15 (Area 2: Skills in Target Content)	To determine the perceived Darija decoding and smartphone usage skills among Moroccan women with limited literacy.	Perceptions of skill level in decoding Darija and using smartphones.

All interview audio recordings were transcribed to ensure the accuracy and completeness of participants responses and are located in Appendix D. They were translated by the author from Darija to English for the purposes of data analysis. TPA findings were developed based on sub-

categories and rubrics that were created as a result of analyzing interview data. They served the structuring of findings that would appropriately lead to the answering of the target population related set of research questions explored in this study. The analysis of the interviews' data general patterns helped generate trends and common patterns for all participants' attitudes and perspectives. The latter helped in selecting the quotes that most explicitly explained a recurrent or unique dimension raised in the interviews. Analysis of the interview responses followed a 6-phase thematic approach and consisted of several steps to include the reading and re-reading of transcripts for familiarity (Braun & Clarke, 2006).

The six-phase thematic analysis consisted of: (a) transcription and familiarization with the data, (b) initially coding was generated based on interesting features in a systematic fashion, then (c) the codes were reviewed for the identification of themes, (d) the themes were then reviewed for relevance to the initial coding and overall emerging themes, then (e) the themes were clearly defined, named, and reviewed again, finally (f) Chapter 4 was written regarding the themes found (Braun & Clarke, 2006). The software program NVivo 12 was used as a supplementary tool in the data analysis process. The program facilitates the organization and analysis of data and provides an effective way of presenting the data in project maps. Therefore, research findings will be presented in tables and figures from the NVIVO 12 software program.

### **Ethical Considerations**

Prior to data collection, I received IRB approval from the university to assure ethical practices were followed in the current study to protect participants human rights. I also ensured ethical recruitment practices by ensuring the protection of participants personal information and using an alphanumeric to identify participants within the study. Before recruitment within the study, each participant was read the oral consent form and asked to consent to participation

before scheduling an interview time. Participants were informed of their rights as a participant. Namely, that they could withdraw from the study at any time without fear of repercussions. To ensure no coercion was used with this study reward, monetary or otherwise, was provided to participants for volunteering for the study. All data was stored on an encrypted and password protected zip drive and will be destroyed after completion of the study both through an electronic wiping of the zip drive and then it will be physically destroyed.

### **Summary**

The current chapter provided an overview of the research methodology and design employed in this study to answer the research questions. Specifically, the targeted population, sample, materials and instruments, data collection and analysis procedures were discussed. The chapter concluded with a discussion of the ethical considerations taken in this study to ensure participants rights. In the next chapter, I report the findings uncovered from conducting interviews with the target population of this study.

## CHAPTER IV: RESULTS

### **Introduction**

The purpose of this Qualitative phenomenological study design was to gain insight into the perceptions of Moroccan women to improve literacy reading skills that involved exploring their perceived skill level in Darija and smartphone usage. Further, the study aimed to determine the characteristics and learning preferences of the target population in this study that could potentially provide recommendations for designing reading instruction. Following the TPA framework and table presented in Chapter 3 for answering the research questions, the following chapter is presented by the TPA area framework. An analysis of the interview questions to answer the research questions will follow.

### **Area 1 Demographics: Interview Questions 1-10**

Area 1, the demographic portion of the interview sessions, consisted of interview questions (IntQ) 1 through 10. Participant responses for interview questions 1-5 and 8 are listed in Table 7. The remaining interview responses regarding demographics are further discussed and include participants family responsibilities (IntQ6), family education (IntQ7), long term goals or aspirations (IntQ9), and social self-position (IntQ10). It is important to note that this specific population had the additional characteristic of using smartphone mobile technology to communicate or access information in different formats (video, audio, images) except text.

**Table 7***Characteristics of Study Participants*

Participant Identifier	Age (IntQ1)	Current Residence (City) (IntQ2)	Native Region (City) (IntQ3)	Languages Spoken (IntQ4)	Family Situation (IntQ5)	Income (IntQ8)
S36	36	Azrou	Taounate	Darija	Married, 3 children	Stay at home mom, husband's income
M46	46	Azrou	Azrou	Darija	Married, 3 children	Artisanal crafter
M50	50	Fes	Taounate	Darija	Married, 3 children	part-time embroidery job
M42	42	Sidi-Yahya Zaer	Sidi-Yahya Zaer	Darija	Married, 2 children	Full time office cleaning job
F48	48	Tamesna	Agadir	Darija	Married, 2 children	Full time cashier manager at traditional bath business
K35	35	Tamesna	Ezzhiliga	Darija	Married, 3 children	Full time office cleaning job
S28	28	Rabat	Romani	Darija	Single	Full-time event cook
S34	34	Rabat	Taza	Darija	Single	Full-time home assistant

The population researched in this study consisted of adult Moroccan women between the ages of 28 and 50 years old. All participants reported low to inexistent reading skills, especially in Darija's Latin script. Most participants (n = 5) reported their current and native regions of origin to be in the northwest of Morocco. Only one participant originated from southern Morocco, near the coast but currently resides in the northwest. It is important to note that at the time of the interview, seven of the interviewed women were not living in their native region for family or work reasons. All of them lived in urban areas at the time when the study was conducted. One common characteristic that was not anticipated in the study was the fact that all participants were raised in rural regions of Morocco until reaching adulthood or marrying. The rural context surrounding their upbringing be it economic, cultural, and geographic contributed



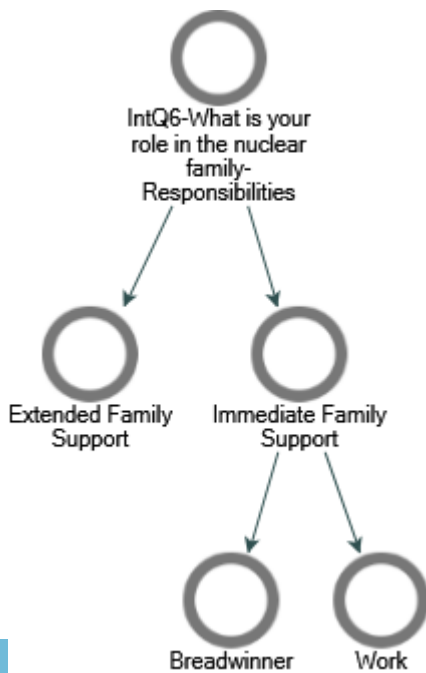
to the inaccessibility of education which ultimately impacted their literacy capabilities. All participants reported using Darija as their mother tongue. Regarding participants' family situation and income, six of eight participants were married with children and six participants were employed full-time while one participant worked part-time and the other was a home-maker.

**Role in the Nuclear Family: Family Responsibilities (IntQ6)**

As illustrated in Figure 1 and in the interview responses on Appendix D, participants of the study reported providing support for both their nuclear as well as extended family. Specifically, six (75%) participants stated that they provided support to their nuclear family either in the form of childcare and education or through the income they provided to support their family financially. Conversely, those that reported being single stated that they provided financial support to their parents and or siblings regularly. Therefore, all participants within the study had familial obligations and responsibilities.

**Figure 1**

*Participant Role in the Nuclear Family*

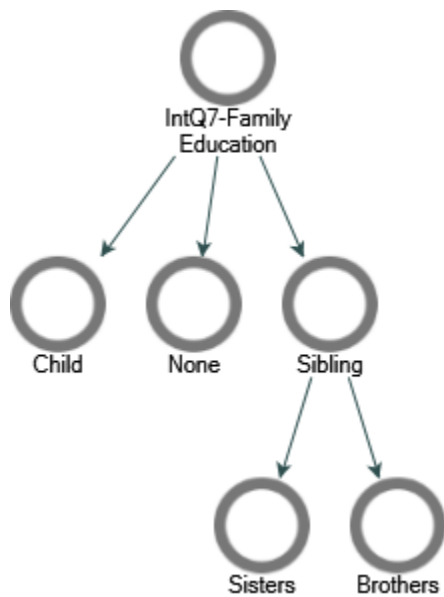


### Family Education: Who Went to School (IntQ7)

Participant responses are illustrated in Figure 2. Although some participants stated that they had a sister who attended school ( $n = 2$ ), half of the participants ( $n = 4$ ) stated that school was predominantly for males in the family and females were not expected to attend. Further, two participants of the study stated that although they may have had a male sibling attend school for a short time, they did not graduate and therefore no one in the family had an education of any kind ( $n = 2$ ).

**Figure 2**

*Family Education*



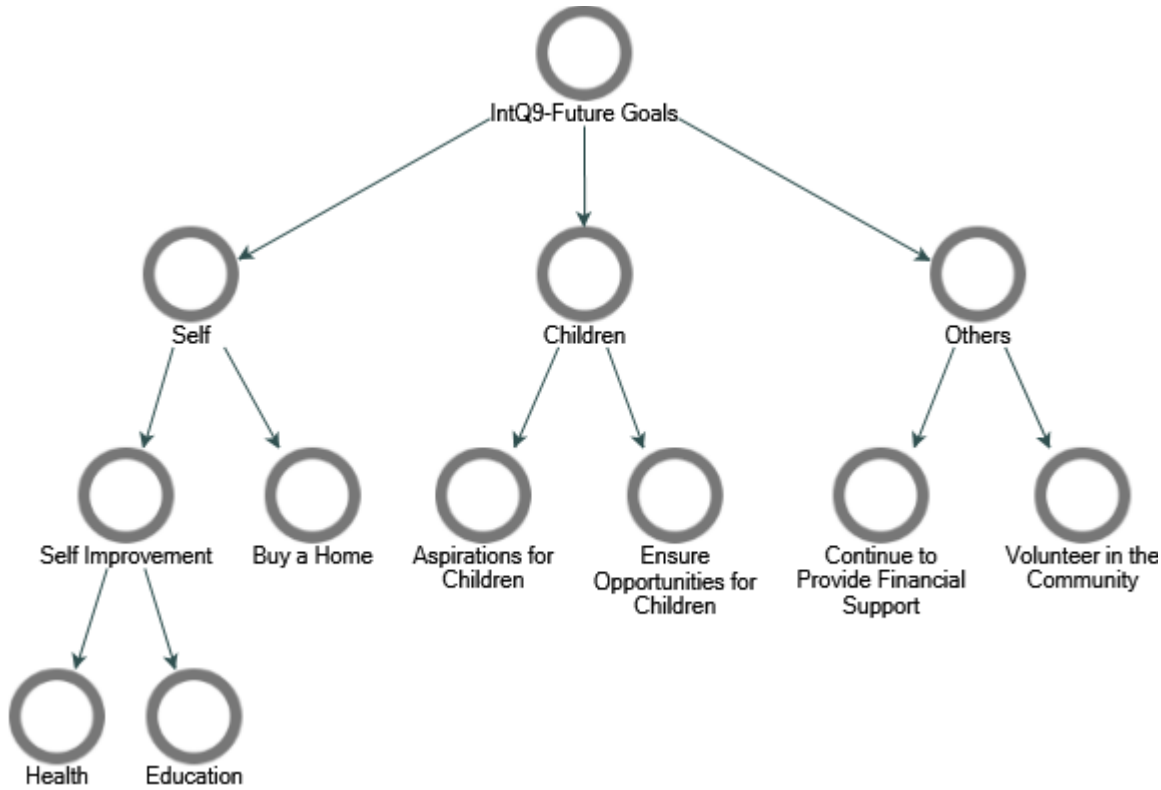
### Future Goals: What do you Hope to Achieve and for Whom (IntQ9)

The interviewees' perception of the future was highly correlated to their family situation. For those who had children, their outlook was a function of their children's success that would ensure the completion of their life mission and parental duties. More precisely it could be implied that such perspectives were framed as a counter reaction to the educational rights and

potential opportunities they were deprived from since their early childhood. As illustrated in Figure 3, participants' responses were found to encompass several themes aimed at future goals for themselves, their children, and others. Specifically, self-goals included self-improvement (n = 2) and the goal of purchasing a new home (n = 2). Regarding children, most participants (n = 5) stated that they had aspirations for their children and wanted to ensure opportunities for them (n = 2).

**Figure 3**

*Participants' Future Goals*



For example, participant “S36” stated, “I want my children to achieve what I was not able to. For example, my daughter is doing taekwondo. I really want her to reach her dreams. This new generation of girls need to study and achieve things, we can’t let them be dependent upon their husbands.” Similarly, participant “M42” stated, “my dream is for my children to study. I

want to see them better than myself.” Other participant responses suggested that ensuring opportunities for their children was an important future goal. For example, participant “M46” stated, “my daughter is into sports and I do all my best to let her do those extracurricular activities.” Further, participant “M50” stated, “I make sure I am not a hindrance to my daughter’s dreams, I want her to pursue her studies in whatever she wants to.” “F48” further said “My dream is for my son to study and find a job. My daughter stopped in middle school and my other daughter is in her final year of high school. If my children can achieve something out of school, then that suffices me.”

The interviewees who were single had a different perspective about their perceptions of their future which was mainly related to helping others in the form of financial support for family and volunteering in the community. Specifically, participant “S28” stated, “I hope to make enough money to continue to help my parents and my siblings.” She also stated, “for me, I would like to do more in the community, but right now I have to work so much it is not possible.” Similarly, participant “S34” stated, “I like to work with people in my community, so now, I am volunteering a little bit, but you know, I have to work a lot.” S34 also suggested that her future goals are to continue to provide financial support for her parents and younger sibling, but she also aspired to purchase her own home as well.

It is important to note that only one of the interviewees expressed a clear future goal that included being literate. Specifically, M46 stated, “I did an Arabic literacy training. I was the first one in the classroom and got an excellence certificate. Learning is still my goal.” Therefore, it was interesting to learn that although all the participants of this study sought to provide support to their loved ones or the community either through financial means or through personal

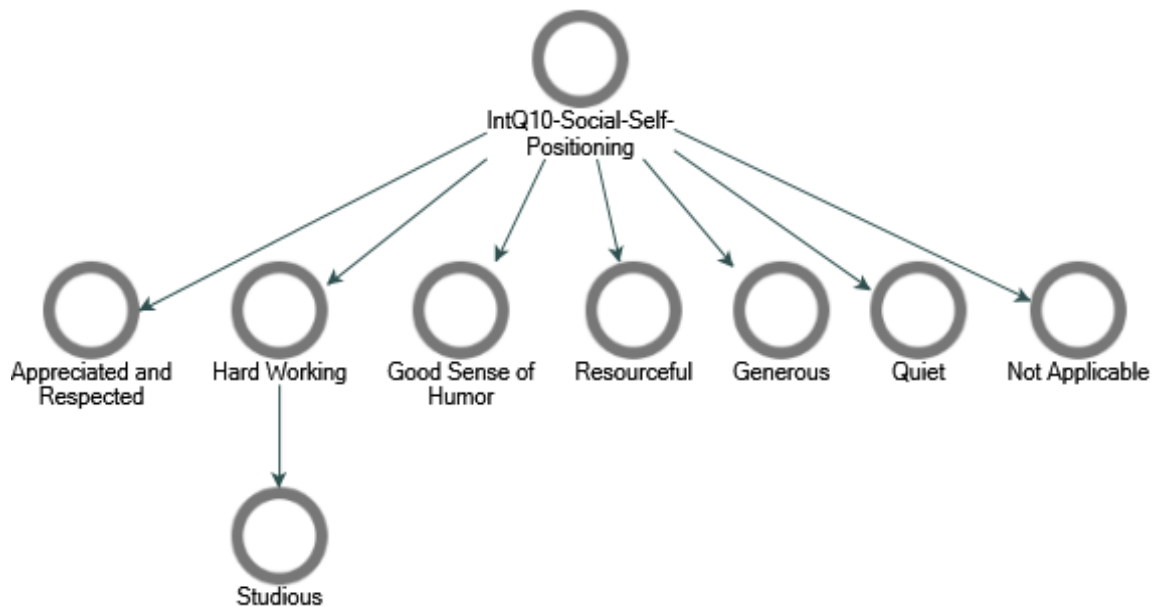
interaction, only one participant saw the benefit of literacy and how it would contribute to their betterment as well as improve their ability to support their family and community.

### **Self-Positioning: How would a Person in the Community Describe You (IntQ10)**

As illustrated in Figure 4, participant responses regarding how the community viewed them and what they would say varied significantly. However, all participants except for one stated they believed community members would have positive things to say about them. Specifically, three participants stated they felt community members would convey respect and appreciation for them such as S36 who shared “Well, uhm, I would say, yes, I am very much appreciated in the community. I have very good relationships and my neighbors can tell you so much more about it.” Two participants stated they felt community members would say they were hard working and or studious such as M46: “They would say about me: she is a nerd always just going to school. (laughs) - because I was always super serious about my artisanal craft and literacy training at the center.” while other participants suggested community members would describe them as having a good sense of humor, being resourceful, generous, or quiet. Only one member of the sample stated they felt no one in the community would have anything to say about them at all.

**Figure 4**

*Self-Positioning*



Specifically, M50 stated, “I have a mental health situation that does not allow me to be present in social gatherings or daily interactions.” These research findings imply the importance of garnering an understanding of potential learners’ perceptions regarding their social position as it illustrates both how the learner may feel about themselves thereby hinting at their own self-confidence and self-worth, while also identifying perceived barriers. As is the case with M50, her response to the interview question suggests that her mental ailment significantly hinders her interaction with the community and is therefore implied to be a major barrier in allowing her to pursue daily activities. Therefore, ensuring a versatile platform for this participant would be detrimental in her ability to participate in lessons and educational modules.

**Summary of Area 1**

Participants of the study consisted of adult Moroccan women between the ages of 28 and 50 years old with low to inexistent reading skills. Participants predominantly originated from or resided in the northwest region (n = 5) of Morocco for family or work reasons and lived in urban

areas but originated from rural ones. It is implied that these rural upbringings contributed to this samples inability to access the necessary education to become literate. All participants reported using Darija as their mother tongue and consisted of predominantly married women with children (n = 6). Most of the sample (n = 6) was working full-time at the time of this study.

Participants reported familial obligations that required either their individual time for rearing of children, or for providing financial support for parents or siblings, or both. Half of the participants (n = 4) reported that education was predominantly for males in their family while two participants stated that no one in their family had any education at all. Future goals predominantly centered around the betterment of their children for those participants that had them and continual financial support and community volunteering for the two single women within the current study. Finally, participants had varied responses regarding their social position in their community.

## **Area 2: Skills in Target Content**

Participants were asked five interview questions (IntQ11-IntQ15e) with sub questions to analyze their skill levels as it relates to their ability to self-direct, digital literacy, experience with literacy teaching, and to assess their skill level based on a self-assessment. The last question with sub questions was used to perform the self-reported assessment for Darija. The following section will explore participant responses for each interview question and conclude with a summary for this section.

### **Self-Direction Learning Attitude (IntQ11)**

When asked about whether the interviewees would be interested in improving their literacy skills by accessing instructional videos on their smartphones and following along by themselves (IntQ11). Five respondents showed resistance. S34 shared the boredom she might

feel by stating “there is something about the phone that won’t let me focus or be serious. I am sure I would quickly get bored, just me and my screen (laughs).” F48 presented work (traditional bath) factors that may hinder her ability to follow a literacy m-learning program before showing a potential possibility:

You know how it works. I stay all day managing who is coming in and who is coming out. Sometimes there are problems that happen inside [the bath], people scream ... sometimes mothers want me to keep an eye on their children. It is too much. I don’t think I will have the time during the day to stop, focus and write even from my phone. We start at 6 [am] and finish at 10 [pm] when will I find the time? If I ever find the time during the day, it is to quickly watch a video I get or watch a series episode but Why not? I’ll try if you ask me.

M50 further shared her doubt of such possible learning setup and the need for an external presence:

Video? Ahh (silence), I don’t know if during the day I can stop to do it because my daughter is not always there to help me follow. I listen well, but it is hard to follow write something stop the video for me day after day with the phone? Insha’allah<sup>7</sup> but I don’t know if I will be able to do it by myself to study.

The three participants who had a positive attitude shared their strategies to allocate time such as M42 who stated, “I would be so glad. I would dedicate time to it as I have the desire to learn how to read. I am really ready to do this, I would be scheduling at least 1 hour per day for

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<sup>7</sup> Insha’ Allah means if god wills.



that.” Similarly, S28 shared: “I think so, I’m pretty, uhm, well good at schedules and keeping them.”

### **Digital Literacy: How Participants Use Technology to Communicate and Perceptions of Smartphone Media (IntQ12)**

All participants within the study stated that they used the features within their phone to chat with friends and family. Features included the use of pictures, videos, audio files, and the use of a voice dictation feature available in WhatsApp as well as a feature on certain phones. For example, participant “K35” stated, “my friends send a lot of pictures and audio, so it makes it, well, uhm, easy to use the phone to chat.” Similarly, S28 stated, “I use my WhatsApp a lot to chat with friends, and uhm I use the microphone feature a lot.” Regarding participants understanding of the media, they are exposed to while using their smartphone, participants stated that they felt the news and media was untrustworthy (n = 7) or just nonsense (n = 1).

Specifically, participant “S34” stated:

I never trust what I receive like videos or audios on WhatsApp... sometimes I receive suspicious messages telling me that I won something or asking me to enter a number... you know they can take what you have in your phone and take your money.

Overall, participants reported using technology readily to communicate with friends and family and reported a distrust of social media and various media platforms.

### **Experience with Literacy Teaching (IntQ13-14)**

Participants were asked if they had participated in learning activities to improve their literacy skills. They were also asked to describe those learning activities if they did participate in any. Half of the participants (n = 4) stated that they had participated in learning activities to improve their literacy skills. Two mentioned going to the mosque although they faced constraints

relating to social ridicule, family obligations (children, pregnancy) and financial burdens. They mentioned the use of the nearby development center to obtain training, literacy training at the mosque or a one-on-one French literacy class. Specifically, M46 stated:

I do all sorts of training such as horizontal traditional weaving. I needed to learn how to read basic words in Arabic for my fashion styling work that is why two year ago I joined the development center. They were offering classes at the development center near my house (Azrou center).

M42 cited:

I couldn't find the time when I had younger children. My first goal was to provide food, make sure my family has what it needs- Learning how to read was like a luxury at the time. But I tried one time in a classroom with a group of women to learn for literacy at the mosque. When I went to the board and answered the question of the teacher incorrectly, other women in the class would laugh at me and made me feel uncomfortable. I couldn't stand that intimidation and I quit.

S28 stated, "I used to go to a teacher to learn French for a year it was every Sunday but I felt it was expensive for the short time I spent with her."

These research findings suggest the importance of literacy programs being accessible to potential learners. Also, they highlight the potential barriers perceived by participants of this study. Namely, familial, and financial. Participant responses also suggest that community involvement in literacy programs could bolster the likelihood that residents will join if promoted by their community as suggested by K35 who stated, "yes my neighbors (women), encouraged me once to join them in literacy classes at the mosque."

### **Perceived Skill Level in Darija (IntQ15)**

Finally, participants were asked to assess their own literacy skills based on self-reporting skill levels in knowing Darija character names (in French or Arabic), Latin Darija character sounds, identification and reading of two to three letter combinations, and reading full words or sentences. To have participants self-assess their skill levels, participants were asked to answer either yes, no, or some to the interview questions. This approach is a qualitative and categorical approach in reporting participants ability to decode Darija. I acknowledge that the methodology of identifying participants skill level is based on participants perceptions and opinions of their proficiency level in decoding Darija rather than an intervention to assess their skills. Table 8 was derived from the direct answers of the respondents to interview question 15 which aimed to have participants self-assess their own skill levels in multiple categories. Interview questions and responses are in Appendix C.

**Table 8***Skill Level Assessment Table*

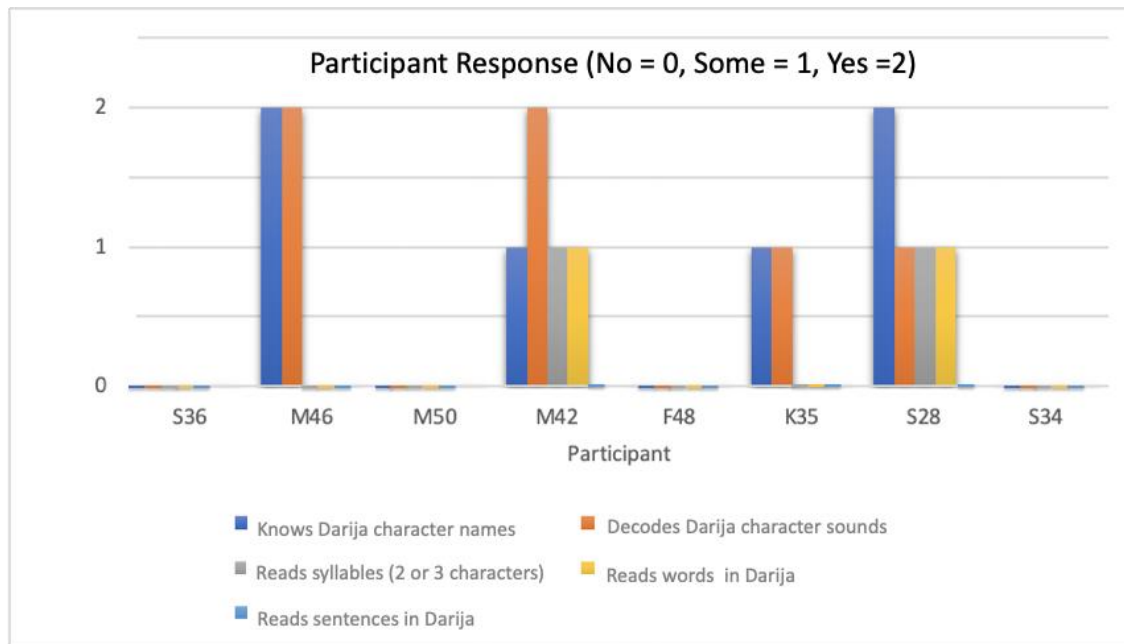
Decoding Sub-Skills	S36	M46	M50	M42	F48	K35	S28	S34
Knows LSD character names	No	Yes	No	Some	No	Some	Yes	No
Decodes LSD character sounds	No	Yes	No	Yes	No	Some	Some	No
Reads syllables in LSD format	No	No	No	Some	No	No	Some	No
Reads words in LSD format	No	No	No	Some	No	No	Some	No
Reads Sentences in LSD format	No	No	No	No	No	No	No	No

*Note.* LSD: Latin script Moroccan Darija

Figure 5 is a graphical representation of participant responses to the interview questions and their results. Specifically, participant responses that resulted in “no” were assigned a zero, a “some” response was assigned a one, and a “yes” response was assigned a two.

**Figure 5**

*Participants Self-Reported Skills Assessment*



Therefore, any bar in the figure that reaches a two illustrates a participant that is well versed at the skill set described. Using this numbering system, the figure provides a better understanding of where participants skills are lacking. Namely, Table 7 and Figure 5 illustrate the disparities in skill levels within the same sample of limited literacy adult women. It shows that the common inability to decode Darija does not result in a lack of competency in other decoding sub-skills such as character knowledge, character sounds, and reading syllables and words. Out of the eight participants. Two of the eight participants reported being able to decode *some* words and syllables in Latin-script Darija (M42 and S28) while having knowledge of character names and the ability to voice some (M42) or all of them (S28) when exposed to their written format. However, when asked about their ability to decode sentences (i.e., text), the unanimity of the eight participants was that they do not consider that they had acquired such capability. One of the eight respondents reported knowing single character names and voicing

their sounds while acknowledging her inability to use such knowledge and skills for the decoding of syllables or words.

## **Summary of Area 2**

Participants of the current study were found to be tech savvy as it relates to using their smartphones for communication through audio, video, and voice dictation features. Most participants (n=5) reported a lack of readiness for self-direction as it relates to following a literacy program on the phone using multimedia content (videos). All participants within the current study use technology to communicate with family and friends easily. However, minimal participants have experience with literacy teaching. Further, participants performance on a skills assessment suggest that most participants of this study have some type of decoding skills from which to build from.

## **Area 3: Skills not Related to Target Content**

Participants use of technology and interest in learning through mobile technology was assessed with the interview questions exploring skills not related to target content (literacy). Specifically, IntQ16 through 18 explored participants perceptions regarding why they use their smartphone, which applications and media they have adopted, and likelihood of using their mobile device for the purposes of learning. The following section will explore participant responses to each of these interview questions.

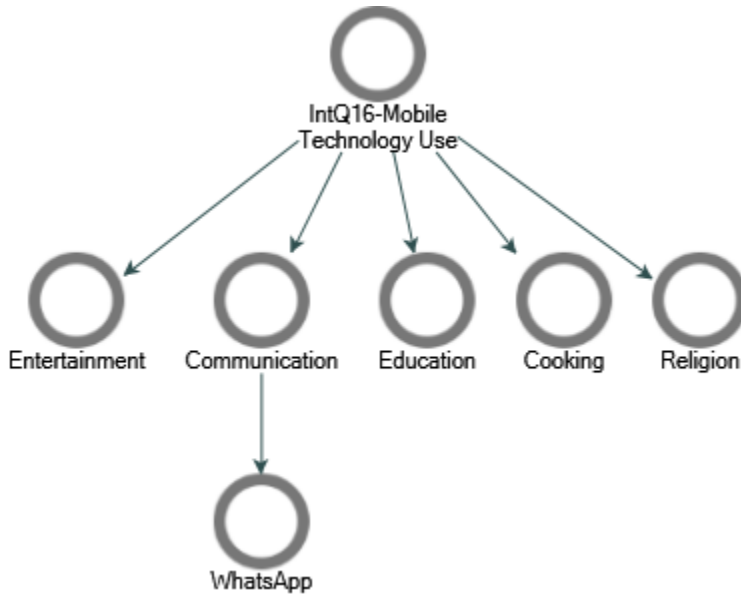
## **Mobile Technology Usage Purpose and Applications Used (IntQ16-17)**

Participants were asked why they use their smartphones and what type of applications do they use. As illustrated in Figure 6, participants listed several reasons for using their smartphone to include for communication (n = 8), entertainment purposes (n = 4), cooking (n = 2), religion

(n = 1), and education of their children (n = 2). Specifically, participants stated they used several different platforms to achieve these endeavors and are proficient users of mobile phones.

**Figure 5**

*Mobile Technology Use*



Platforms mentioned included: Youtube, WhatsApp, radio, and television series applications (Shahid). The purposes of using their smartphones were diverse although redundant across all participants. Regarding participants smartphone usage ability, one participant stated that they needed external support through a literate family member to access their desired content or in S36’s case to read a recipe.

**Interest in Learning Through Mobile Technology (IntQ18)**

Participants were asked several questions regarding the use of their smartphone as it pertained to their potential interest in using it for general learning purposes. Specifically, participants were asked how their smartphone was currently a source for learning, if they had

ever considered using it for learning, and any potential foreseeable challenges with using their smartphone for learning. A total of five of the eight participants stated that they did not have any interest in using their mobile phone for learning purposes. Specifically, two participants stated that they did not have the time since they had young children at home such as S36 who said, “My kid is still young for me to follow on the phone.” One stated that she did not have anyone to show her how to use her mobile phone for learning purposes, and one participant stated that her job was a hinderance to using the phone for learning purposes (S34): “I don’t think so, I am very tired since I’m always working and trying to help my family financially. I don’t think it is uhm the time right now, but hopefully in future.” M50 shared: “I don't know, if only there was someone to help me and give me time to show me how I can access this phone to learn new things.”

Only three participants in the sample stated that they would be interested in using their mobile phone for learning, or more specifically, that they already do use it for learning purposes. For example, M42 stated, “it helps me learn cooking, I watch first and until I master the recipe then I do it, I feel like I learned, the phone is making so many things easier.” K35 shared: “Yes, I thought about it. I can keep learning by myself. That way there is some hope that I might learn how to read.” S28 shared her experience with learning through her phone that specifically concerned reading:

One day, my best friend shared with me some videos on YouTube that were teaching how to read. Then, we decided to make a study plan and held each other accountable. We studied together those videos apart for a year.



### **Summary of Area 3**

Participants of the current study predominantly use their smartphones for communication (n =8), and entertainment purposes (n = 4). Several applications were adopted by the current sample. However, aside from WhatsApp, participants predominantly used YouTube and television channels for entertainment. Finally, only three participants stated they would be interested in, or were already using their mobile devices for learning purposes. All other participants stated they either did not have the time because of familial or work obligations or because they did not have someone to teach them how to use their phone for educational purposes. These research findings suggest that participants of the current study experience several barriers to adoption of a mobile-based literacy program.

### **Area 4: Educational History**

It was essential to understand the educational background of the target population that could better explain the causes and context behind their illiteracy situation as adults and serve the general instructional design implications considered in this study. Hence, IntQ19 through 21 explored participants educational level, attitudes toward formal instruction, and preferred mode of learning. The women shared their educational background by describing their experiences compulsory formal education, in vocational training and in informal learning contexts they voluntarily joined to improve their literacy skills. Overall, only half (n = 4) of the participants had informal education and one had a month and a half of formal compulsory education as illustrated in Table 9.

**Table 9***Participants Past Educational History*

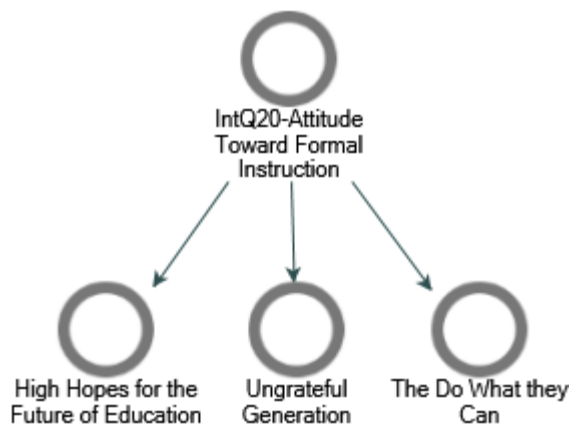
<b>Participant Identifier</b>	<b>Formal Compulsory Education</b>	<b>Literacy Education</b>
S36	None	None
M46	None	3 years Arabic literacy program
M50	None	None
M42	None	1-month Arabic literacy program.
K35	None	1-week Arabic literacy program at the mosque.
S28	None	1-year French literacy one-on-one tutoring
S34	1 month and a half	none
F48	None	none

**Attitude Towards Formal Instruction (IntQ20)**

Participant were asked what came to their minds when school, teachers, and classrooms were mentioned. Three major themes were identified in participant responses and included high hopes for the future of education (n = 3), a feeling that the current generation is ungrateful for all the opportunities they have (n = 2), and that the educational system is doing the best that it can (n = 3) as illustrated in Figure 7.

**Figure 6**

*Attitude Toward Formal Education*



Specifically, participant “F48” stated, “I feel like it’s always a good thing to study, now there are plenty of opportunities. Whoever wants to study, and succeed has no more excuse.” Similarly, S36 stated, “with this new distance teaching. I have high hope in the future of education in Morocco.” However, some participants felt the current generation is ungrateful for the resources they have. For example, S28 stated, “I feel very angry when I hear about girls dropping out of school halfway through it (...) it hurts me deeply.” Similarly, M46 stated, “the current generation has a lot of opportunities to study and succeed but my children for example don’t want to study. They have everything to study, and they don’t.” Finally, three participants suggested that the educational system is doing their best and that it is up to the learner to make the best of their education. Specifically, M42 stated, “they [education system] do their efforts. It depends on personal efforts we can’t blame the system.”

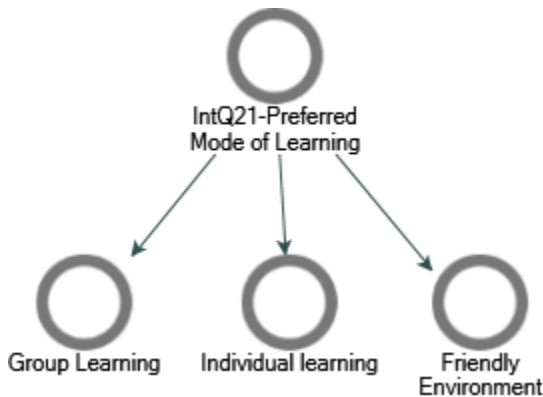
**Preferred Mode of Learning (IntQ21)**

To assess participants preferred method of learning, they were asked how they would like to be taught if they were ever in the classroom or able to participate in an educational platform online. Participant responses revealed three major themes as illustrated in Figure 8. Namely, four

of the eight participants stated that they would prefer learning in a group setting. M46 shared that “learning in group is better because you can participate, ask questions and sometimes figure out when you are the wrong path. Through others we learn.” Similarly, M50 posited “I can’t take full advantage when I am alone.” S36 brought a perception of selfishness that pertained to the individual learning setting, “I prefer learning with a group of women. I don't want to be selfish. I want to be with others.” Two stated they preferred individual one-on-one learning with a teacher, and finally, two participants stated they did not care about the learning mode. However, the learning environment needed to be welcoming and friendly. Further, half of the participants explicitly stated they would be interested in an informal learning mode. However, it was implied that an informal environment would be most conducive to learning by an additional three participants but was not explicitly stated as such.

**Figure 7**

*Preferred Mode of Learning*



**Summary of Area 4**

Participants suggested that they have high hopes for the current educational system in Morocco (n = 3). However, it is up to the learner to learn the materials (n = 3). Two of the participants’ responses suggested that they were unhappy with the current generations lack of

interest in studying and hinted at their own regret of not having an opportunity to attend school. However, as evidenced by participants prior responses, they also do not feel they have the time to attend. Finally, half of the participants (n = 4) suggested that they would prefer a group setting for learning as opposed to individual further suggesting issues of reaching this sample population using a mobile-based literacy application.

### **Area 5: Learning Preferences**

To assess participants learning preferences, they were asked three interview questions (IntQ22-24) pertaining to participants preference in being taught, representation preference, and about their ability to focus. The following section will describe participant responses to these interview questions.

#### **Interaction Preference (IntQ22)**

Participants were asked based on their previous experience as a learner how they would like to be taught literacy. Like IntQ21, three participants stated that the disposition of the teacher was important to their learning environment. Namely, that the teacher would need to be friendly and create a welcoming environment. Two participants stated that they would like the teacher to be motivational and engaged, while one participant stated that they would expect a give and take environment. K35 shared for example, “Even if I don't understand I want the teacher to motivate me and give me time before I make second trials when I make mistakes.” M46 stated that “The literacy teacher needs to be involved. I am happy to come to her class if that is the case.” Unfortunately, since most of the participants within this study did not have prior education or formal training, it appeared that they were not sure how they would like to be taught, or what the best method for them would be (S34, M50, F48) as you can see from their responses under IntQ22 in appendix D.

### **Representation Preferences (IntQ23)**

To ascertain what participants representation preferences are, they were asked to predict the mobile-based literacy application format to determine their preferences. Two participants stated that they did not know. S36 expressed her uncertainty regarding her learning preference as it related to content representation by stating, “I don't know. Will it be a teacher there? I need a voice to help me understand the content.” However, one participant (M46) stated that they expected an excellent visual representation of characters and clear instructions and stated, “I imagine learning through my smartphone to have letters clearly shown with the teacher explaining well (...) I don't care if they show or not their faces, I just need to hear their explanations.” Two other participants suggested that they expected the platform to be flexible, easy to follow, and provide ample opportunities for questions to the instructor. Therefore, participants representation preferences were for a literacy platform that was visually clear, flexible, easy to follow, and provide an open line of communication to the instructor for questions. For instance, K35 shared: “I want to be able to see the characters one at a time. The teacher should focus on explaining slowly each one of those characters.” Similarly, S28 stated “Oh, I guess, uhm, she would be, easy to follow and offer a lot of opportunities to ask the teacher questions.”

### **Ability to Focus (IntQ24)**

Participants were asked to describe their ability to focus to determine if a literacy based mobile application would be the right format for the target population. A total of five participants suggested that they would be able to focus while three participants stated that it would be a challenge. Specifically, M42 stated, “I can focus very well, my dream is to read and understand and then be able to read for others who still can't.” Similarly, M46 stated that she had a “high

ability to focus.” S34 further stated: “I can focus if I need to, it would depend on the time of day and what we are studying.” Suggesting that this group may be capable of learning.

### **Summary of Area 5**

To assess participants learning preference, they were asked about their preferences for the learning environment, representation preferences, and ability to focus. Since a large portion of this sample did not have any type of formal education, it is evident that they may not know the type of environment best suited to their learning needs. However, many participant responses suggested that they would be interested in a flexible, easy to follow learning format with an open line of communication to the instructor for questions. Finally, most of the participants of this study (n = 5) suggested that they had the mental capacity to focus well suggesting that learning may be feasible.

### **Research Questions**

The current study proposed three research questions. Table 10 illustrates the proposed research questions, interview questions aimed at answering the research questions, associated purpose and outcomes. The following section will explore each of the research questions and these variables in detail.

**Table 10***Research Questions and Corresponding Interview Questions*

<b>Research Question</b>	<b>Interview Questions</b>	<b>Purpose</b>	<b>Outcome</b>
RQ1: What are the perceptions of the target population towards using smartphones to acquire reading skills in Darija (LSD)?	IntQ16-18 (Area 3: Skills Not Related to Target Content)	To gain insight into the perceptions among Moroccan women with limited literacy toward the use of mobile technology for improving their reading skills, as well as their likelihood of adopting a mobile-based literacy application.	Perceptions and likelihood of adopting a mobile-phone based literacy application to acquire reading skills.
RQ2: What are the characteristics and literacy learning preferences of illiterate Moroccan women?	Characteristics: IntQ1-10 (Area 1: Demographics), IntQ19 (Area 4: Educational History)	To determine learner characteristics and learning preferences of the targeted population to inform instructional strategies.	Learner characteristics and literacy learning preferences
RQ3: What are the target population's perceived prerequisite skills and knowledge as they relate to reading Darija and using smartphones?	Literacy learning preferences: IntQ20-24 (Area 4: Education, and Area 5: Learning Preference) IntQ11-IntQ15 (Area 2: Skills in Target Content)	To determine the perceived Darija decoding and smartphone usage skills among Moroccan women with limited literacy.	Perceptions of skill level in decoding Darija and using smartphones.



## **RQ1: Perceptions of the Target Population Towards Using Smartphones to Acquire Reading Skills In LSD**

The purpose of this research question was to gain insight into the perceptions among Moroccan women with limited literacy toward the use of mobile technology for improving their reading skills, as well as the likelihood of adopting a mobile-based literacy application. IntQ16 through 18 were used to answer this research question and were part of Area 3, Skills Not Related to Target Content. Specifically, it was important to understand how participants currently used their mobile devices to garner a better understanding of their perceptions toward its application. Interview questions asked participants how they currently used their smartphones, which applications and media they used most, as well as their interest, willingness, and perceptions of using their smartphones for m-learning.

Participants of the current study exhibited digital literacy (Jimoyiannis, 2015) as exemplified by their ability to use their smartphones predominantly for communication and entertainment. Participants also adopted several communication and entertainment platforms such as WhatsApp and YouTube to further exemplify their technological savviness even while being illiterate. Unfortunately, even though this sample was technologically savvy, a total of five of the eight participants stated that they did not have any interest or perceived self-direction ability in using their mobile phone for general learning purposes nor for acquiring Darija reading skills. Further, participant responses regarding using their smartphone for learning suggested that several of these participants suffered from significant barriers to use. Specifically, two participants cited their children as barriers to their adoption of a mobile-based learning experience. Further, one participant cited her work as a hinderance. Overall, only three

participants in the sample stated that they would be interested in using their mobile phone for learning, or more specifically, that they already do use it for learning purposes. Therefore, it was obvious that most of the participants of this study (n = 5) did not perceive their smartphones as a potential tool to learn from nor one from which to acquire literacy skills.

## **RQ2: Learner Characteristics and Literacy Learning Preferences of the Target Population**

Characteristics of the target population were explored using IntQ 1-10 and IntQ19 which consisted of Area 1, Demographics, and Area 4, Educational History. The demographic characteristics of the target population consisted of adult Moroccan women between the ages of 28 and 50 years old with low to nonexistent reading skills and predominant rural origins and residence in the northwest region (n = 5) of Morocco. Darija was the native tongue of all participants in the study and the population consisted of predominantly full-time (n = 6) married (n = 6) working women with children (n = 6). Therefore, this target population had a great deal of familial responsibilities and obligations.

Further, because of the Moroccan culture, men were reported more likely to attend school than women suggesting that expectations of the Moroccan culture may dissuade women from obtaining an education in this population. As such, none of the participants in this study reported a formal education lasting any reasonable amount of time to procure an education. Therefore, characteristically, it could be implied that the target population consisted of undereducated young to middle aged women with strong familial values, a hard work ethic, and deep cultural ties.

IntQ20 through 24 which was covered under Area 4, Education, and Area 5, Learning Preferences, were used to answer the second portion of research questions 2 regarding learning preferences of illiterate Moroccan women. Specifically, interview questions sought to explore

participants attitude toward formal instruction, and preferences in learning regarding: (a) mode of learning, (b) interaction, (c) representation in m-learning video lessons, (d) and ability to focus. Regardless of participants limited-literacy because of their lack of experience in formal education, participants had positive outlooks on formal instruction. In addition, half of the participants (n = 4) wanted a group setting for learning. Although participants expressed a positive outlook on formal instruction, four participants stated they would prefer an informal environment and an additional three participants made statements that suggested they would prefer an informal environment although it was not explicitly stated. Overall, participant responses suggested that they prefer a friendly, flexible, easy to follow learning format that was visually clear with an open line of communication to the instructor for questions. Participants stated they imaged a literacy application to be mostly visual, easy to follow, and providing clear audio instructions. They further reported an ability to focus well (n=5) suggesting confidence in their abilities to sustain their attention for long periods of time for learning purposes.

### **RQ3: Perceived Prerequisite Skills and Knowledge of the Target Population**

IntQ11 through 15 was used to answer this research question pertaining to participants perceived prerequisite skills and knowledge toward literacy. Specifically, these interview questions were part of Area 2, Skills in Target Content, and explored participants perceptions regarding their ability to self-direct, digital literacy, experience with prior literacy education, non-instructional experiences, and skill level in Darija.

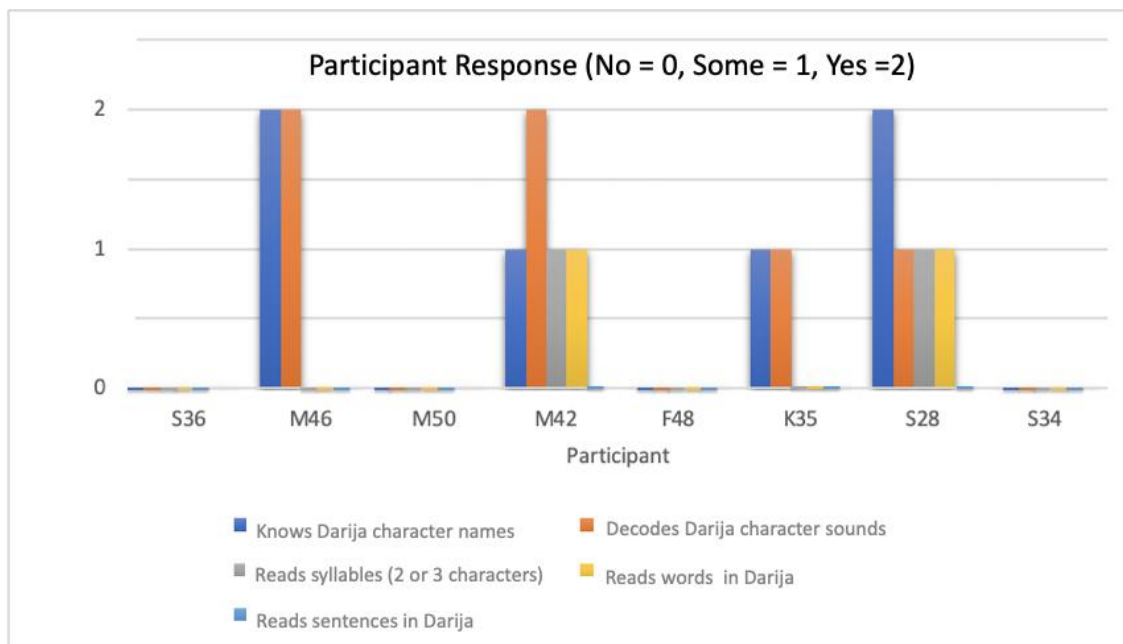
Although participants of the current study were found to be tech savvy as it related to using their smartphones for communication through audio, video, and voice dictation features, they were resistant to being self-directed if asked to use a literacy m-learning application. Specifically, five of the eight respondents suggested they would experience some type of

challenge if needing to set a schedule to follow along by themselves. However, all participants within the current study used their smartphones to communicate with family and friends easily suggesting established digital literacy.

Participant responses regarding experience with literacy education and non-instructional experiences suggested that half of the participants had sought some type of literacy education in the past. However, participants noted several barriers associated with continuing their education. Regarding self-perceived skill sets, as illustrated in Figure 9, half of the participants in this study did not know the names of Darija characters, their sounds, or how to read either a three-letter word, a full word, or a sentence.

**Figure 8**

*Bar Chart of Participants Skill Level Self-Assessment*



However, the other half of the participants were able to identify at least some of the character names (n = 4), sounds (n = 4), can read or decode two to three letter combinations (n = 2), and read or decode full words (n = 2). Therefore, participant responses suggest that half of the

participants have some type of decoding skills from which to build from, but little formal knowledge. Therefore, the perceived prerequisite skills and knowledge of the target population are limited but not completely absent in half of the participants of this study.

## **Conclusion**

Participants were asked 24 interview questions covering five areas consistent with the TPA framework. Specifically, participants were asked demographic questions, skills in target content, skills not related to target content, educational history, and learning preferences. Based on the interview questions and research findings, although this population is reported to be capable of using smartphones, there appear to be several barriers that suggest adoption would be unlikely. The following chapter will provide a discussion of the implications of the research findings, limitations, and recommendation for future research.

## CHAPTER V: DISCUSSION AND RECOMMENDATIONS

Although the Moroccan government has implemented several programs (IEP and PPI) to reduce the prevalence of illiteracy within the country, illiteracy rates continue to climb (Erguig, 2019). Illiteracy rates are significantly higher in rural areas of Morocco as a result of the scarcity of resources there and other confounding factors (High Commission for Planning, 2018). There are a plethora of negative consequences associated with illiteracy for individuals and include elevated unemployment rates, prevalence of healthcare issues, lower income and quality jobs, lower self-esteem leading to isolation, and increased prevalence of injury and recovery times (Literacy Foundation, 2021).

The purpose of this qualitative phenomenological study was to gain insights into the perceptions of Moroccan women about the use of mobile technology for learning literacy skills using semi-structured interviews. This study also sought to determine the characteristics and learning preferences of learners when using mobile phone technology for literacy learning purposes and these women's perceived prerequisite knowledge in reading Latin-script Darija and using smartphones. The current study employed a TPA framework as the theoretical lens from which to design the study and view the research findings. The current chapter will provide a short overview of the research findings and then discuss limitations of the study and implications. The chapter will also offer recommendations for future research.

### **Overview of the Research Findings**

Participants of the study were illiterate women in their late 20's to early 50's residing in the northwest and central west regions of Morocco. Interestingly, all participants originated from rural areas of which the majority were married ( $n = 6$ ) and had children ( $n = 6$ ). Further, most ( $n = 6$ ) participant reported working full-time and had no prior formal education. Over half of the

participants stated that education in their family was geared toward male family members and most (n = 7) participants' future aspirations did not include education or literacy.

Regarding skills in target content (Area 2), participants showed knowledge in identifying and making character sounds for four of the eight participants within the study. Participants also showed some knowledge decoding words and syllables. However, this was only reported in two participants. It is important to note that half (n = 4) of the participants were not able to report having any skills in decoding at all. Participants also reported minimal experience with literacy teaching and instruction. However, participants exhibited digital literacy skills (Jimoyiannis, 2015).

Regarding skills not related to target content (Area 3), participants were found to use their smartphones predominantly for communication and entertainment. When asked if they would be interested in using their mobile device for learning purposes, only three of the eight participants stated they would be interested. Other participants cited several perceived barriers often related to familial obligations as reasons not to pursue mobile-based Darija literacy program. Regarding participants education (Area 4) and perception of the current educational system, none of the participant within this study had a school education and although three members had high hopes for the current educational system, five participants were either unhappy with the current generations disinterest in learning or felt that the educational system could only do so much.

Finally, learner preference (Area 5) revealed several distinct preferences held by participants regarding learning. Although all the participants within the study had never received any formal education, most of them stated they would prefer learning in a group context with a

personable and friendly teacher. They also suggested the preference of a flexible, easy to follow format, with open lines of communication with the teacher.

Overall, although participants of this study exhibited digital literacy, most (n = 5) did not perceive their smartphones as a potential tool for learning literacy skills. Learner characteristics suggested that this sample consisted of undereducated young to middle aged women with strong familial values, hard work ethic, and deep cultural ties which often acted as barriers to literacy education. The population in this study suggested that they prefer a literacy learning platform that is conducted in a group setting (n = 4), consists of a friendly and communicative instructor, is flexible, easy to follow, provides clear images, and audio instructions. Overall, only half of the participants in this study possessed any type of knowledge of the Darija character system and sounds. However, all participants possessed the digital literacy necessary to participate in an m-learning literacy program.

### **Study Limitations**

It is important to identify and discuss the limitations of the current research project. Limitations of the study include: (a) all participants came from one of two facilities, (b) the study had a small sample size, (c) there is the risk of potential response bias, and (d) participants were asked to self-assess themselves on their skill level in identifying and reading Darija. Because the sample consisted of participants from one of two facilities, research findings may not be generalizable to the target population. Therefore, the current study is at risk for selection bias because of the use of purposive sampling, a non-randomization sampling technique. Furthermore, because participants came from one of two facilities, there is no way to know if only individuals with certain characteristics frequent these locations thereby further biasing the sample selection.



In addition to the risk of selection bias, the small sample size may pose a risk to the generalizability of the research findings to the population under study. The small sample size could also create a risk regarding internal validity (Vasileiou et al., 2018). Although the research findings could be applied to the sample within this study, they cannot be applied to all female Moroccans. Regarding sample size and internal validity, I cannot say definitively that these research findings can account for “the full spectrum and variation of the phenomenon under investigation” (Vasileiou et al., 2018, p. 162). In addition to the potential limitations created by the small sample size, it is also possible that participants exhibited response bias when answering the interview questions. The primary response bias of concern is that of social desirability. Namely, the participant may be responding to me in a way they think will be more socially desirable and thereby effect the research findings (Villar, 2011). Finally, participants were asked to rate themselves on their own skill level. Participants may not have the ability to self-assess these skills accurately.

## **Implications**

### **Recommendations for Instructional Designers and Curriculum Developers**

The purpose of this research study was to gain insights into the perceptions of Moroccan women with limited literacy as it relates to the use of a mobile based literacy program as well as their likelihood of adopting one. Further, to determine the characteristics of the research subjects, their learning preferences and perceived skill levels in Darija decoding and smartphone usage. Although participants in the study exhibited digital literacy, they did not appear to be interested in using their mobile device as a learning tool to learn to read. Participant responses regarding the norms of the Moroccan culture suggest several potential limitations for instructional designers, curriculum developers, and various stakeholders, and practitioners in the field to

consider. Namely, participants stated that school was predominantly for male family members. Further, participants of the study repeatedly focused on the need to provide either physical, financial, or emotional support to immediate family members either through caregiving or by working outside of the home. These research findings suggest that a strong cultural component may be the cause of the exceedingly high illiteracy rate amongst female Moroccans. These cultural norms in conjunction with limited resources in rural areas, are undoubtedly compounding the issue and could be contributing to the prevalence of illiteracy in this population despite government intervention.

Regarding RQ1, participants of the study perceived the use of their smartphones to be primarily for communication and entertainment purposes with few suggesting interest in using them for literacy learning purposes. Hence, although the target population is digitally literate, participant responses suggest they did not perceive their smartphones as an appropriate tool for literacy education. Therefore, research findings imply that a mobile learning platform would not be adopted readily by this population thereby suggesting that instructional designers must use a platform more readily acknowledged as acceptable to this population. Specifically, participants within the study suggested that they were able to participate in literacy programs through community facilities and religious venues. This platform for introducing literacy programs may be ideal initially and could incorporate m-learning to facilitate a perceptual change in the target population regarding the usefulness of smartphones for literacy education.

Learner characteristics suggest that the target population require an extremely flexible instructional and curriculum design that would allow for frequent disruption while learning. Participants of the study were suggested to have strong familial values, a hard work ethic, and deep cultural ties that are implied to confine these women to gender specific roles. Specifically,

it should be expected that these learners will need to abruptly stop their learning to attend to family issues, work, or to observe cultural or religious events. As such, instructional design and the curriculum would need to be easy to pick back up when abruptly ended and offer learners quick and easy audiovisual recaps of each individual learning module to allow for quick revision. Regarding learner preferences, most of the participants within this study preferred a group learning environment. The learning preference to learn in groups as advanced by respondents helps in sharing the performance pressure with peers. Additionally, classroom learning involves the ability to learn in groups that is not necessarily an inherent characteristic of m-learning. Although smartphones are designed to be personal, their usage in an m-learning context can be accommodated for group learning by including vocal instructions to invite learners to have an accountability partner or to follow the learning experience in groups through the same mobile device (tablet or smartphone or laptop).

Participants within the study also suggested that they would prefer a learning environment where lines of communication with the instructor are open, the curriculum and instructional design are informal and flexible, and materials are provided in an easy-to-follow format with clear visual and audio instructions. These research findings can be used to inform the instructional and curriculum design of literacy programs for both face-to-face and m-learning platforms involving the target population.

Finally, regarding the findings for RQ3, based on participants prerequisite skills and knowledge, it is evident that the curriculum design would need to start with Darija character recognition for some while offering modules a little more advanced for learners that may already have Darija characters and sounds memorized. Therefore, an easy-to-use initial assessment for

individual learners will be essential in determining where to place learners based on their individual needs and prior knowledge.

### **Recommendations for Education Policymakers**

There are several factors surrounding adult illiteracy, they relate to governance, education policy, school curriculum decisions, socio-economic disparities, rural-urban chiasms and unequal access to quality education. In the context of Morocco, an additional multi-linguistic context contributes to such landscape. As explained in the literature review, the mismatch between the commonly spoken languages of Darija (and Berber<sup>8</sup>) and the content of curriculums that is taught in classical Arabic or more recently in French (Caubet, 2017) is a major contributing factor to the learning difficulties faced by students not only at early stages of their education but also in higher educational contexts. For instance, scientific subjects (e.g. Biology, Physics) are taught either in Modern Standard Arabic (MSA) or French and never in Darija. The non-codification and officialization of Darija as the language of Moroccans constitutes a major barrier to the creation of a *Moroccan* education system. Such learning difficulties resulting from a compartmental linguistic usage are the precursors for adult illiteracy, school dropout, limited social mobility and less societal integration of individuals from lower socio-economic contexts due to a non-Darija and non-Berber language requirement in professional and educational contexts alike. Hence, without a governmental effort to support the commonization of Darija (and Berber) in curriculums and institutional contexts, adult illiteracy will remain present in

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<sup>8</sup> Berber is a less commonly used language in spoken speech. Darija is spoken by all Moroccans including Berbers and non-Berbers also bridging the gap between them.

Morocco because of school dropouts coming from un-adapted curriculums and teaching practices.

For the population of illiterate adults, adult literacy initiatives should be a combined effort of civil society and governmental institutions. As explored in this study, the deployment of m-learning for literacy will enable scaling to reach a larger population of limited-literacy adult learners. M-learning will also develop adapted asynchronous mobile learning experiences through the usage of proven instructional methods for reading.

Although the current research findings suggest that the target population is unlikely to adopt an m-learning platform currently, implementing literacy learning programs at community venues that promote the use of m-learning platforms may be a way to alter perceptions of the feasibility of smartphone use in literacy education among the target population. Since m-learning is expected to be the most advantageous in reaching underserved or rural areas, promoting its use is expected to ensure the largest subset of the illiterate population is reached.

### **Recommendations for Future Research**

Although the research questions set forth by this study have been addressed, additional questions remain unanswered. Throughout this study, several research areas have surfaced. Suggestions for further research include the creation and implementation of an m-learning Darija reading program within a sample and a comparison study regarding limited literacy between male and female participants. A research study exploring the application of an Arabic-script version of Darija for literacy education could be used to better inform the creation of a program targeted for hard-to-reach populations.

Also, the current study focused on illiterate Moroccan females. Therefore, future research should explore the perceptions, characteristics, and prerequisite skills and knowledge of a male

population. A male population may have significantly different mobile-based literacy needs as compared to their female counterparts. Specifically, a male population may present different characteristics, learning needs, and prerequisite knowledge in decoding. To compare such differences, a subsequent study is recommended to explore both a male and female population of literacy learners.

In addition, there were several attitudes and perceptions that surfaced from this study's respondents that may be representative of those of the larger population of limited-literacy Moroccan adults. The most recurring one, concerned the different readiness tendencies towards the use of smartphones for learning. Specifically, although several participants in the study use their mobile device daily for communication and entertainment, they were hesitant to consider their smartphone for literacy learning. This divergence in perceptions suggests future research is warranted to explore these perceptions to garner a better understanding.

Finally, for those researchers interested in duplicating the current study, there are several recommendations for future research. First, the incorporation of a larger sample size, randomized sampling, and a larger applicant pool of participants is recommended to increase the likelihood that research findings will be generalizable to the targeted population and to increase the likelihood of transferability. Further, it is recommended that future researchers do not use a self-reporting skills test to assess participants' literacy. Instead, a standardized test administered by the researcher or third-party entity is recommended to ensure response bias is not a risk for the accuracy of learners' skills.

## Conclusion

The purpose of this qualitative phenomenological study was to gain insights into the attitudes of Moroccan women and their use of mobile phones to develop reading skills. Further, the study aimed to determine the characteristics, learning preferences and skill levels of the target population in decoding Darija and using smartphones. Research findings from the study suggest that although participants of the study are digitally literate, they have limited interest in using mobile technology for the purposes of improving their literacy. They perceive group learning as a preferred educational environment and opt for having a friendly, approachable teacher to interact with. Further, those individuals interested in using their mobile phone for literacy training appear to not feel the familial pressures described by other participants in the study. Therefore, it does not appear that the use of a mobile-based literacy program would be feasible for the participants within this study. There appear to be several other barriers prohibiting the adoption of this type of literacy instruction that would need to be addressed first. Finally, it is evident that all participants in the study require training as it pertains to Darija literacy although they showed some basic decoding foundation to build from and Darija language fluency. These research findings can be used by practitioners in the field, instructional designers, and other stakeholders to inform the design and implementation of mobile literacy education and explore new ways in which m-learning can be utilized.

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## APPENDIX A: IRB APPROVAL

Date: 3-13-2021

IRB #: IRB-2020-335

Title: Case study adaptation of DI DISTAR Reading Program for Moroccan Women with limited literacy using Mobile Technology.

Creation Date: 8-15-2020

End Date:

Status: **Approved**

Principal Investigator: Klaus Schmidt

Review Board: Illinois State University IRB

Sponsor:

### Study History

Submission Type	Initial	Review Type	Limited	Decision	<b>Exempt - Limited IRB</b>
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### Key Study Contacts

Member	Nada El Maliki	Role	Co-Principal Investigator	Contact	nelmali@ilstu.edu
Member	Klaus Schmidt	Role	Principal Investigator	Contact	kschmid@ilstu.edu
Member	Nada El Maliki	Role	Primary Contact	Contact	nelmali@ilstu.edu

## APPENDIX B: ORAL CONSENT SCRIPT

You are being asked to participate in a research study conducted by Nada El Maliki, under the supervision of Dr. Klaus Schmidt from the Technology department at Illinois State University. The purpose of this study is to understand the nature of mobile usage among Moroccan women with low literacy skills as well as their attitudes towards the use of mobile technology for improving their reading skills.

### **Why are you being asked?**

You have been asked to participate because you fulfill the criteria of being an adult woman from Morocco who showed low to inexistent literacy skills with regular usage of smartphone applications (like WhatsApp) in your communication.

Your participation in this study is voluntary. You will not be penalized if you choose to skip parts of the study, not participate, or withdraw from the study at any time.

### **What would you do?**

If you choose to participate in this study, you will be asked to participate to a one-on-one interview with Nada El Maliki (the researcher) where you will be asked questions relating to your daily usage of your smartphone, your educational history, your learning preferences and attitudes towards learning how to read. You will also be asked about your current social and professional status. In total, your involvement in this study will last approximately 45min to 60min for a one-time interview. The interview will be conducted through a WhatsApp call and will be recorded. All of your recorded answers will be used for analysis by the research team.

**Are there any expected risks?**

We do not anticipate any risks beyond those that would occur in everyday life

**Will your information be protected?**

We will use all reasonable efforts to keep any provided personal information confidential. We will not mention details beyond your first name and social status.

Information that may identify you or potentially lead to reidentification will not be released to individuals that are not on the research team.

The findings from this study may be presented in the form of anonymized quotes from your interview answers, summary of your ideas and their interpretation in light of the most common themes that surfaced among all interviewees.

**Could your responses be used for other research?**

After your data has been deidentified, your data may be used in other research projects.

**Who will benefit from this study?**

There are no direct benefits from this study.

**Whom do you contact if you have any questions?**

If you have any questions about the research or wish to withdraw from the study, contact Nada El Maliki by phone +1(309) 2125568 or Dr. Klaus Schmidt by phone +1(309) 438 3502

If you have any questions about your rights as a participant, or if you feel you have been placed at risk, contact the Illinois State University Research Ethics & Compliance Office at (309) 438-5527 or [IRB@ilstu.edu](mailto:IRB@ilstu.edu).

**Oral Consent Prompt**

Do you accept and consent to be part of this study by participating to this interview in light of all what has just been mentioned?

## APPENDIX C: INTERVIEW QUESTIONS

Interview rubrics and questions were adapted from Gibbons (2013) target population analysis framework.

### **Area 1: Demographics**

1. Age: How old are you?
2. Residence (City): What is your City of residence?
3. Original City: Where were you born?
4. Languages: What language(s) do you speak? Do you have Berber or Arab origins?
5. Family situation: What is your family Status? (marriage age)
6. Family Responsibilities: What is your role in your nuclear family?
7. Family Education: In your family (parents/siblings) who went to school? Who graduated from primary or secondary? Are there any who pursued higher education?
8. Financial – Source of Funds/work: What is your source of income?
9. Aspirations – Long-term goals: What do you hope to achieve in your life and for whom?
10. Social – Self-position / Others' respect: If a person in your community would describe you to me what would they say?

### **Area 2: Skills in Target Content**

11. Self-direction: If someone give you access to video lessons that teach you how to read and write Darija, would you be able to set a schedule to follow along by yourself?
12. Digital literacy: How do you use technology to communicate? / What is your understanding of the media you are exposed to on your smartphone? (safety, ethics, fake news)



13. Experience with Literacy teaching: Have you participated in learning activities to improve your literacy skills? If so, what are they?
14. Non-instructional experience with Skill: Have you engaged informally to improve your literacy? If so, please describe your approach to learning?
15. Skill Level Self-Assessment:
- a) Do you know the names of Darija Characters (in French or Arabic?)
  - b) Do you know how to voice some or all Latin Darija character sounds?
  - c) Can you read some or all two to three letter combinations you come across?
  - d) Sometimes, does it happen to you that you read full words?
  - e) Sometimes, does it happen to you that you read full sentences?

### **Area 3: Skills Not Related to Target Content**

16. Mobile Technology Usage Purpose: Why do you use your smartphone? For what purposes?
17. Mobile Technology applications: What applications do you most use? What type of media do you use (audio, video, media)?
18. Interest in learning through mobile-technology (questions asked separately): How is your smartphone a source of learning? Have you ever thought of using your smartphone to learn something? If yes, what was it and how did your learning go? What were the challenges that could hinder your learning from your mobile phone?

### **Area 4: Educational History**

19. Educational level: Have you attended school when you were young? If so, can you share more about your experience? What stands out when you recall that period?

20. Attitude towards formal Instruction: What comes to your mind when I mention school or teachers or the classroom?

21. Preferred Mode of Learning How do you want to be taught? One-one-one? Seated, face-to-face? Formally? Informally?

#### **Area 5: Learning Preferences**

22. Interaction Preferences: Based on your previous experiences as a learner (if any) - How do you like someone, teaching you how to read or write, to interact with you?

23. Representation Preferences: In the video lessons, described earlier, that will teach you how to read and write, how would you imagine their format?

24. Ability to Focus: How would you describe your ability to focus?

APPENDIX D: INTERVIEW RESPONSES

**Area 1: Demographics**

<b>IntQ1: Age:</b> How old are you?	S36	36
	M46	46
	M50	50
	M42	42
	F48	48
	K35	35
	S28	28
	S34	34
<b>IntQ2: Residence (City):</b> What is your City of residence?	S36	Azrou
	M46	Azrou
	M50	Fes
	M42	Sidi-Yahya Zaer
	F48	Tamesna
	K35	Tamesna
	S28	Rabat
	S34	Rabat
<b>IntQ3: Original City:</b> Where were you born?	S36	Taounate
	M46	Azrou
	M50	Taounate
	M42	Sidi-Yahya Zaer
	F48	Agadir
	K35	Ezzhiliga
	S28	Romani
	S34	Taza
<b>IntQ4: Languages Spoken:</b> What language(s) do you speak? Do you have Berber or Arab origins?	S36	Darija
	M46	Darija
	M50	Darija
	M42	Darija
	F48	Darija
	K35	Darija
	S28	Darija
	S34	Darija
<b>IntQ5: Family Situation:</b> What is your family Status? (marriage age)	S36	Married, 3 children
	M46	Married, 3 children
	M50	Married, 3 children
	M42	Married, 2 children
	F48	Married, 2 children
	K35	Married, 3 children
	S28	Single
	S34	Single

<b>IntQ6: Family Responsibilities:</b> What is your role in your nuclear family?	S36	Stay at home mom
	M46	Organize my time, go to work help my children study, organization, manage the sport activities of my children
	M50	help my children study and achieve things that I couldn't do through education.
	M42	work for my family. My husband has a very uncertain work schedule.
	F48	I am the breadwinner of my family. I am responsible of everything.
	K35	I do everything to manage my family. I am not dependent upon my husband's work or income.
	S28	I help my parents and siblings by sending them a monthly amount of money. I work away from my hometown, so I am not in very close contact with them.
	S34	I am responsible for my sister's education and the finances of my parents.
<b>IntQ7: Family Education:</b> In your family (parents/siblings) who went to school? Who graduated from primary or secondary? Are there any who pursued higher education?	S36	From where I come, yes, ok, so where I'm from, boys study and girls don't. This is how we do it, it is rural culture, mixing boys and girls. My brothers were the only ones who got a high school diploma in all my siblings.
	M46	Four girls in my family went to school and one of my brothers. Also, uhm, I have a little sister that attended college. Me, I am a professional traditional Artisan, so definitely need to know how to do math. Uhm, really, I need numeracy skills

		in my work since I sell products in exhibitions and I deal with counting a lot for my customers.
	M50	In my native home, only the boys in my town were allowed to study, and uh, so, girls didn't go. I come from a rural town, and um, yes, so, girls and boys didn't go around together, so there are my brothers who attended school, and um, you know, they got their degree from high school. Uhm, they were the only ones, you know, that was just how it was.
	M42	My sister went to school and graduated high school and my son is currently attending school.
	F48	I have five siblings, and uhm, three sisters and two brothers, and oh, so no, no one went to school in my family.
	K35	Oh, my brothers went to school. My two brothers were the only ones who went to, uhm, you know, school, but they ended up leaving. Yes, they dropped out during, uhm, yes, I think middle school.
	S28	No, my parents did not, uhm, you know, attend any school. I think my dad might have attended for a short time, but yeah, no, not really. I did not attend either, so yea, no one attended school.
	S34	My brother attended school for a short time, I don't remember, uhm, when he left, but yeah, definitely it was more for boys than girls

		where I come from, so no, no one graduated or attended college either.
<b>IntQ8: Financial - Source of Funds/Work:</b> What is your source of income?	S36	Stay at home mom, husband's income
	M46	Artisanal crafter
	M50	part-time embroidery job
	M42	Full time office cleaning job
	F48	Full time cashier manager at traditional bath business
	K35	Full time office cleaning job
	S28	Full-time event cook
	S34	Full-time home assistant
<b>IntQ9: Aspirations:</b> Long-Term Goals. Goals in the future? What do you hope to achieve and for whom?	S36	my dream is that my daughters' study so they achieve what I could not achieve. For example, my daughter is doing taekwondo. I really want to her to reach her dreams. This new generation of girls need to study and achieve things, we can't let them be dependent upon their husbands.
	M46	Buy a New House. Have health and a good brain. I did an Arabic literacy training. I was the first one in the classroom and got an excellence certificate. Learning is still my goal also, my daughter is into sports and I do all my best to let her do those extracurricular activities.
	M50	I make sure I am not a hindrance to my daughter's dreams. I want her to pursue her studies in whatever she wants to. The only thing that makes me sad is that I can't help my children do their homework and support them in their studies. I face a lot of regrets daily. For example, I

		can't read invoices and so I pay what they tell me to do although they could be lying to me, you know, so, sometimes, I need to buy my medicine for my mental health and my daughter is the only one who can help me, because I don't want people to know, you know?
	M42	My dream is for my children to study. I want to see them better than myself, you know, and yeah, that is it.
	F48	My dream is for my son to study and find a job. My daughter stopped in middle school and my other daughter is in her final year of high school. If my children can achieve something out of school, then that suffices me.
	K35	To be healthy and for my children to succeed, I think that is uhm, important, yeah.
	S28	I hope to make enough money to continue to help my parents and my siblings, and uhm, I would like more time with them, but I have to work away from home, so it is hard. So, yeah, really, I just want to uhm, continue to take care of my parents and siblings and, oh, yea, of course, I hope my siblings will be able to make some money too, and for me, I would like to do more in the community, but right now I have to work so much it is not possible, you know?
	S34	I like to work with people in my community, so now, I am volunteering a little bit, but

		you know, I have to work a lot, so yes, so my sister is supposed to finish school soon, and ok, yeah, so I hope she finishes and graduates since I am, you know, I am paying, so it would help if she finished so that I can focus on paying off my bills and I would like, to, like to, yes, I would like a house of my own too, that would be nice.
<b>IntQ10: Social-Self-Positioning/Others' Respect</b> If a person in your community would describe you to me what would they say?	S36	Well, uhm, I would say, yes, I am very much appreciated in the community. I have very good relationships and my neighbors can tell you so much more about it.
	M46	They would say about me: she is a nerd always just going to school. (laughs) - because I was always super serious about my artisanal craft and literacy training at the center.
	M50	I have a mental health situation that does not allow me to be present in social gatherings or daily interactions. For example, no one knows my name in my community.
	M42	They would say she works hard for her family, has a great sense of humor, doesn't take life too seriously, is resourceful.
	F48	People know me very well. I always do good to others. Everyone would complement me.
	K35	They would describe me as a respectable woman who is serious.



	S28	I don't know, I would, I guess, I would say they may say I am quiet and keep to myself. I uhm, yeah, they would say I am generous for sure. Otherwise, I don't know.
	S34	For those people that know me well, they would say I am helpful, but I do not socialize much, and yea, I'm always working, so I don't see people in my community outside of work often, you know?

## Area 2: Skills in Target Content

<b>IntQ11: Self-Direction:</b> If someone give you access to video lessons that teach you how to read and write Darija, would you be able to set a schedule to follow along by yourself?	S36	I would not hate that but you know how it is hard with my children. I would find time but I am not sure if I can follow everyday. I never thought of learning from my phone.
	M46	Yes, I think the phone is a good thing. When you are in a classroom it is better than watching the teacher in a video. It is practical if at home and you don't go out this is all what I am asking for but I don't think I am good at following just like that for a time in the day.
	M50	Video? Ahh (silence), I don't know if during the day I can stop to do it because my daughter is not always there to help me follow. I listen well, but it is hard to follow write something stop the video for me day after day with the phone? Insha'allah but I don't know if I will be

		able to do it by myself to study.
	M42	I would be so glad. I would dedicate time to it as I have the desire to learn how to read. I am really ready to do this, I would be scheduling at least 1 hour per day for that.
	F48	You know how it works. I stay all day managing who is coming in and who is coming out. Sometimes there are problems that happen inside [the bath], people scream ... sometimes mothers want me to keep an eye on their children. It is too much. I don't think I will have the time during the day to stop, focus and write even from my phone. We start at 6 [am] and finish at 10 [pm] when will I find the time? If I ever find the time during the day, it is to quickly watch a video I get or watch a series episode but Why not? I'll try if you ask me.
	K35	Yes possible. I can dedicate two to three hours for it.
	S28	I think so, I'm pretty, uhm, well good and schedules and keeping them.
	S34	There is something about the phone that won't let me focus or be serious. I am sure I would quickly get bored, just me and my screen (laughs)"

<b>IntQ12: Digital Literacy:</b> How do you use technology to communicate? / What is your understanding of the media you are exposed to on	S36	I use my phone for WhatsApp calls, I reply in audios, pictures, videos. All those news half of it is fake I only follow TV news.
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your smartphone? (safety, ethics, fake news)	M46	I use my WhatsApp to talk with friends and family, you know, like, I just talk into it and it send the message. I don't access to these things (entertainment or scamming content). I go for quranic things on applications. I don't believe in all this. I am very cautious.
	M50	I use my WhatsApp microphone feature a lot to send messages, also uhm, well, video, and uhm, you know, functions that allow me to audio record my messages. Oh, media, well, I know most of it is well, fake.
	M42	I don't trust the stories I get on my phone. I only trust national TV news. I use the different features on my phone to communicate with friends and family, I can tell my phone what to do and have it read my messages back, you know, it makes things easy.
	F48	I use the features in my phone to chat or make calls. My friends and family send a lot of videos and audio files. Oh, news, some things you can trust online others you don't. Those gossip channels on youtube are just complete nonsense.
	K35	Sometimes I don't trust the content I get on my smartphone. I only trust official sources (TV, radio). My friends send a lot of pictures and audio, so it makes it, well, uhm, easy to use the phone to chat.

	S28	Oh, media, I avoid it, you know, it usually just upsets me and is, well, not true most, uhm, of the time. Oh yes, I use my WhatsApp a lot to chat with friends, and uhm I use the microphone feature a lot.
	S34	I never trust what I receive like videos or audios on WhatsApp (...) sometimes I receive suspicious messages telling me that I won something or asking me to enter a number (...) you know they can take what you have in your phone and take your money

<p><b>IntQ13: Experience with Literacy Teaching:</b> Have you participated in learning activities to improve your literacy skills? If so, what are they?</p> <p><b>IntQ14: Non-Instructional Experience with Skill:</b> Have you engaged informally to improve your literacy? If so, please describe your approach to learning?</p>	S36	Uhm, no, I don't have any experience with those. I do go to listen to the Quran, does that count? Oh, well, no I do not have any experience with classes for literacy. I have worked with my kids when they are reading, but mostly, well, uhm, well, the kids and I will go over, the, yes, the Quran every week.
	M46	I do all sorts of training such as horizontal traditional weaving. I needed to learn how to read basic words in Arabic for my fashion styling work that is why two year ago I joined the development center. They were offering classes at the development center near my house (Azrou center). My daughter was still very young, and I didn't want to bring her with me, she

		<p>would be disturbing other people. It was quite hard to manage classes and be a mom.</p> <p>when I was doing the Arabic literacy classes. I would do my homework back home and organize my time.</p>
	M50	<p>I thought about it. I am against the idea of that mentality for gender seclusion. When I was young I thought about it and was so angry against this mentality and system because that was the main cause that prevented me from going to school.</p>
	M42	<p>I couldn't find the time when I had younger children. My first goal was to provide food, make sure my family has what it needs- Learning how to read was like a luxury at the time.</p> <p>But I tried one time in a classroom with a group of women to learn for literacy at the mosque. When I went to the board and answered the question of the teacher incorrectly, other women in the class would laugh at me and made me feel uncomfortable. I couldn't stand that intimidation and I quit.</p>
	F48	<p>I always was so protective of my children; I don't want to let them with anyone. That's why I never found the time to focus on my own learning and growth.</p>

		No, I was so involved in my family stuff that I couldn't find the time.
	K35	Yes my neighbors (women), encouraged me once to join them in literacy classes at the mosque. I tried the governmental literacy programs. I was pregnant at the time, so I had stopped after only one week of classes. I really enjoyed it though and the teacher appreciated me as a student.
	S28	I used to go to a teacher to learn French for a year it was every Sunday but I felt it was expensive for the short time I spent with her.
	S34	No never got in touch with classes. No experience with literacy class. Only go to the mosque to hear the Quran.

<b>IntQ15: Skill Level Assessment:</b> a) Do you know the names of Darija Characters (in French or Arabic)? b) Do you know how to voice some or all Latin Darija character sounds? c) Can you read some or all two to three letter combinations you come across? d) Sometimes, does it happen to you that you read full words?	S36	No
		No
		No
		No
		No
	M46	Yes
		Yes
		No
		No
		No
	M50	No
		No
		No
		No
No		
M42	Some	
	Yes	

e) Sometimes, does it happen to you that you read full sentences?		Some	
		Some	
		No	
	F48		No
			No
			No
			No
			No
	K35		Some
			Some
			No
			No
			No
	S28		Yes
			Some
			Some
			Some
		No	
S34		No	
		No	
		No	
		No	
		No	

### Area 3: Skills Not Related to Target Content

<b>IntQ16: Mobile Technology Usage Purpose:</b> Why do you use your smartphone? For what purposes?	S36	My children study with my smartphone. On WhatsApp I only communicate with audios. I can't even watch videos I want, my child helps me read for example the ingredients of a recipe.
	M46	I use my smartphone for communication, take pictures and share with my friends, listen to the Radio, watch some series and videos on YouTube.
	M50	WhatsApp only and sometimes YouTube - I watch movies/series
	M42	I watch cooking videos, communicate in WhatsApp,

		with family. I remember the phone numbers because I can't read the names. My smartphone helps me shorten distances between me and my family. I am able to speak to them daily just from WhatsApp audios and video calls.
	F48	receive calls, hear Quran, YouTube cooking videos, News buzz, make calls
	K35	Talk to my family, given it to my children to learn from it. I send videos and pictures to my children too.
	S28	I use my smartphones for everything. Really, uhm, I use it to search the web, make calls, chat with friends and family, so, pretty much everything.
	S34	Before, I was only able to make calls with my mobile phone. By getting this finger-touch screen. I learned so many things on how to communicate.

<b>IntQ17: Mobile Technology Applications:</b> What applications do you most use? What type of media do you use (audio, video, media?)	S36	WhatsApp calls.
	M46	audios are faster that is why I use them to communicate on WhatsApp. Even my children study from it in covid.
	M50	WhatsApp, and calls - through pictures of WhatsApp I can know who I'm calling.
	M42	communication calls, images
	F48	YouTube, WhatsApp, call, radio, Quran
	K35	audios, images, videos,
	S28	WhatsApp and Youtube
	S34	WhatsApp calls.



<p><b>IntQ18: Interest in Learning Through Mobile-Technology (questions asked separately):</b></p> <p>a) How is your smartphone a source of learning?</p> <p>b) Have you ever thought of using your smartphone to learn something?</p> <p style="padding-left: 40px;">i. If yes, what was it and how did your learning go?</p> <p>c) What were the challenges that could hinder your learning from your mobile phone?</p>	S36	My kid is still young for me to follow on the phone.
	M46	I can access the Quran. Learning recipes online. My schedule is hectic from taking care of my children and family. I just come home and sleep. When my children grow up, I could find more time to dedicate and be more patient.
	M50	I don't know, if only there was someone to help me and give me time to show me how I can access this phone to learn new things.
	M42	It helps me learn cooking. I watch first and until I master the recipe than I do it. I feel like i learned- the phone is making so many things easier. It shortens the distance when your loved ones too.
	F48	cooking, my job hindrance, no motivation hope through children, entertaining storytelling videos.
	K35	Yes, I thought about it. I can keep learning by myself. That way there is some hope that I might learn how to read.
	S28	One day, my best friend shared with me some videos on YouTube that were teaching how to read. Then, we decided to make a study plan and held each other accountable. We studied together those videos apart for a year
	S34	I don't think so, I am very tired since I'm always working and trying to help

		my family financially. I don't think it is uhm the time right now, but hopefully in future.
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#### Area 4: Educational History

<b>IntQ19: Educational level:</b> Have you attended school when you were young? If so, can you share more about your experience? What stands out when you recall that period?	S36	never went to school just helping out at home domestic chores since my childhood.
	M46	Primary school first grade.
	M50	no never
	M42	no never
	F48	never ever
	K35	Never ever
	S28	No
	S34	I wanted to go to school, but I was not allowed since I am a girl. I will only went to first grade for one month. So, uhm, I just helped out at home. My mother had a lot of chores and I was happy to help.

<b>IntQ20: Attitude Towards Formal Instruction:</b> What comes to your mind when I mention school or teachers or the classroom?	S36	With this new distance teaching. I have high hope in the future of education in Morocco.
	M46	The current generation have a lot of opportunities to study and succeed but my children for example don't want to study. They have everything to study, and they don't. They are not suffering as much as other generations like mine to access education
	M50	Schools in Morocco do what they can. My daughter is pursuing a higher education degree in fashion design... My dream is to see her achieve her dreams even if

		it's not the mainstream thing to do.
	M42	they (education system) do their efforts. It depends on personal efforts we can't blame the system
	F48	I feel like it's always a good thing to study. Now there are plenty of opportunities. Whoever wants to study, and success has no more excuse. It is still a regret that I didn't go to school. I would never forgive my parents for that.
	K35	The current schools and educational opportunities do all their efforts. Sometimes some learners cannot keep up even if the teaching parties are doing their best effort.
	S28	I feel very angry when I hear about girls dropping out of school halfway through it (...) it hurts me deeply
	S34	I think it would be great to go to school, and uhm, take some time to learn, but I just don't see how that is possible with all my responsibilities.

<b>IntQ21: Preferred Mode of Learning:</b> How do you want to be taught? One-one-one? Seated, face-to-face? Formally? Informally?	S36	I prefer learning with a group of women. I don't want to be selfish. I want to be with others. I just want her (teacher) to be effective and not be that strict - just professional and informal
	M46	I respect my teacher can't call them by their name say. I would call them "teacher." Learning in group is better because you can participate, ask questions and sometimes

		figure out when you are the wrong path. Through others we learn.
	M50	I like learning in group. I can't take full advantage when I am alone. I like the teacher to be informal like an actual friend teaching you.
	M42	I can't learn in the group I prefer to be by myself.
	F48	same for me no difference. But it would be better if that teacher is like my friend, so I am not shy or blocked if I want to interact with her and ask questions.
	K35	I want to be very close to the teacher so that she can explain things to me. I prefer to have other classmates who are women like me (same situation). So, I can ask them questions too and learn together. I want to be close to my teacher for her to tell me stories and me to tell her mine
	S28	I don't know.. I think I would be happier in a group setting, but uhm, yeah, not sure. I would say I really want a nice teacher who will be available to answer my questions... and so, yeah, I would say group learning and not really strict teacher like in school
	S34	I don't know really .... I like to be comfortable with the teacher and what she explains like with my sister who explains to me.

## Area 5: Learning Preferences

<b>IntQ22: Interaction Preferences:</b> Based on your previous experiences as a learner (if any) - How do you like someone, teaching you how to read or write, to interact with you?	S36	I want to have a close relationship with the teacher. That person will change my life and I would love her.
	M46	The literacy teacher needs to be involved. I am happy to come to her class if that is the case.
	M50	they explain and I grasp that's what I want
	M42	To have a give and take interaction.
	F48	I can recognize things in my phone. I have a minimum awareness. I can recognize names that are calling me and distinguish between them.
	K35	Even if I don't understand I want the teacher to motivate me and give me time before I make second trials when I make mistakes.
	S28	I would like a friendly environment.
	S34	I think, I want to be taught on my time, when, where it will be flexible.

<b>IntQ23: Representation Preferences:</b> In the video lessons, described earlier, that will teach you how to read and write, how would you imagine their format?	S36	I don't know. Will it be a teacher there? I need a voice to help me understand the content.
	M46	I imagine learning through my smartphone to have letters clearly shown with the teacher explaining well (...) I don't care if they show or not their faces, I just need to hear their explanations
	M50	I would thank the person behind this initiative.

	M42	That is a great idea. Starting from zero. With voice and image... the most important thing is someone bringing some valuable knowledge to me. I just want to be able to be given the opportunity to answer questions, know when I get it right and have someone behind me to encourage me to not give up.
	F48	I don't know
	K35	I want to be able to see the characters one at a time. The teacher should focus on explaining slowly each one of those characters.
	S28	Oh, I guess, uhm, she would be, easy to follow and offer a lot of opportunities to ask the teacher questions.
	S34	I would guess that it would be flexible?

<b>IntQ24: Ability to Focus:</b> How would you describe your ability to focus?	S36	I will make effort that's the most important not my abilities. My strength is my motivation.
	M46	high ability to focus. I'm in constant activity it helps my brain be stimulated constantly go to the city center go here and there
	M50	Yes, I just need someone to be patient with me even if I have depression, I still have mental abilities to learn.
	M42	I can focus very well. My dream is to read and understand and then be able to read for others who still can't.
	F48	I don't think my brain can keep up with it.

	K35	I think I might have some difficulty in focusing.
	S28	Very good, I can definitely focus
	S34	I can focus if I need to, it would depend on the time of day and what we are studying.