# Mobile Learning for Resettled Refugees in the United States: Lessons from International Programs A Review of the Literature

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Abstract: This review of the literature is third in a series of investigations into educational technology curriculum integration for the Tucson, Arizona office of the International Rescue Committee (IRC). It is a broad investigation into the theory, methods and delivery of supportive instructional materials to refugees via mobile learning. It examines current international program methods that will aid in design of U.S. mLearning programs to support the IRC's mandated goal of promoting self-sufficiency for resettled refugees.
Keywords: mobile learning, mLearning, digital literacy, refugee resettlement

## Mobile Literacy and Learning for Resettled Refugees

This review of the literature is third in a series of investigations (Corrette-Fay, 2015) into educational technology curriculum integration for the Tucson, Arizona office of the International Rescue Committee (IRC). The IRC is an international non-governmental organization (NGO) that offers resettlement services to refugees with the goal of obtaining self-sufficiency in the first six months in country. This paper is a broad investigation into the theory, methods and delivery of supportive instructional materials to refugees via mobile learning (mLearning) in order to help meet or accelerate attainment of that goal.

This paper will update previous inquiry and lay out a broad overview of emerging trends in mobile learning for refugees today. Much of the literature is from international research yet is useful guidance to the application of mLearning in the United States. The topics covered include the cultures, competencies and context of the learners. Infrastructure and funding issues are touched upon. Information on learning theories and instructional design that is suitable for mobile learning (mLearning) follows. The review concludes with the state of mLearning delivery, monitoring and evaluation methods. This broad base of current information will serve as a foundation for mLearning programs in development by the Tucson office of the IRC.

### The Digital Literacy Program at the Tucson Office of the IRC

The Education and Learning department of Tucson IRC has begun a pilot Digital Literacy Program that is subdivided into two projects. Project #1, Smartphone Instruction was launched in January of 2016 with the goal of introducing newly arrived refugees to the basics of smartphone operation. Project #2, in the development stage, is the design of an IRC Android App to enable client access to in-house agency resources as well as community services. To continue the progression, a potential Project #3 is on the horizon due to the recent affordability of smartphones for newly arrived refugees in the last year. Research into using smartphones for educational purposes, followed by the development of contextual and targeted mobile delivered training materials is indicated, thus this review of the literature.

### Background: Previous Reviews

The first review examined the global landscape of information and communications technology (ICT), its current use in areas of crisis and conflict and its value in the delivery of education mLearning (Corrette-Fay, 2014). Education was established as a priority globally in Universal Declaration of Human Rights adopted by the United Nations General Assembly in 1948. While education is a legal human right on paper, the reality is that in 2011 only 2% of humanitarian aid went to education and that number diminished to 1.4% in 2012. A recent report published by

the Malala Fund states that between 2011 and 2015, UN-coordinated funding for education remained at 1.4%. Educational funding specific to the Syrian conflict was 3.6%.

The second review was part of a small-scale research study completed a year ago for the Tucson IRC mLearning (Corrette-Fay, 2015). The goal was to determine if digital literacy education would be of sufficient benefit to the staff and clients, i.e. increased speed to economic self-sufficiency, the agency's goal, and to promote better long-range outcomes in the eyes of the refugees themselves. The study was of limited value due to a low response rate. The literature however strongly supported continuing efforts towards inclusion of digital literacy and technology in future educational projects. The literature also identified mobile technology as the technology of choice for refugees and underserved populations in lower social-economic ranks. Further investigations into community resources and assessments conducted with staff and newly arrived refugees led the Tucson IRC to move forward with the mobile literacy program.

Much has changed since that first review of the literature in 2014 and the research that followed early in 2015. Areas of crisis and conflict have rapidly increased, refugee numbers are rising (UNHCR, 2015), media coverage and work on solutions to refugee needs has surged. Emerging technology has been front and center in many of the proposed and pilot solutions.

### IRC Overview & Goals

The term refugee is a legal status designation for people who have crossed an international border and cannot return to their country of origin due to fear of persecution because of race, religion, nationality, membership of a particular social group or political opinion (UNHCR, 2015). To obtain legal refugee status in the U.S. and dependent upon a person's situation, the requirements and security screenings are extensive and lengthy ("Status and Documentation", 2015). Once approved, refugees are assigned to a locale and paired with a government-approved provider of resettlement services.

The federally mandated goal of the U.S. based resettlement providers is to provide services that help refugees gain self-sufficiency in the first six months in country. Those services include housing, food, transportation, community services and public assistance, cultural orientation and employment training, English classes, health, finance and U.S. Law (Abrams, 2013). This review begins as a broad investigation into delivery of instructional materials to refugees via mLearning in order to help meet or accelerate attainment of the goal of self-sufficiency.

### Learners: Culture, Competencies and Context

Mobile learning will support resettled refugees in the United States. The environmental context is that of a population of resettled refugees (clients as they are called upon arrival) assisted by the IRC. Previous assessments have resulted in identifying which clients would gain the most from smartphone training and mLearning (Corrette-Fay, 2015). These clients are primarily women, particularly those arriving from sub-Saharan and eastern Africa. Women (and some men) from this region have the least exposure to technology, low rates of literacy and education, and fewer resources. Traditionally, women in these cultures work at home. Once in the U.S., women with school age children are expected to find employment. They, along with the women at home with preschool children need an education that includes digital literacy. The former to coordinate with employers, schools and day care and the latter for safety, services and communications with family outside of the home. The assessments also identified older clients, both men and women with a need and desire to gain digital literacy. Additionally, a sample of clients age 18 to 30 indicated a gap in their stated skills with their actual skills in using mobile technology (Corrette-Fay, 2015). Furthermore, incoming clients with adequate or better skills often need an introduction to the location and method of access to U.S. resources.

When designing cross-cultural instruction for mobile delivery, cultural differences towards education and cultural differences towards mobile phones must be taken into reasonable consideration dependent upon the educational context. Instructors and instructional designers should have an awareness of the cultural and national values that affect the learners' views and use of technology. For example, in China and Finland, adults use their phones primarily to connect socially. In Africa, personal and professional connections are important and in the U.S., adults use phones for information (Bhargava & Keengwe, 2014). Further distinctions can be made between genders, age groups and levels of disability.

## The Why and How of Mobile Learning

The need for digital literacy and the growth in smartphone ownership drives a fresh examination of mLearning. In May of 2011, the first year Pew Research reported smartphone ownership by adults in the U.S., it was at 35%. By July 2015, it was grown to 68% ("Device Ownership", 2015). Many people are using smartphones to manage their everyday lives. More than half of the users report using their phones to gain information on healthcare and online banking. More than 40% use their phones to find places to live, to search for jobs and to locate government services. Just under half of those, 46% say they cannot live with out their phones (Anderson, 2015). Of particular interest to this review is the 13% of low-income users who are smartphone dependent, meaning that they only have Internet access with their phones. The clients of the IRC fall into this category. Few if any have computers, computer skills or access and are therefore completely reliant on their phones for information, communication and more. Since January of 2016, the Tucson IRC recommended clients obtain smartphones versus the older flip-phones, due to their recent affordability by providers and their increased utility.

### *Funding for mLearning Programs*

Each program is dependent upon available funding. Educational technology programs are not included services provided with government resources. Due to world events and the growing need for refugee services, an escalating interest in technological solutions has been sparked by media reports of smartphone use by fleeing refugees. This interest translates into increased grants and funding opportunities that leverage technological solutions to the myriad issues of resettlement. Locally, that interest prompts the Tucson IRC to pursue funding opportunities that enable the continuation of its innovative Digital Literacy programming.

### *Considerations of Infrastructure and Hardware*

Much of the literature is international in scope and addresses issues of infrastructure, access to Wi-Fi, hardware and maintenance. These issues should be assessed prior to adoption of mLearning for any population. It is assumed by many that everyone in the U.S. has access to smartphones, cellular service and Wi-Fi yet the digital divide exists and lessons learned internationally provide information of value locally (Smith, 2015). It is evident in low-income and rural communities, often the locales in which refugees are resettled, that the limitations in Internet access, of bandwidth, cellular coverage and cost must be considered. Additionally, multiple types of phones and operating systems will drive how content is designed and delivered. To manage the variety of devices and the speed at which they are changed, refined and technologically advanced, an examination of standards-based authoring tools and platforms continues later in this review.

### The Relationship of Educational Theory and mLearning

It is crucial to identify appropriate underlying theories of learning to apply in the design of mLearning instruction. The learners and their cultural differences as well as the context of the instruction must also be taken into consideration. The IRC provides 16 hours of classroom Cultural Orientation instruction and 18 hours of classroom Job Training. Both curriculums are information dense and limited classroom time is allotted for delivery. Clients would benefit from the availability of mLearning reinforcement and review at home. Two theoretical learning models that were applied to mLearning and found in the literature have relevance here therefore warrant examination.

### *ARCS Model of Learning*

Founded by John Keller, the ARCS model as described by Pappas (2015) uses a problem-solving model that creates engagement. The acronym ARCS stands for the dimensions of attention, relevance, confidence, and satisfaction. Attention includes active participation, humor, conflicting points of view, and multimedia. Relevance describes worth, value, choice usefulness and a relationship with previous experience. Confidence is gained by taking incremental steps to encourage heuristic learning, receiving constructive feedback that in turn fosters learner responsibility, independence and control. And last, the element of satisfaction is felt from the reward of praise and attainment of real-world skills.

In their 2012 study at a school in Turkey, Cagiltay et al., applied the ARCS model to mLearning. In their blended program, they noted that the attention dimension of the model encouraged peer collaboration. This interaction resulted in the emergence of leadership and assistance by students with greater technological competencies. The program also used push notifications as reminders of events and assignments to the students. Relevance and satisfaction were gained by the appeal of mobile phones to the learners' age groups and satisfaction in using it. This study was conducted in a derchene in Turkey, an intensive school that trains teenaged students to meet specialized goals. Its relevance is especially current because of the European-Union (EU)-Turkey deal, now a reality. The deal returns migrants from Greece and other European destinations to refugee camps in Turkey (Al Jazeera, 2106). As that occurs, mLearning methods in Turkey today may be considered for these camps in the future.

| Attention | Relevance | Confidence | Satisfaction |
|---|---|---|---|
| **Perceptual Arousal**<br><br>Provide novelty and surprise | **Goal Orientation**<br><br>Present objectives and useful purpose of instruction and specific methods for successful achievement | **Learning Requirements**<br><br>Inform students about learning and performance requirements and assessment criteria | **Intrinsic Reinforcement**<br><br>Encourage and support intrinsic enjoyment of the learning experience |
| **Inquiry Arousal**<br><br>Stimulate curiosity by posing questions or problems to solve | **Motive Matching**<br><br>Match objectives to student needs and motives | **Successful Opportunities**<br><br>Provide challenging and meaningful opportunities for successful learning | **Extrinsic Rewards**<br><br>Provide positive reinforcement and motivational feedback |
| **Variability**<br><br>Incorporate a range of methods and media to meet students' varying needs | **Familiarity**<br><br>Present content in ways that are understandable and that related to the learners' experiences and values | **Personal Responsibility**<br><br>Link learning success to students' personal effort and ability | **Equity**<br><br>Maintain consistent standards and consequences for success |

Table 1. ARCS Model Components
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### CAML Learning Model

Similar to the ARCS model, the context aware mobile learning model (CAML) as explained by Huang and Chiu (2015), lists meaningful learning as the goal. The dimensions of this learning model are listed as active, authentic, constructive, cooperative and interactive. Each dimension has criteria to be met. The active dimensions relate to a spontaneous learning need and mobility; authentic is a situational and contextual activity; constructive is personal and self-regulated; cooperative signifies a collaborative effort and interactive includes virtual and physical interaction.

The study by Huang and Chiu examined three mLearning activities designed with the CAML model and evaluated the results. These activities, designed for elementary level learners can be useful in creating activities for our target audience. Each activity requires dimensions from the model; technology in the form of a mobile device, online instructions, two of more students working cooperatively to complete an activity that also uses the mobile device to complete the assignment. In this study students had to use a combination of camera and GPS to locate and identify plants. The authors also use RFID technology to track learners' locations and time. In this example the multidimensional analytic hierarchy process (AHP) was used to evaluate the results both quantitatively and qualitatively.
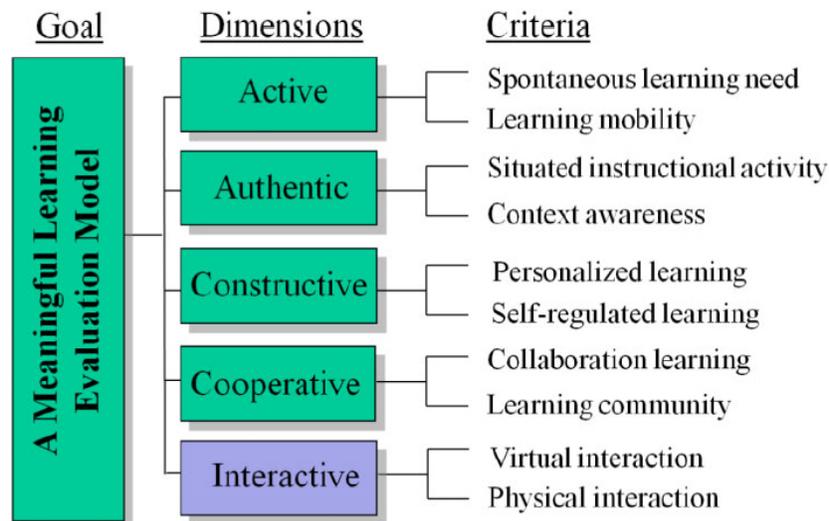
Table 2. CAML Model Framework
Note. Huang, Y, Chiu, P. (2015).

**Standards-based mLearning Content and Delivery**

The interest in learning objects (LO) peaked about 10 years ago and has decreased according to Google Trends. Learning objects are defined as a "collection of content items, practice items, and assessment items that are combined based on a single learning objective" (Wikipedia; attributed to Cisco Systems). These "knowledge packets" contain a title, subtitle, and objectives that include an overview, theory, examples, activities, and estimated time to complete. LOs also contain metadata and occasionally assessments. They are reusable, utilized in eLearning and SCORM standardized platforms (Keramida, 2015).

Kinshuk and Ryan (2013) re-examine the concept of reusable learning objects. They acknowledge the limitations of these earlier LOs. Earlier LOs have not been compatible with mobile devices due to a lack of standardization for that purpose. Kinshuk and Ryan have developed a tool called MAAIMS or Mobile Authentic Authoring in instructional management systems, more commonly called IMS today. The tool is based on standards based authoring such as SCORM, used by non-mobile devices and platforms. It allows for authoring of reusable learning objects for mobile deployment. They take the IMS Learning Design concepts of reproducibility, interoperability, compatibility and reusability, as well as the goals of Open Educational Resources (OER) and have made it possible to create a new mobile compatible reusable LO. In developing this new model, they have retained the theoretical foundations of authentic learning such as problem-based, situated, constructive and collaborative learning approaches. The tool extends LOs by encompassing new technological means of inclusion of social constructivism, an element integral to the mobile environment and user. Methods for learners to capture, create and share resources have been adopted. To wrap up their study, they explain a method for the learning objects to be stored in repositories available to others, allowing reuse and repurpose. A validation method and details of the system architecture are also discussed.

*Cloud Storage*

Storage of learner content needs to be determined by the educational provider. Due to the nature of the refugee learner, it's unlikely that they have a computer and hard drive for storage of digital materials. If the instructional program is tied to an organization or institution, the materials may be stored on their servers within whichever LMS or delivery option they use. Ideally independent cloud storage would be offered as an option for

each learner. Concerns over ownership of materials, location, portability and safety would be minimized. Cagiltay et al, 2012).

### *Monitor and Evaluate*

The final component of any educational program is creating a means to monitor and evaluate (M&E) the results of the intervention or instruction. A report by Adams and Gawande of the Acumen Fund and Overdyke of Root Capital (2015) explains their innovative approach to M&E. Each uses mobile technology. Acumen focuses on mobile phones and Root Capital uses tablets. They both use a measure they call social performance rather than impact. Social performance is more qualitative – with no ability to use control groups – yet an efficient method to obtain some data. While it's not true research that delivers the high degree of control that the term impact implies, in the context of evaluating diverse groups in the field, this method delivers adequate information provided the limitations are disclosed.

## Discussion

### *Theory and Instructional Design*

The CAML and ARCS models of mobile learning inspired reflection. Many of the clients of the IRC are hesitant to leave home alone to complete the daily tasks of living. If those tasks were taught in a manner that required collaboration and physical interaction with their environment, it would ease the fear of the unknown especially for female refuges. If instruction were designed in compact modules with an escalating but doable sequence of difficulty, the important dimension of confidence would be attained. Confidence is of utmost value to women's self-sufficiency. Taking small steps is never as fearsome when done with another. Reaching a goal and receiving positive reinforcement facilitates the learners' growing confidence.  The ARCS model states that this will create learner control and independence, thus meeting the goal of the agency and the refuges themselves.

The additional component of RFID technology as described in the CAML Model by Huang and Chiu (2015) lead to some serious concerns regarding privacy and the implementation of such technologies. Privacy and security is out of the scope of this review but cannot be ignored during the development of future instruction.

### *Content, Delivery and Storage*

The literature on the potential of Standards-based content for mLearning and OERs is encouraging for future implementation. Continued research on the progress of these tools is recommended. Nevertheless, to support mLearning today, reliance on current technology is inescapable. Mobile responsive websites and LMS capabilities, augmented with off-the shelf learning apps must suffice.

### *Monitor and Evaluation*

This review supports the implementation of the IRC's Digital Literacy Program, a program that will be funded by grants and donations. The foundations and individuals require, and deserve, documentation of the outcomes provided by the programs they've funded. The agency, the program designers and more importantly, the clients we serve all need and deserve information gathered from M&E in order to improve the quality of outcomes. Once the pilot project is complete, the results may contribute to the formation of a body of knowledge about mLearning for resettled refugees.

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