Syrian Youth in Za'atari Refugee Camp as ICT Wayfarers: An Exploratory Study Using LEGO and Storytelling

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ABSTRACT¹

We share insights from exploratory research with Syrian youth at the Za'atari Refugee Camp in Jordan about the role of information and mobile technology in their daily lives, and how they serve as information, communication and technology (ICT) wayfarers. Survey findings (n=174) show most youth own mobiles and SIM cards, and WhatsApp and Google are the most popular apps/engines. Design Workshop data contradicted youth survey self-reports of being heavy ICT users on behalf of others. Instead, narrative-drawings (n=50) created using LEGO Mini-Figures depicted situations involving primarily instrumental assistance, with fewer representations of informational, technological and emotional assistance, per Dervin's Sense-Making framework. Depicting mostly events in Syria, with several in Za'atari, the narrative-drawings reflect the youths' affinity for the forms of assistance outlined in the fourth Geneva Convention. The research informed longer workshops in the camp setting in accordance with the methodology's original aim to co-design ICT mediary devices that support the youths' mediary behavior, as represented by their narrative-drawings and survey data, and in support of UN Sustainable Development Goals.

CCS CONCEPTS

• **Computer systems organization** → Performance of Systems; *design studies* • **Information Systems** → User/Machine Systems; *human factors*.

KEYWORDS

Refugees; Teens; Youth; Design; Cultural probes, Mobiles; LEGO; Wayfaring; Ethnography; Survey; Mixed methods; Syria; Jordan; Displaced persons; UNHCR; Za'atari Refugee Camp.

1 INTRODUCTION

2015 marked the worst migrant and refugee crises since World War II, witnessing the forced migration of over sixty million displaced persons, notably from Syria, Iraq, Afghanistan, Asia, and Eastern Africa to Northern Europe and across the world [46]. In 2018, there are over 70 million displaced people. The 1949 Fourth Geneva Convention "Protection of Civilian Persons in Time of War," applies to people "who do not belong to the armed forces, take no part in the hostilities and find themselves in the hands of the Enemy or an Occupying Power." It requires pact countries (amongst other items) to ensure: that displaced individuals are treated humanely at all times, in accordance with their religious convictions and practices, manners, and customs; that mothers and children, along with the wounded, sick, and elderly, are specially protected in safety zones; that people are enabled to exchange family news; and that they are helped to obtain news of dispersed family members [26]. However, European countries have been unprepared to deal with the influx of migrants in terms of a unified policy and instrumental help [12]. Live reporting of migrants en route to European destinations, and the attitudes of and treatment by government, by-standers and others in the West were captured and broadcast widely by social media, journalists, NGOs, and other observers [23]. Articles appeared about the vital importance of smart phones and social media in aiding migrants [6]; others expressed concern for the future and education of migrant youth. UNICEF warned of an entire lost generation of children in some countries who are out of school—13 million youth are now behind in school due to the disruption and destruction of education systems [20, 41].

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This paper shares emergent findings from a mixed-method exploratory study conducted in January 2015. The study examined how young people (age 15-25) living in the Za'atari Syrian refugee camp in Mafraq, Jordan use mobiles and the Internet in their daily lives, with a focus on how they help others through information and technology. Invited by the United Nations Refugee Agency (UNHCR), the field research team represented five American universities and multiple academic backgrounds—human geography, computer science, information science, and political science—and collaborated with academic colleagues from Syria (based in Malaysia) and Jordan in preparing instruments and analyzing data. While the current paper reports on data collected with youth via a written survey and design workshops held at community centers, additional research foci included visually mapping the Za'atari camp's information systems and studying the organizational information relationships among the camp's many partners. Findings from those studies are shared in other reports [33]. The research had multiple motivations. Primary was the UNHCR's request for insights about the mobile and Internet use of Za'atari youth that would help them: plan Internet-based services for camp residents—especially for education and training; facilitate communication internally and externally with residents' family and friends; and support delivery of broader media. Of strong research interest was how the youth might be serving as information and technology mediaries or information, communication and technology (ICT) wayfarers, helping family, friends, camp staff, officials, and other people with everyday situations.

2 LITERATURE REVIEW

The current study is informed by work in several cognate fields, notably refugee studies, international studies and development, computer science, information science, the learning sciences, anthropology, the health sciences, and political science. Of equal import in understanding the contextual landscape are reports by government and non-governmental agencies, as well as social media. Historically, the interdisciplinary scholarship of refugee studies draws on theories and approaches from international law, international studies, documentary production by the UN and other international agencies, development studies, and literary studies [34]. Thus, compared to its information technology-based counterparts in venues such as the ACM CHI annual meetings, the Information and Communication Technologies and Development (ICTD) Conferences, and the Information Systems for Crisis Response and Management (ISCRAM) gatherings, refugee studies is a well-established field. In a 2001 review article by Black [3] published in the *International Migration Review* and titled 'Fifty Years of Refugee Studies: From Theory to Policy' the author describes a refugee scholarship dating back to the 1930s. The field has several journals dedicated to the topic, including the *Journal of Refugee Studies* from its associated International Association for the Study of Forced Migration, the *International Migration Journal*, and the *Forced Migration Review*, as well as numerous centers at universities across the globe. In recent years, extensive networks of organizations and individual scholars have emerged, such as the Refugee Research Network (<http://refugeersearch.net>)

spearheaded by the Centre for Refugee Studies at York University. A special 2011 issue of *Forced Migration Review* featured research and practice in the use of ICTs with topics ranging from satellite phone use to data sharing and to critical perspectives on use of ICTs.

Research by several scholars in cognate fields have especially informed the current work. Katz [24] has focused extensively on the role of Latino youth in negotiating interactions amongst their families and community providers upon migration to the United States, highlighting how children's unique brokering abilities are crucial to assisting short-term family needs; but she also reveals how the same responsibilities can constrain children's access to educational resources and affect their long-term goals. Working in human development, Daiute's [9] comprehensive research with 108 war-affected youth from the former Yugoslavia reveals how workshops involving youth perspectives on society, involving critical narrative and youth-designed surveys, can constructively explore themes of peer and adult conflicts, and produce hypothetical community narratives.. Sawhney [40], in computer science, created an innovative extension of the MIT Media Lab's Computer Clubhouses for Palestinian youth in the Shu'fat Refugee Camp in East Jerusalem, utilizing LEGO programming tools and multi-media to facilitate their digital storytelling. Latif's [30] interview study with Palestinian refugees in Lebanon uses narrative as a tool to understand the relationship between gender and violence, contrasting how relationships between Palestinians and Lebanese changed after the end of the Lebanese civil war in 1990. Collectively, these studies reflect assertions by Block, Riggs, and Haslam [4] of the intrinsic importance of involving displaced persons in as much of the research process as possible, providing displaced people with ownership of the process and their own data, and a voice in interpreting the data. Through such collaborative mechanisms, researchers are better positioned to understand the nature and phenomena of displacement, and make recommendations via theory, methods, policy and practice.

In information science, Fisher [x] critically reviewed research across related fields on the information worlds of refugees, as well as presenting topline insights for carrying out fieldwork and design by conflict zones. Caidi, Allard and Quirke [7] broadly reviewed research on the information practices of immigrants in the United States and Canada, characterizing the range of immigrants' information needs, methods and sources of seeking information, and the significance of interpersonal relationships, social settings, and media. They emphasize the dearth of research and the need for building systematic research programs. Building on early work by Fisher, Durrance and Hinton [18] carried out with immigrants in Queens, New York, Lloyd et al. [32]—from interviews and focus groups with refugees in Australia—emphasized the importance of service providers as professional mediators: "social inclusion becomes possible where information is provided via sharing through trusted mediators who assist with navigating the information landscape and information mapping, and through visual and social sources." Also in an Australian context, Sampson and Gifford [39] helped recently arrived refugee youth create

photo-novellas and neighborhood drawings in order to understand how they connect to new places in Melbourne that aid with their resettlement. Surveying Syrian youth about their ICT training, Yafi et al., [48] derived a framework that “generates, analyses, and tests data to determine to what extent ICT educational applications are valuable tools in fostering the development of key life-skills and qualifications that can improve employability among Syrian youth, empower them to actively contribute to their own development, and have a positive impact on the community around them.”

Focusing on immigrant and refugee youth in the United States [2, 15, Fisher, Yefimova & Bishop 2016] used collaborative design workshops to understand how young immigrants and refugees help others as information and technology mediaries. Using an approach with youth that integrates design thinking [5] and cultural probes [21], this work yields lessons about the teens’ cultures of helping and their capacity for designing tools to make it easier for them to create, find, share, curate, and remix information that is critical for coping with everyday life in a foreign setting. This approach is used in situ with local community organizations; it enables investigators to explore concepts, test ideas, and create designs with youth that meet developmental needs in safe settings, in culturally and gender appropriate ways.

The impetus for this study of the information behavior of immigrant and refugee youth in the U.S. arose from Becker, et al., [1] whose research of 50,000 public library computer users showed that while two-thirds were searching online for information and carrying out instrumental activities on behalf of someone else, regression analysis identified these information mediaries as young (ages 14-18), non-white, and non-native English speakers, suggesting ethnic minority youth are key for surfacing and understanding the information needs of their respective populations, passing on needed information to otherwise hidden users (especially non-English speaking, non-service users), and identifying the greater range of how search engines, web applications and information services can help.

Thus findings from work with immigrant and refugee youth from Nepal, Myanmar, Vietnam, East Africa (including Somalia and Eritrea), and Latin America confirm that youth play intrinsic roles in helping others through information and technology. Results indicate that youth help their parents, elders and siblings in a wide variety of situations, ranging from managing micro-businesses to health and education, recreation, navigating geography, translating, learning social norms, employment, and more. Moreover, the types of informational and technological help youth provide may differ by gender (youth help their mothers differently than their fathers, for example). In addition, youth play hidden, invisible informational service roles in institutions such as schools, acting as assistants to other immigrant students and families and teaching them the norms. The implications of these behaviors are substantial as the findings suggest changing power dynamics where youth are holding the wherewithal or expertise to navigate society, and moreover, that highly complex, adult situations are being interpreted by younger mindsets, e.g., situations involving medical care, finances, legal regulations, and more are being governed by

family minors because they possess the requisite linguistic, technological and informational skills.

A further finding from the design thinking workshop methodology, reveals youths’ “hacking” creativity to support their roles as family information gurus, ranging from using paper and ink to keeping lists and images on mobiles and texting to recording notes on their hands with markers [2, 13,49]. Yet analysis of youths’ narratives via focus groups and other data points show youth can be overwhelmed with the information burden of being their family’s information intermediary, especially when it conflicts with other teenage demands, limitations, and desires.

These findings were derived in workshops with teens at different phases of the immigration process: from newly arrived in the U.S., to several years residency, to first-generation born. Workshop experiences, youth narratives, and ICT designs also suggest that youth continue information behaviors that are established in earlier contexts. Several youth from Myanmar, for example, described how they helped others in a refugee camp and then continued a similar role in the U.S. at the weekly potluck dinner organized by their church that focused on keeping community together and integrating newcomers. In addition to serving food, the youth were expected to befriend newcomers and help them navigate the new geography and culture by providing information and help beyond the potluck (for which they designed an app).

3 CURRENT STUDY

3.1 Background

The purpose of the Za’atari research was manifold: to learn more about the youths’ refugee experiences and their use of ICTs, to get an initial glimpse of how they help their families, friends, and others with information and technology during their time in refugee camps; to provide the camp youth with an opportunity for self-expression and a creative outlet using narrative and play; and to explore the portability and scalability of our methodology to the camp setting outside the United States.

Thus, the following research questions framed the current study: 1) What are the mobile and Internet technology usage patterns of youth residing in the Za’atari camp? 2) In what situations do Za’atari youth assist others through providing information, technological or instrumental help? and 3) Can the understanding of refugee youth as ICT wayfarers be supported using a truncated design workshop that includes LEGO materials and narrative-drawings?

3.2 Field Site

In January 2015 we were among a team of investigators invited to the Za’atari Refugee Camp in Jordan by UNHCR (Jordan) to begin research collaborations around digital technology use. Goals included establishing relationships, gaining an understanding of life in the camp, testing the feasibility of various research methods, and gathering baseline and exploratory data.

In August 2014, the Office of the UNHCR had registered more than 3 million Syrian refugees in Egypt, Iraq, Jordan, Lebanon, Turkey and North Africa; in March 2018 that number had increased to 5.6 million. [44] The Za'atari Refugee Camp, populated primarily by Syrian refugees, lies a few miles from the Syrian border by Mafraq, Jordan and encompasses just over two square miles. The camp is run jointly by the UNHCR and Jordan. It has grown to be the largest Syrian refugee camp in the world and the third largest city in Jordan. [33] The current population of Za'atari is speculated to be at more than 80,000, with 45.5% aged 5-17 and 44.5% aged 18-59—with high percentage between 19-25 [45]. Za'atari's internal economic development surpassed in six months what many camps see in 20 years [46]. Most Za'atari refugees live in caravans. The camp has two commercial districts and a significant number of social services located in the 12 districts and the camp's outer ring [38].

Regarding ICT use in Syria, despite implementing strict controls, Syria's President Bashar al-Assad also opened the door to some very important reforms, including increased access to the Internet and general modernization of technology throughout the country [22]. According to International Telecommunications Union statistics, less than 2 percent of Syrians were using the Internet in 2000, but by 2010 the number jumped to over 20 percent [27]. Syrian users are adept at circumventing government restrictions; even when bans on Facebook, YouTube, and Wikipedia were in place in 2010, almost 10,000 Syrians joined Facebook every month.

4 METHODOLOGY

The research team first met at a National Science Foundation Workshop on Designing Robust Socio-technical Systems for Displaced Persons, held in Cape Town, South Africa in December 2013. The team traveling to Za'atari included seven faculty and graduate students from four American universities [names removed for review]. Staying in Mafraq, where we gathered field data with Jordanians who interacted with camp employees and gained local perspectives, we spent three days in Za'atari, and met both before and after with colleagues from the Princess Sumaya University for Technology in Amman. Each researcher had his or her own specific study agenda, though all fell into the broad category of investigating how information and communication technologies (ICT) can improve the lives of refugees and the operations of camp service providers. Our collaboration with partners in Za'atari was channeled via the Youth Task Force (YTF), a collective of all actors in the camp engaged in youth-focused activities and programs.

Data collection took several forms. Observations and reflections of Za'atari life and infrastructure were recorded as field notes and photos (as permitted per UNHCR guidelines). Formal and informal interviews were conducted with varied stakeholders, including UNHCR camp leadership, NGO staff, and Jordanian government camp administration. These complemented the daily engagement and member checking that we carried out with three translators from the camp (discussed below). Contextual data were gathered from Jordanians with whom we interacted while based in and commuting from Mafraq, as well as via analysis and peer

debriefing with our professional Jordanian colleagues at the University in Amman and a Syrian colleague at the University of Kuala Lumpur.

4.1 Youth Survey

The Za'atari Youth Internet and Mobile Phone Use Survey was a collaborative effort of the larger research team, the UNHCR and the Za'atari Youth Task Force (YTF). A detailed description of the survey methodology, including data entry and analysis, is available at [27]. In brief, the survey instrument was developed iteratively, with much vetting by multiple parties to ensure the survey represented relevant context and sensitivity to the youth's past and ongoing struggles, and for translation into Arabic. One researcher, who has extensive experience in the Middle East and has moderate Arabic fluency, reviewed the survey's many drafts. At various points, the survey was vetted by UNHCR staff, then the YTF, and camp management, as well as several universities' Institutional Review Boards. As with all studies conducted at the Za'atari camp, ours required permission from the Jordanian Ministry of the Interior. Team members were required to submit identification documents (passport copies) via email several weeks prior to the trip.

In the camp, the survey was distributed to students in informal education programs operated by members of the Youth Task Force, such as the Norwegian Refugee Council (NRC), International Rescue Committee (IRC), International Relief & Development (IRD), Relief International (RI), and Mercy Corps. These organizations' willingness to have the survey distributed to their students was crucial to the data collection effort. Also crucial were three refugee translators hired by the team to help explain directions and answer questions during data collection, and then subsequently translate the survey's written responses. The hiring of the translators was organized by UNHCR. All three hold bachelor's degrees in English literature from universities in Syria and were English teachers in Syria. In the camp they work for various organizations as English teachers in informal education programs.

To achieve greater representation among youth, the survey was distributed to passersby on the camp's commercial streets. When possible, the survey distribution location was recorded to differentiate classroom versus street-based subjects. The survey was conducted on January 5th and 6th, 2015. Due to a snowstorm in the camp, further data collection did not occur on Wednesday; instead, the team worked with the translators to translate text on surveys and the design workshop narrative-drawings.

The multiple-choice survey comprised five topics: demographics, past and current ICT use, network and device use details, interests, and the role of teens. The demographics portion consisted of questions assessing age, gender, and home governorate. The latter were collected for differences in past and current use based on region. Questionnaire items also assessed whether or not and how frequently youth accessed the Internet. Given the confusion over the very popular Facebook and YouTube services, on one hand, and the internet more generally (e.g., saying 'no' to internet use, but 'yes' to Facebook use), we asked about the use of both.

4.2 Design Workshops

Like the survey, the design workshops followed UNHCR's social definition of youth as extending from age 15 to age 25. We carried out three storytelling sessions in which youth created pictures and wrote narratives to relate their experiences helping others with information and technology. This approach comprised a truncated version of one of the cultural probe exercises from our previous workshops in the U.S.: collecting teens' stories of their ICT wayfaring experience in the form of a picture with brief accompanying text. However, we used another cultural probe, LEGO Mini Figures and blocks, in tandem with the drawings, to stimulate memories of ICT wayfaring in both Syria and Za'atari, thus utilizing a form of play and inspiring creativity in an engaging way. As with the survey, the workshop instruments were translated into Arabic. At the Norwegian Refugee Council center we held one workshop with 19 young women in a sewing class and one session with 13 young men in a barbering class; at the American School we held one session with 16 young women (See Figure 1). The sessions were 60-90 minutes. The teachers were briefed on our study and served as facilitators—in addition to the Syrian translator we employed from the camp, NGO staff, and ourselves—to explain the activities to the youth. Session materials included color and glitter pens for drawing and writing stories, 11"x17" cardboard stock with the activity instructions written in Syrian Arabic (explained below), and LEGO Mini Figures/blocks. Younger kids were given LEGO DUPLO and materials for fun. All creative and LEGO materials were left with the participants and NGOs.

Figure 1: Storytelling session with girls in Za'atari

An important feature of our workshop methodology is its adherence to the developmental needs of youth participants, including physical activity, structure and clear limits, and creative expression [10]. We strive to insure that teens collaborate in a study process that they find enjoyable, meaningful, satisfying, and safe.

Our concerns were heightened in working with refugee youth subjected to loss and the hardships of violence and migration to another country, doing their best to survive, and help others survive, in the fragile and sometimes dangerous environment of the camp. Thus, we followed basic precepts from child development [26] and psychology on the therapeutic nature of play, narrative, and storytelling among youth who have experienced trauma. [4, 8, 9, 22, 24, 40]

The specific instructions for the storytelling sessions were as follows: "Everyday people create, find, and share information with other people. Young people are known for being especially good at helping other people with information through talking, searching the Internet, looking things up, passing information on, and acting as translators and teachers. Can you think of a recent time when you helped someone in one of these ways? Draw a picture of who you helped, what it was about, and how you helped them." This guidance was reiterated by the facilitators giving examples of how they help their parents and asking the teens to voice their own examples, to ensure the teens' understanding of the exercise. Topics in that preliminary discussion ranged from helping family access shows of the recent Syrian winner of "Arab Idol" and Turkish soap operas to locating relatives by using ICTs.

4.3 Survey Findings

The survey was conducted with a non-representative sample of 174 youth, as data collection primarily occurred in community centers (139 cases) and thus the outcomes are slightly biased toward that group. Based on comparisons with a sub-sample of youth from outside the centers, the center subjects are significantly more educated and more likely to be female. However, no significant differences were found in average age, English language ability, and Internet use in Jordan or Syria.

Respondents' average age was 20.6, reflected a fairly even gender balance, and the average level of education is 'some secondary school' although about 40% have some or completed university. The majority of self-reported English language reading skills are either good or fair.

Regarding mobiles, 86% own mobile handsets and 83% own SIM cards, with the average number being 1.4. Even with reasonably high levels of ownership, and some having multiple SIMS, 79% also borrow them from friends and family. Unsurprisingly mobile phones were the most popular medium for accessing the Internet in Syria and even more so in Za'atari. Of mobile carriers, youth overwhelmingly choose Zain—with those areas in the camp with the best carrier signal (Districts 4 and 1) cited most commonly as Internet access sites for calling Syria.

To understand the ICT skills and experience refugees bring to the camp, we asked about prior use. In Syria, Internet use was primarily

a home-based activity with the second most popular being at an Internet café. WhatsApp was most frequently used to communicate with people in both Jordan and Syria; however, mobile voice was used more frequently for communicating within Jordan. Apart from mobile voice, there is little difference in use among a variety of services when communicating with those in Jordan versus Syria.

We also wanted to understand whether Internet, social media and online video use in the camp changed from previous use in Syria. While online video is much less popular than Internet or social media, the use of all three has increased since moving to the camp. In fact, social media use nearly doubled in intensity.

Given the potential interest in expanding Internet-based services to refugees, it is important to know what they do online currently and what they would like to do if high quality, low cost services were available. When asked about favorite online information sources, respondents offered a wide variety, but six were cited most frequently: Google, Facebook, YouTube, Skype, TV, and Wikipedia, with Google being significantly more popular. Without resource constraints, the youth indicated they would like more access to Instant Messaging/WhatsApp, news sources and the opportunity to communicate with people via social media.

Regarding ICT wayfaring and helping others, for many youth around the globe, including teens who informed the current research, the skills to access online content and use social media were often honed from interpersonal engagement with friends and family. In terms of providing assistance with ICTs, the Za'atari youth indicated they frequently help immediate family and friends. While less common, youth also reported helping camp staff and visitors, as well as others both inside and outside the camp. Respondents reported receiving and offering help about equally. The nature of help was also evenly distributed among the most commonly noted uses: online education, information search (e.g., health, legal), news, employment, and mapping. The top services for receiving help were online education, WhatsApp and news.

4.4 Workshop Findings

4.4.1 LEGO as Creative Play and Design Tools

Three workshops were held with 48 youth, who completed visual narratives to depict a recent time which they helped someone using information or technology. In addition to the 11"x17" story boards with lines for writing narrative, the youth were given LEGO Mini Figure pieces and materials to promote their creativity and designs. The youth incorporated the LEGO in several ways (See Figure 2). Often working socially, the youth built Mini Figures, and held them or placed them in front of their paper while drawing.

Others used LEGO to create 3-D scenes, sometimes as gauges to carefully measure or scale scenes, which they drew a picture of and described with narrative (See Figure 3). A few integrated LEGO figures and blocks in their drawings, creating a composite piece with pictures, words, and LEGO. Field notes show the LEGO was as popular and used as

much with all three groups, and also served as successful ice-breakers with all groups, setting a warm tone in the rooms.

Figure 2: Young women in sewing class creating narratives

Figure 3: Young men in barbering class creating 3-D narrative

4.4.2 Sense-Making and the Fourth Geneva Convention

The young people's 50 drawings (two youth drew two narratives/pictures) are amenable to analysis from four perspectives—(1) place, (2) people, (3) type of assistance or support (informational, technological, instrumental, emotional), and (4) topic—with key observations integrated. The main finding, however, was reached via an unexpected thread across the data. We introduce the theme early, rather than in the Discussion, as it provides better context for interpreting the youth's drawings together with the survey data, and understanding our mixed method approach.

What was this anomaly? Given the survey findings that community center youth are strong users of mobiles, social media, and online

sources such as Google, Facebook, YouTube, Skype, TV and Wikipedia; and reported being frequent providers of ICT help to family, friends and others, one would expect to see a high articulation of ICTs in their drawings. However, this was not the case. Out of 50 drawings, only one explicitly involved an ICT while only six involved explicit information exchange. Moreover, the majority of drawings were set in Syria where the survey youth reported less ICT use than in the camp.

The depicted narratives and drawings remain information-intense but of a different scope. Peer debriefing with colleagues who speak Syrian Arabic, experts in cognate areas, as well as continued engagement with the research field led to two perspectives for understanding the young people's narratives: Brenda Dervin's Sense-Making framework, and the 1940 Fourth Geneva Convention [26]. Dervin's Sense-Making framework [11, 35] provides a strong rationale for the absence of ICTs in the youth's stories and provides guidance for the next stage of design work. Developed in communications and library and information science for contextually understanding how people experience information as part of everyday life, Dervin focuses on the situations—in which people experience gaps and use (i.e., how the information helps)—in which information seeking is embedded. Our analysis of the drawings suggests youth were depicting situations (in Dervin's terms), or the initial raw contexts, in which they instrumentally assisted others and were emotionally connected. According to Sense-Making, the Za'atari youth are astute at identifying the gaps or needs that people experience, and are adept at recognizing barriers to resolving needs, as well as ways of helping. In many indelible ways, the drawings can be explained using Dervin's classic situation-gap-use model of help seeking that has been used for decades in the social, health and computer sciences.

If Dervin's Sense-Making theory points to an accounting for the youth's base helping behavior and lack of ICT inclusion, then the precepts of the Fourth Geneva Convention sheds light on the nuanced range of help provided. As listed in the outset, the fourth Convention focuses on aiding children, women, the elderly, and people who are vulnerable, sick and wounded, and enabling family communications, connecting people, and protecting people's dignity and religious beliefs. These are all themes running through the help-giving situations depicted in the posters, as described in the next section. The youths' focus on immediate dangers and needs provides empirical data that meshes with the principles articulated in the Geneva Convention. These situations of help-giving may have the strongest pull on refugee youth's minds, and thus are emphasized in the drawings.

4.4.3 Place, People, Type of Help, and Topic

Returning to the drawings, all were richly depicted, making it difficult to choose a sampling for illustration. Those we include here were selected to drive discussion about the situations that prompt youth to help others in times of crisis and displacement, and how future field and design work might support youth help-giving.

Regarding place, 29 drawings were situated in Syria (usually identifiable by the presence of vehicles, roads, buildings, and

themes of fighting/destruction) (See Figure 4), seven in Za'atari (represented by camp images of caravans and NGO buildings), while 12 drawings were coded as imaginary, meaning the place was not readily or even plausibly identifiable, showing for example, animals or lakes.

Figure 4: A teen boy's poster portraying the war in Syria

The people identified as receiving aid primarily include mothers and siblings, people with disabilities (particularly people who are blind or use a cane/wheelchair), orphans, and widows; as well the general populace in situations involving fighting. Animals also were identified as recipients of help (See figure 5). Beyond earlier discussion, these actors make sense given contextual data of male family members being separated due to war and migration, as well as the maiming of people, lack of medical care, and poor infrastructure.

Figure 5: Helping boy cross the street in Syria; Rescuing a baby bird.

In essence, the Za'atari youth, similar to the immigrant and refugee youth we've worked with in longer workshop settings in the U.S., are depicting their ability to see and empathize with gaps and vulnerabilities that prompt ways of helping in society. An additional note about the depiction of people pertains to their appearance. In several instances, youth created westernized figures: women with short dresses—without hijab (head coverings) or Abaya (robes), and children with blond hair—neither of the field researchers were fair-haired (one was Arab) or dressed out of context.

Regarding forms of help-giving, the data were examined for four types of support: informational, technological, instrumental and emotional. Only six narratives comprised help of an informational nature (showing a friend how to bake a cake for her mother, telling a neighbor child not to play with matches for fear of burning down the camp, helping a younger sibling with homework (See Figure 6), helping a young sister learn the alphabet (See Figure 7), and alerting others to a fire). All of these examples were shared by young women, which reflect a relationship between gender and informational nature of help-giving that can be studied more deeply in future research.

Figure 6: An American School girl's poster depicts helping her sister learn mathematics

Only one narrative explicitly depicted ICT help, in the form of a young female teen helping her mother learn to use a mobile phone (See Figure 7). This image is of particular interest for several reasons, including its inclusion of two helping narratives, its westernization of the female characters (knee-length skirts, no head coverings, the help-giver having blond hair) and a drawing of a mobile phone.

Figure 7: A teen girl shows helping her mother and sister with information and technology with complex symbolism

Corresponding with the basic situation of danger or need described above, the third category of helping-giving based on instrumentality or physical help was the largest with 37 narrative examples. These narratives were classified into six sub-groups: 1) helping others during crisis in Syria such as bombings/fighting (See Figure 8) ; 2) helping others cross the street in Syria—including

people who are disabled; 3) helping others during crisis in the Za'atari camp such as with a tent fire (See Figure 12) ; 4) helping others by providing food and money, especially if ill, injured, dying or less fortunate (See Figure 10); 5) helping a family member, in general, such as with housework (See Figure 11); and 6) helping others—including by baking cakes (See Figure 9), carrying water containers (a precious camp/desert commodity), delivering a baby, looking after/rescuing an animal, and by assisting in life in the camp, generally.

Figure 8: Helping victims of a mosque bombing in Syria

Figure 9: Helping an orphan by baking a cake

Figure 10: A mother depicting her hard work for sustaining her injured husband and children

Figure 11: Helping my mother with housework

The fourth dimension of help-giving focused on the emotional help-giving. These drawings and narratives suggested strong feelings of altruism and general willingness to help others, both people that the youth know and those to whom the youth feel an affinity, including animals. This shows a high degree of unselfishness and social responsibility, which are critical for refugees and communities at time of resettlement or returning home. Drawings of helping people who are disabled by blindness or mobility and less able to cross streets ridden with craters safely were a strong theme, baking “birthday” cakes for orphans, helping family with everyday tasks (Figure 11), helping put out a fire (Figure 12) and helping widows and “single” women with their everyday needs such as carrying water (Figure 13) and negotiating gendered/male spaces suggests strong altruistic behaviors and empathy.

Figure 12: Fire in the Za'atari Camp – Burning Caravan

Figure 13: Helping others by carrying water in Zaa'atari

In addition to the perspectives highlighted in this section, many young people also included adorations to Allah in Arabic and notes from the Quran (See figure 14) in addition to gratitude to the UNHCR and NGOs in their drawings.

Figure 14: Helping a disabled person to cross the street with notes from Quran in Arabic

5 DISCUSSION

Increasingly, the lives of refugees are affected by the use ICTs [47]. Refugees are more frequently arriving in camps with mobiles and with computing and Internet skills. Mobiles provide an important lifeline of information and communication with loved ones, whether they stayed behind or settled in a different destination. For refugee service providers, mobiles and other ICTs are quickly becoming vital tools. In many cases, UNHCR or other service providers have come to rely on refugee mobiles as a means of communication and information provision.

This exploratory research yielded both confirming and new data related to refugee youth as ICT wayfarers. The survey demonstrated that youth in Za'atari commonly serve as ICT wayfarers, continuing and expanding their use of ICTs according to the situations they encounter in the camp, where, for example, Internet access was both cheaper and less restricted than in Syria. Survey responses also indicated youth provide others with ICT assistance in circumstances ranging from online education to news to using social media and finding health information.

Regarding access, based on the survey findings and an infrastructure assessment, we suggest the following. First, among the youth population as represented by our survey, there is high level of Internet activity and interest in a wide variety of online activities. However, continued access via mobiles may limit the benefits and skills developed over time. Using Internet-based services to solve strategic challenges such as access to higher education is possible, at least in terms of interest and ability. Enhanced access should be pursued through a combination of actions targeting improved cellular network services by mobile carriers, complemented with a camp-based wide area network. The latter may help offload traffic from the mobile network, enable more efficient communications among service providers, and provide a mechanism for serving centrally stored content such as educational and training materials. It can also greatly facilitate co-design of applications and services with youth and other camp.

Design research with teens—albeit a growing field—is still in its infancy [17, 35]. This exploratory work took a first step in extending our previous research with immigrant youth in the U.S. to youth in a refugee camp. The understanding of refugee youth as ICT wayfarers, using the truncated workshop format with narrative storytelling and LEGO, was bound by constraints of time, language, and culture. The youth largely found the hands-on activities enjoyable, engaging with focus and energy as well as making repeated efforts to present their finished work to the researchers and asking for the activity to last longer that day or to continue the next. Participants' positive interest in the workshop was gauged from their repeated gestures of giving their completed drawings to the investigator and ensuring that their narrative was understood by the investigator, whether it was a deeply emotional story of a caravan burning down and young lives being lost because water was unavailable to put out the fire, or a happy story about a cat being saved (see Figures 15). Debriefings with NGO staff and our interpreters confirmed that the narrative workshops were an emotional outlet for youth; for some it was more than fun, or a way to spend time, it was cathartic—at least for an hour as participants share their stories from Syria and Za'atari.

A few youth did not fully participate and drew instead pictures of a fish, a tree, or stars. We speculate their level of trauma, tiredness, or illiteracy played a role. Lack of Arabic literacy was evident in a few cases, though care was taken to assist youth with recording their narratives, where needed. Also observed was the young people's longing to return to a safe, peaceful homeland—this was evident in phrases on the drawings along with praise to Allah, and notes of gratitude to the UNHCR and NGOs.

Figure 15: Saving a cat and saying Thank you to the UNHRC

The two- and three-dimensional narratives created by youth provided rich insights about the contexts of helping. Although we were initially surprised that few stories introduced ICTs as part of the helping experience, deeper analysis suggests that Dervin's Sense-Making framework may provide a rationale for the absence of ICTs, meaning the youth are focused on the situations in which help-seeking and ICT needs emerge, on the initial raw contexts in which they assisted others. Subsequent fieldwork [16, 14,49] drew from these situations to encompass next stage design activities, focused on distilling and creating services and ICT prototypes that

would support behaviors reported by youth, such as helping people navigate dangerous streets, protect against fires in the camp, get water, feel emotionally safer, get medical care, plan future travel, communicate and connect with family, keep track of educational and health records, obtain online education, and much more.

5 CONCLUSION

UNICEF [2017] reported on the increased technology use and digital literacy by youth worldwide. As an extension of our work with immigrant and refugee youth in the U.S., the Za'atari 2015 pilot study suggests that the instinct to help others through ICT wayfaring is universal and that youth play powerful roles, including in times of crisis and displacement. The Syrian youth shared contextual stories of how they help people in vulnerable situations—with disabilities, orphaned, without food and water, in mourning, and in poverty—by providing instrumental, informational, emotional, and technological assistance that intrinsically reflect the mandate of the Fourth Geneva Convention and cross-cuttingly support the UN Sustainable Development Goals. The Za'atari storytelling sessions with LEGO and drawing aids proved to be a powerful and enjoyable creative tool for equally engaging both genders, despite constraints of language, culture, time, etc. We conclude that the workshop methodology for studying and designing around the information and technology helping behavior of migrating youth is portable to the refugee camp environment. It can be successful with a scaled down design kit that includes only drawing and LEGO supplies, rather than a full complex of art and craft supplies. Scaling back to a single storytelling session of 60-90 minutes supplemented by other fieldwork, however, does not yield complete results. Our ongoing longitudinal work [Fisher, Yefimova, Yafi 2016] at Za'atari Camp builds on the 2015 pilot by engaging the youth over longer periods, for deeper, prolonged fieldwork that moves from eliciting stories to crafting low-tech ICT prototypes that support their helping behaviors as wayfarers and complement services and technologies available in the camp per the mobile and infrastructure findings of the survey and support futuristic design. This current effort includes deeper sharing of the findings with participants via group presentations, and in-person debriefings with UN Agencies, NGOs and camp newspaper staff; and engagement with understanding the daily dynamics of camp life, the varied actors, past and current events, and deployment of ICT prototypes that lead to tangible impact on the lives of refugees.

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