The Role of Digital Skills in Refugee Integration:
A State-of-the-Art Review

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Abstract

Two concurrent 21st-century phenomena—the nearly unprecedented number of forced migrants and the near-ubiquity of information and communications technology—have given rise to increased scholarship in "digital migration studies." One area of investigation in this emergent interdisciplinary field is the role of digital skills in refugee integration. Given the accelerated global reliance on technology resulting from the COVID-19 pandemic, the author conducted a state-of-the-art literature review to identify emerging issues and highlight research needs in this area. A search of 10 databases yielded 39 studies spanning the major resettlement regions (North America, Western Europe, Oceania) and including refugees from across the globe. The inclusion criteria were studies focused on refugees' practical use of digital technology in integration, published from January 2020-April 2021. Exclusion criteria were studies on refugees in transit or protracted displacement, digital connectivity and accessibility, use of digital technology by humanitarian actors, software development, analyses of digital representations of refugees, public attitudes toward refugees as expressed in digital media, and literature reviews. Ndofor-Tah et al.'s (2019) Refugee Integration Framework was used to organize and synthesize the findings. The studies demonstrated how digital skills affect all domains of integration. Additionally, the studies confirm that many refugees in resettlement have limited digital skills for necessary integration tasks, such as navigating websites and assessing the credibility of online information. Limitations of this state-of-the-art review include its cross-sectional nature, having only one reviewer, and only published literature accessible online through public websites or subscription databases. An important emerging issue for future research is assessing, teaching, and learning digital skills among this population. The study's contributions to the knowledge base and theory, and its implications for information science scholars and practitioners and those in allied disciplines within digital migration studies, are discussed.

Keywords: digital proficiency; digital skills; integration; literature review; refugee; resettlement

Publication Type: literature review

Introduction

The past decade, 2010-2020, has witnessed an increasing body of scholarship on the convergence of two early 21st century phenomena: the nearly unprecedented number of refugees worldwide and the near-ubiquity of information and communications technology (ICT). This growth in scholarship showed a notable spike after 2015 (Figure 1), a year when over one million refugees, primarily from Syria, Afghanistan, and Iraq, sought asylum in Europe (United Nations High Commissioner for Refugees, 2015). Research on refugees' ways of engaging

with ICTs has ultimately given rise to the new interdisciplinary field of "digital migration studies" (Leurs & Smets, 2018). Over time, digital migration studies have undergone a paradigm shift. Early studies were based on a techno-optimist lens that views technology as the solution to the numerous challenges faced by refugees (Kaurin, 2020). In this perspective, technology reunites families, enhances access to information and services, and promotes equality (Bouffet, 2020; Kaurin, 2020). However, this techno-optimist lens fails to account for the multi-faceted social, economic, and cultural influences that mediate technology use (Kaurin, 2020). It soon became evident that technology replicated, if not amplified, existing social inequities (Bouffet, 2020; Kaurin, 2020). Consequently, digital migration studies typically adopt a techno-realist critical paradigm, which considers the social networks, structures, positionalities, and intersectionalities that influence the development and use of technology (Kaurin, 2020). This paradigm critiques top-down and supply-driven digital initiatives instead of needs-driven projects developed in partnership with end-users (Kaurin, 2020). Further, this paradigm recognizes both the benefits and risks of refugees' technology use (Maitland, 2020).
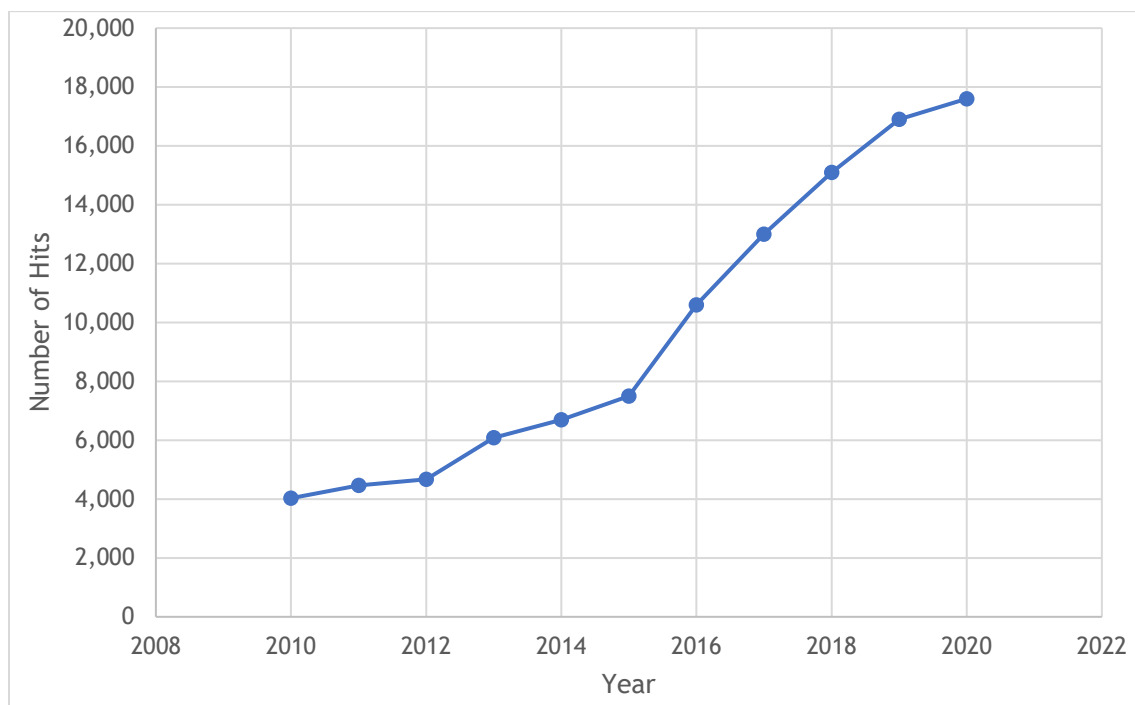

Figure 1. Google Scholar hits for "Refugee AND (Digital OR ICT)" by Year, 2010-2020; source: Author's search, May 26, 2021.

Information science plays a vital role in the digital migration studies field. Lloyd (2020) asserts:

> When viewed from [an information] perspective, forced migration and resettlement can be problematized against concepts of information landscapes, literacies, information resilience, and affordances, with practice and social capital theories providing explanatory frameworks. Forced migration creates complex social, cultural, and political information problems for people by fracturing established information landscapes created and anchored in previous lives and reflected in lived experiences of social

networks. Knowing what is needed, where and when it is needed, how to acquire and access information, and what or whom to trust for information is predicated upon understanding what information is essential within a cultural context and then reconciling that knowledge with an internal understanding of what constitutes information and knowledge. (p. 12)

One area of investigation in this emergent field is the role of information behavior in refugee integration (Oduntan & Ruthven, 2020). Integration refers to the mutual adaptation between refugees and their host societies in their countries of resettlement. Ager and Strang (2008) pioneered a now-classic refugee integration framework, which was recently updated (Ndofor-Tah et al., 2019). This framework defines the goal of integration as "communities where people, whatever their background, live, work, learn and socialise together, based on shared rights, responsibilities and opportunities" (p. 2) and identifies key domains that evidence suggests are central to achieving this aim.

A significant revision in the updated framework was the addition of "digital skills" as a domain of refugee integration. The concept of *digital skills* or *digital literacy* (used interchangeably here) refers to one's cognitive and technical abilities to use information and communication technology to locate, appraise, produce, and communicate information (American Library Association, 2021). Digital skills were added to the refugee integration framework in recognition that access to people, services, and rights often depends on, or is facilitated by, technology (Ndofor-Tah et al., 2019). The COVID-19 pandemic, which struck only months later, has accelerated the global reliance on technology to meet essential human needs. Inevitably, the gap between the digital haves and have-nots has exacerbated pre-existing inequities in all spheres of life.

Although many resettled refugees are tech-savvy, many others have low levels of digital literacy and socio-economic, linguistic, and cultural barriers that can hinder their use of technology (Alencar, 2020). Additionally, while many refugees use smartphones, these devices are insufficient to fully develop digital skills (Cherewka, 2020). People whose sole digital connection is a smartphone are likely to have fragmented digital knowledge. For example, they may connect with family members abroad using a mobile app but may not know how to complete and submit a job application on a desktop computer. Such fragmented knowledge may allow people to perform some digital tasks needed for everyday life but may restrict them from developing broader and deeper digital problem-solving skills (Cherewka, 2020). Conversely, people who cannot use smartphones are increasingly disadvantaged, as many daily life skill functions require mobile technology.

Survey data further demonstrate the refugee digital divide. Although data specifically on resettled refugees are not available, a survey of digital skills across the technology-rich Organisation for Economic Co-operation and Development (OECD)[1] countries where refugees resettle found that 13% of foreign-born, foreign language adults had no computer experience, compared to 8% of native-born, native language adults (OECD, 2015). Further, only 17% of the former group was highly proficient in digital problem-solving (e.g., coordinating the use of multiple apps, evaluating web search results, troubleshooting) compared to approximately one-third of the latter group (OECD, 2015). In a survey of the training needs of nearly 200 refugee service providers throughout the U.S., information about digital access and literacy was the most requested training topic, with 57% of respondents, together with 58% of respondents requesting mental health training (Switchboard, 2021).

Background: Digital Skills in Refugee Integration

The refugee integration framework provides a conceptual basis for unifying, organizing, and understanding the positive and negative ways digital skills affect multiple aspects of refugees' lives in resettlement (Alencar, 2018; Eskola et al., 2020). The framework consists of four levels, each entailing a set of domains (Figure 2). The refugee integration framework provides a conceptual basis for unifying, organizing, and understanding the positive and negative ways digital skills affect multiple aspects of refugees' lives in resettlement (Alencar, 2018; Eskola et al., 2020). The framework consists of four levels, each entailing a set of domains (Figure 2).
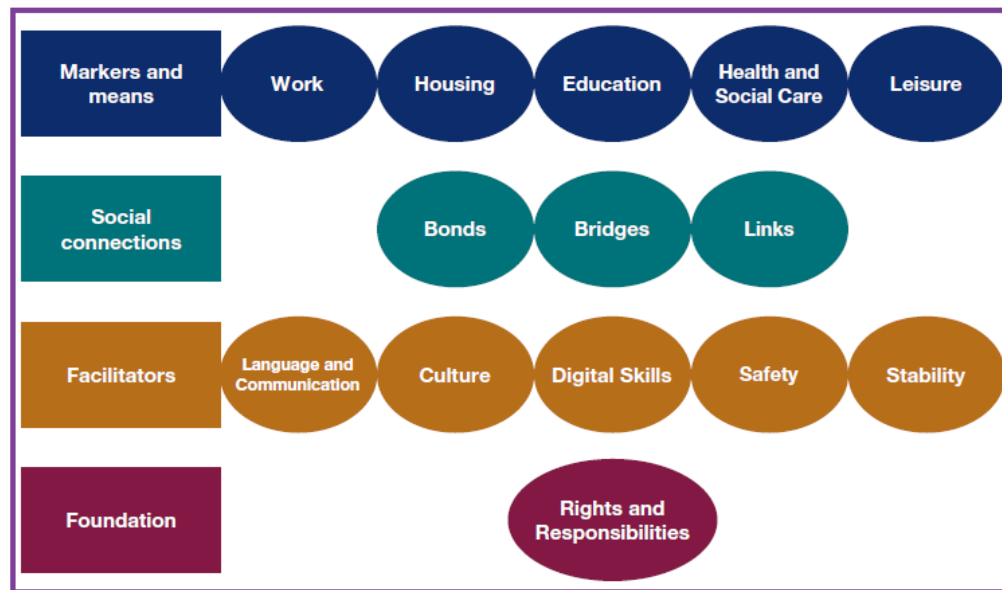

Figure 2. Refugee integration framework; source: Ndofor-Tah et al. (2019). Contains public sector information licensed under the Open Government Licence v3.0.

The ground level is the foundation, which entails one domain: rights and responsibilities. This foundation represents the social contract between refugees and their host societies, constituting mutual expectations and obligations of integration. At this level, technology is valuable as a source of information about rights and responsibilities in the host society and a means of promoting the right to freedom of expression (Alencar, 2020; Bouffet, 2020; Eskola, 2020; Orrnert, 2020). However, there are rights-based concerns related to refugees' agency in producing and consuming digital content. Potential rights violations include property and privacy concerns. These include a lack of ownership of one's digital representation or a lack of control over the dissemination of private information (Bouffet, 2020; Maitland, 2020). A related concern is the potential exploitation of refugees' data by for-profit and humanitarian actors (Bouffet, 2020; Maitland, 2020). For example, technology providers monetize their users' data, while non-governmental organizations (NGOs) do likewise in fundraising appeals (e.g., using refugees' images and narratives). Refugees' freely given consent in these situations may be questionable

given their dependence on these services. Compounding this ethical dilemma is the fact that these two sectors often work in partnership. Technical and cognitive limitations among some refugee subgroups, such as older adults and those with disabilities, are additional rights concerns (Maitland, 2020).

The next level of the integration framework is facilitators, consisting of language & communication, culture, digital skills, safety, and stability. These domains represent key factors that aid the process of integration. Digital skills affect all the other domains at this level. In language & communication, refugees benefit from online language learning tools, translation apps, and the capability to communicate digitally (Culbertson et al., 2019; Patil, 2019; Maitland, 2020; Taftaf & Williams, 2020; Türkay, 2020). In the culture domain, refugees use online communities, online content in their native language, and digital storytelling to develop and maintain connections to their native and host cultures (Orrnert, 2020; Patil, 2019). Some use technology to access religious content and faith-based assistance (Culbertson et al., 2019).

Culture is preserved and evolves through memory and identity, and refugees use technology for this purpose. Examples include storing images on smartphones or using social media to help establish a new, bicultural identity (Culbertson et al., 2019). Refugees, especially youth, have used digital media production, such as digital storytelling, to express their identity and assert ownership of their narratives (Alencar, 2020; Maitland, 2020; Michalovich, 2021; Pottie et al., 2020; Türkay, 2020). In the domain of safety, mobile phones can be a crucial lifeline for accessing needed resources; on the other hand, concerns have been raised about refugees' cybersecurity and personal safety connected to technology use, as well as misinformation and disinformation disseminated digitally (Alencar, 2018; Bouffet, 2020; Culbertson et al., 2019; Eskola et al., 2020; Maitland, 2020; Patil, 2019). The final facilitator is stability, which refers to predictability in one's work, education, living circumstances, and access to services. Digital skills affect obtaining information and communicating with employers, schools, landlords, and service providers.

The third level of the refugee integration framework is social connections, encompassing three domains: social bonds, social bridges, and social links. Social bonds are connections with others with a shared sense of identity, such as family and close friends; they are a source of social support. Refugees use mobile phones and social media to maintain and develop transnational social bonds for emotional and psychological support (Alencar, 2020; Culbertson et al., 2019; Orrnert, 2020; Patil, 2019; Pottie et al., 2020). However, these relationships also require emotional labor due to traumatizing stories or unrealistic expectations from family members remaining in the country of origin (Alencar, 2020). Social bridges are connections with people of different backgrounds. These ties are weaker than social bonds, but they are critical sources of resources and opportunities. In this domain, refugees use digital media to exchange information about the host community's cultural, social, health, and economic aspects (Maitland, 2020; Pottie et al., 2020). On the negative side, refugees have reported resorting to mobile technology instead of interacting in-person with host culture members due to negative experiences. Hence, refugees may view their digital connections as a hindrance to forming real-life relationships with host culture members (Alencar, 2020; Bouffet, 2020). Social links are connections with institutions, including government services. These links are necessary to access rights or services and to fulfill obligations. Developers have created thousands of apps for refugees to facilitate social links (Alencar, 2018; Kaurin, 2020; Maitland, 2020; Patil, 2019), although refugees most typically use mainstream apps to link to resettlement resources (Alencar, 2020).

The final level in the integration framework, markers and means, contains five domains: work, housing, education, health and social care, and leisure. These domains are "markers" because they are outcome indicators of integration; they also serve as "means" because success in these domains assists the broader integration goal. Refugees use digital technology for employment-seeking and entrepreneurship (Culbertson et al., 2019; Patil, 2019). They use various technologies to find housing, including social media and housing-matching services (Culbertson et al., 2019), an increasingly critical function against the backdrop of affordable housing shortages in resettlement areas. In education, refugees benefit from technology-enabled remote learning and game-based learning apps for both adults and children in formal and informal educational settings (Alencar, 2020; Culbertson et al., 2019; Maitland, 2019; Patil, 2019; Taftaf & Williams, 2020). In health and social care, refugees use technology to seek healthcare or find health-related information (Culbertson et al., 2019; Maitland, 2020; Patil, 2019; Pottie et al., 2020). Digital mental health apps improve refugees' mental health symptoms, and refugees perceive these apps positively (Liem, 2021). Digital storytelling shows some evidence of effectiveness as a mental health therapeutic technique (Maitland, 2020). Finally, leisure represents a significant technology element for all users, including refugees (Maitland, 2020; Türkay, 2020).

Purpose of the Study

Given the rapid developments in technology and its use, which were already accelerating and further propelled by the pandemic, the author conducted a state-of-the-art literature review in digital migration studies of refugee integration. A state-of-the-art review is one of 14 types of empirically identified literature reviews (Grant & Booth, 2009). This type of review has the following features: it addresses current matters; it may offer new perspectives on issues or identify areas for further research; it aims for comprehensive searching of current literature; it does not include formal quality appraisal; it is typically narrative; and it analyzes the state of knowledge and priorities for future research (Grant & Booth, 2009). Accordingly, this review aimed to identify emerging issues and highlight research needs in digital migration studies.

Methods

A state-of-the-art review utilizes comprehensive searching and narrative synthesis of current literature (Grant & Booth, 2009). Accordingly, the author searched the following databases: Google Scholar, LISA, LISTA, PubMed, ERIC, PsycInfo, Social Service Abstracts, Sociological Abstracts, Web of Science, and Scopus, using the Boolean string "refugee AND (digital OR ICT)" with publication date parameters of January 2020-April 2021. The search included studies focused on refugees' practical use of digital technology in integration. Exclusion criteria included studies on the following topics: refugees in transit or protracted displacement, digital connectivity and accessibility, use of digital technology by humanitarian actors, software development, analyses of digital representations of refugees, and public attitudes toward refugees as expressed in digital media. Also excluded were literature reviews, in line with the current rather than the retrospective focus of the state-of-the-art review; however, the author incorporated these literature reviews into the preceding background section of this study. The author conducted the search and screen. The author then used deductive content analysis (Kyngäs & Kaakinen, 2020) to classify each included study into its corresponding integration domain. Finally, the author narratively synthesized the findings within each domain.

Results

Out of 353 studies initially retrieved and screened (abstract or full text), 39 met the inclusion criteria after removing duplicates and excluding ineligible studies. Table 1 shows the breakdown of the included studies by integration level and domain of the refugee integration framework described above (Ndofor-Tah et al., 2019). Subsequently, the identified studies within each level and domain are discussed.

Table 1. Studies on digital skills in refugee integration, January 2020-April 2021 (N=39)

Integration Level	Integration Domain	Number of Studies
Foundation	Rights and responsibilities	4
Facilitators	Language & communication	7
	Culture	7
	Digital skills	5
	Safety	4
	Stability	2
Social Connections	Bonds	4
	Bridges	8
	Links	2
Markers and Means	Work	2
	Housing	2
	Education	7
	Health and social care	12
	Leisure	4

Note. Some studies are included in multiple domains.

Foundation

Rights and Responsibilities

The recent literature on rights and responsibilities aligns with the contemporary critical techno-realist paradigm, examining the socio-political-economic contexts in which refugees use technology and identifying the benefits and risks. Cotton (2021) argues that the perspective of refugees is systematically overlooked in the development of digital apps to assist integration. This exclusion perpetuates a one-way view of integration that holds refugees solely responsible

for their integration experience and suppresses their ambitions for integration in favor of those of the host society. Cotton advocates the discontinuation of refugee-specific apps and the promotion of mainstream apps already used by refugees to reduce refugee marginalization and build on existing trust networks. Alonso et al.'s (2020) findings in Sweden support this position, showing that although nearly 60% of newly-arrived refugees use the Internet to find information about their rights, only 8% use refugee-specific apps for this purpose due to lack of confidence and trust.

In contrast, beginning from the same premise of refugee exclusion, Bock et al. (2020) reach a different conclusion, arguing that refugee integration apps have value. However, future development must involve a diverse sample of end-users (disaggregated by gender, age, language, and geographic origin) from the initial stage throughout subsequent phases, leaving capacity for modifications once cultural attributes are better understood (Bock et al., 2020). Finally, Awad and Tossell's (2021) exploratory study of Syrian refugees in the Netherlands highlights how refugees' technology use is perceived simultaneously as a valuable tool and a burden imposed by the host society and family members abroad. Like Cotton, these authors call for a nuanced perspective on refugees' digital skills to avoid perpetuating the marginalization of refugees.

Facilitators

Language & Communication and Culture

Within the current literature on refugees' digital skills, the language and communication and culture domains are closely tied. The recent studies in these domains have reaffirmed the crucial role of technology in communication with both the home and host cultures and further explored themes of cultural and linguistic identity, cultural maintenance, and community rebuilding. Based on studies of diverse refugee groups in Australia and Sweden, Lloyd (2020) examined the role of technologies as information and communications resources. Consistent with the techno-realist perspective, Lloyd identified both enabling and constraining technology functions. Enabling functions included establishing new social networks that serve as information sources, confirming the veracity of information from multiple sources, and connecting with family through discussion of everyday activities and events, thereby creating transnational shared lives. Constraints included potentially inhibiting integration by creating virtual refugee communities disconnected from the broader host society. Additional constraints were fear of electronic surveillance, uncertainty about information due to the speed of information delivery and the complexity of the digital environment coupled with refugees' low host language proficiency, and limitations of algorithm-driven refugee-specific apps that do not account for individual differences and needs.

Alonso et al.'s (2020) study of 67 newly-arrived refugees in Sweden found that most used technology to communicate with family abroad, often through closed social media groups. However, when it came to communication with local businesses or people, the respondents preferred visiting or calling, expressing concerns about the security of their personal information online, and echoing Lloyd's (2020) findings regarding family connection as an enabler and privacy concerns as a constraint.

In a rare study examining technology use by refugee communities decades after resettlement, as opposed to recent arrivals, Halilovich and Kučuk (2020) described how local Bosnian

communities in the U.S. and Austria have digitally recreated their physically destroyed native villages. These "cyber villages" include pictures of the former village, cultural symbols, videos featuring local music, an online library, blog posts by community members, and individual and group chats. These imaginary spaces provide a platform for political expression, social interaction, memory preservation, and maintenance of translocal identity.

Two studies further explored translocal identity maintenance. In a participatory art workshop in the U.K., recently arrived young Syrian men used digital photography and collage art software to create digital self-portraits to express their embodied feelings about speaking different languages, ways of communicating, and anything else they wanted to convey about their identity (Evans, 2020). The participants then discussed their creations and why they had chosen to include particular symbols, words, or colors. Their representations highlighted the process of becoming bilingual and bicultural.

A different form of expression, writing, was used with newcomer immigrant and refugee high school students from Honduras, Guatemala, and Rwanda in the U.S. (Kelly et al., 2021). In a literacy workshop, the students wrote brief sentences in English about topics such as "What I care about" and "School here and there." The students then crafted their work into digital presentations that they shared in roundtables. Content analysis of the students' presentations identified aspirational, linguistic, familial, social, navigational, and resistant capital themes. In both studies, the digital expressions fundamentally provided their creators a forum for asserting a strengths-based counter-narrative to the dominant hostile, deficit-based discourse about them in their host countries. Neag and Supa (2020) observed adolescents' identity negotiation in a study where they monitored the social media posts by 16 unaccompanied refugee minors in Sweden and Italy. The study revealed that the youths' social media practices helped them maintain and develop multiple cultural identities.

Examining the language use of Colombian refugee families in New Zealand, Revis (2020) found that children's use of social media to connect with local and transnational Colombian friends helped them maintain their native language. Revis observed strategic use of social media in different languages for different purposes among the adults in these families. For example, one participant deliberately restricted her transnational, native-language social media interactions to engage more with members of the host country in their language. Such activity in the digital space provides yet another counter-narrative to the dominant view in the host society that refugees do not desire to integrate.

Digital Skills

In the domain of digital skills, Lloyd's (2020) studies on diverse refugee groups in Australia found that while refugees frequently use technology, they often lack the skills to navigate and judge the reliability of internet resources capably. Similarly, in a mixed-methods study of technology use among 70 Iraqi, Burmese, Congolese, and Somali refugees in the U.S., respondents generally felt only slightly confident about using technology (Bletscher, 2020). However, using technology for tasks such as online banking, applying for public benefits, and completing job applications, was extremely difficult for participants to learn. These interfaces were hard to understand due to their complex terminologies and navigation processes.

In recognition of the gap between access and skills, three recent studies have examined how digital skills are taught to refugees. Focusing on digital skills training using interviews with 21

resettlement service providers in the U.S., Dahya et al. (2020) found that some providers offer digital literacy programs, with a few explicitly addressing mobile literacy. Apart from resettlement service providers, public libraries are another resource used by refugees for digital skills training. Besides formal training programs, resettlement service providers teach clients how to use mobile apps for everyday life, such as texting, navigation, banking, and translation.

Digital skills training often occurs in other group learning activities, such as language and employment classes (Dahya, 2020). In this regard, Pei and Crooks (2020) and Tour et al. (2021) conducted ethnographic studies of refugees' digital use and skills in adult English language courses in the U.S. and Australia, respectively. Pei and Crooks (2020) studied the perspectives and practices of the students, and Tour et al. studied those of the teachers. While acknowledging the benefits of digital skills training, Pei and Crooks identified several emotional costs associated with the learning process: confusing advertisements often saturated screens, draining students' attention and time (i.e., participants struggled with the constantly changing digital environment that demanded ongoing learning), and participants were concerned about internet addiction and meaningless technology use.

From the teachers' perspective, Tour et al. (2021) found that despite being highly compassionate, empathetic, and goal-oriented, teachers generally held a normative deficit-based view of their students that focused on what they lack more than what they bring. Nonetheless, the teachers used some strengths-based teaching practices for digital literacies. These included appropriately teaching for each student's developmental level, capitalizing on students' prior knowledge and skills, using authentic teaching materials reflecting the students' experiences and environments, developing trusting relationships and learning communities, and using strategies to empower students, promoting autonomy, and maintain lifelong learning. Tour suggested that the apparent disconnect between teachers' perspectives and practices may be because they recognized their students' strengths and leveraged them when teaching digital skills. Still, they did so intuitively rather than intentionally.

All three studies on digital skills pedagogy found that refugees, especially women, often depend on intermediaries such as family members (often children) for tech support. However, sometimes these intermediaries aim to simplify specific apps or processes without giving the users a deeper understanding of how to use the device overall, thereby limiting users' autonomy. Moreover, the users are often reluctant to ask their family members for help for fear of burdening them, resulting in extended periods where users cannot use their device, thereby hampering their digital and language learning. Further, any digital task essentially requires double the labor, thereby draining families' energy. Similarly, several participants in Bletscher's (2020) study indicated that their reliance on resettlement agencies to use technology limited their ability to become self-sufficient in technology use. The findings showed that resettlement agencies enabled this dependency.

Safety and Stability

Two studies addressed technology and violence against refugee women in the safety domain, and two concerned refugees' sense of safety. Henry et al. (2021) studied technology-facilitated domestic violence against immigrant and refugee women. Such violence includes online threats or harassment, monitoring and surveillance, revenge porn, and controlling access to technology. Based on interviews with 29 domestic violence survivors and 20 service providers in Australia, the authors found that perpetrators often used the women's marginalized positionalities (ethnic,

religious, socio-economic, and migration status) to enhance their power and control over the women, to isolate them from their support networks further, and to bind the women even more to their abusive partners. In contrast, technology can also serve safety functions. In a study of 21 resettlement service providers in the U.S., Dahya et al. (2020) described how the staff taught female clients to use their mobile phones to call for help if harassed on the street based on their appearance or apparel.

In another perspective on safety, Udwan et al. (2020) and Wilding et al. (2020) described refugees' ability to reassure themselves of their loved ones' safety abroad through daily transnational digital connections, which in turn, engendered a sense of safety within the refugees and helped them perform their other life functions. Finally, two studies noted the benefit of online education in providing one form of stability in refugees' otherwise precarious life circumstances (Bock et al., 2020; O'Connell & Lucić, 2020).

Social Connections

Studies of social connections demonstrated reciprocal linkages between the three domains of this level—social bonds, bridges, and links—thus supporting the conceptual cohesiveness of this overall construct. For example, studies consistently find that increased digital social bonding risks decreased social bridging. The studies also illuminate reciprocal connections across levels, thus supporting the overall integration model. For example, language & communication and culture are closely tied to social connections; in turn, social connections influence and are influenced by health and education. Specific instances of these linkages within and between levels and domains are highlighted below.

Bonds

The recent studies on technology use and social bonds are notable for their focus on specific refugee subgroups—women, LGBTQ people, and older adults—representing three of the four studies found in this domain. Almenara-Niebla and Ascanio-Sánchez (2020) conducted a social media ethnographic study with young Sahrawi refugee women in Spain. They found that the women's transnational social media networks pressured them to conform to traditional cultural gender norms through transnational digital gossip. To avoid becoming the subjects of such gossip and subvert these norms, the women employed various strategies such as using different social media profiles, privacy settings, or not posting photos.

The strategy of using multiple profiles also emerged in interviews with nine gay male refugees in Belgium (Dhoest, 2020). Although the respondents used digital media to stay connected to family and other people in the country of origin, stigma strained this bond. They used social media and dating sites to bond with other gay men, but this posed the danger of exposure in the country of origin. Thus, some participants created separate profiles to keep their gay lives disconnected from their family lives. This study found that identity formation and negotiation are central to LGBTQ refugees' digital and social media use. They aim to redefine themselves in a new context and develop new networks based on sexual orientation rather than nationality or ethnicity.

Wilding et al. (2020) conducted ethnographic interviews with 51 refugees aged 50 and over from Burma, Sri Lanka, and Somalia within Australia. Some refugees had lived in Australia for decades, while others had arrived more recently. The authors described the participants as sharing a

strong desire to use digital media to contact transnational family members. The participants reported using digital media transnationally as a routine part of everyday life. They engaged in affective exchanges of both positive and negative emotions with their transnational family members, creating a sense of mutuality and togetherness.

In the final study within this domain, Udwan et al. (2020) conducted in-depth interviews with 22 male and female Syrian refugees in the Netherlands. The respondents reported feeling compelled to communicate with family in Syria daily. Although these bonds provided social support, they were also a source of emotional labor from deciding which feelings and information to share and which to withhold and negotiating different and conflicting online identities, as seen earlier in studies within the cultural domain.

Bridges

In the domain of social bridges, recent studies have examined a variety of digital modes of connecting refugees with members of the host society. These modes include social media, collaborative platforms, digital storytelling, learning, and mentorship. Several studies have examined the role of social media in social bridging.

Marlowe (2020) conducted a digital ethnography with 15 diverse refugees in New Zealand to examine the effect of their transnational social media practices on their sense of belonging. The participants unanimously agreed that social media helped them develop a sense of belonging. They emphasized that their initial contacts with host society members had been in person, primarily through formal educational programs. These initial interactions occurred in real life then evolved in digital space.

Marlowe (2020) further demonstrated the reciprocal linkages between and within the levels of integration the participants experienced by positing that:

> [I]nteractions with friends and family [social bonds domain] provided [participants] with the basic level of well-being [health & social care domain] they needed to engage in civic activities [social bridges domain] such as work, education, sports and community events [work, education, leisure domains] which in turn helped them to identify and access opportunities related to such activities [language & communication and digital skills domains]. (p. 281; content in brackets added by the present author).

The participants also articulated the risks of social media use. They cited the potential for isolation from the host society if a user's social media interactions are solely transnational. Furthermore, over half the participants referred to their social media use as an addiction.

Anderson et al. (2020) studied an anonymous social media forum dedicated to refugee issues. A qualitative analysis of 171 posts showed that refugees used the forum to seek advice, share their stories, and clarify misinformation about them. Members of the host society used the forum to offer help during times of crisis. Similarly, Modesti et al. (2020) studied refugee-led associations in Italy. They found that their participants also promote social bridging by sharing stories on social media about their social integration and active participation in their resettlement communities. As noted earlier, such messaging aims to counteract prevailing negative media representations.

Interviews with eight young refugees in Norway sought to examine how they use social media in their everyday lives in Norway, identify capabilities associated with this use, and make connections between these capabilities and their well-being (Anderson & Daniel, 2020). The three main motivations reported by the refugees for their use of social media were communication, accessing information, and learning. In addition to successfully attaining these capabilities, they also reported enhanced social connections.

Another Italian association illustrates a direct means to connect refugees and host community members using an online collaborative platform to connect hosts with refugees looking for housing to promote social inclusion (Ferrari et al., 2020). As such, the platform offers a service, stimulates reciprocity, and activates relationships aimed at inclusion. Combining online collaboration with face-to-face relationships encourages a sense of belonging and mutuality in the social inclusion process.

Digital storytelling fostered social bridging in an educational program where refugees co-developed digital resources (Svoen et al., 2021). The project, implemented with 300 refugees and 50 educators in four European countries, supported new digital skills and enhanced feelings of social inclusion and well-being as students created and shared knowledge of the new society and culture. The participants were selective in their choice of social media platforms and expressed "social media fatigue" about the prospect of signing up for more accounts. Consistent with certain arguments in the rights/responsibilities domain, Svoen et al. advocate using social media platforms that refugees already use and regard as trustworthy. They recognize that refugees usually use the same platforms as host populations and should not be further stigmatized by having separate platforms and apps.

AbuJarour (2020) examined how digital learning impacts the social inclusion of Syrian refugees in Germany. A sample of eight participants reported that using technology for language learning and educational purposes helped them become more socially included in the host society. A final example of intentional social bridging is a digitally mediated homework mentorship program in Germany designed to mitigate refugee children's barriers to social interaction and education caused by the COVID-19 pandemic (O'Connell & Lucić, 2021). Sixteen students were paired with a native German-speaking adult whom they could turn to for help. The mentorship structure entailed completing an online needs assessment and goals contract, regular communication between the mentor and mentee via phone calls and texting, weekly videocall supervision, and motivational incentives when students achieved their goals. The study found that such direct and individualized attention to the needs of newly arrived refugee children can start to bridge the cultural divide with the host society. Beyond offering homework assistance, mentors filled communication gaps between teachers, social workers, and parents, essentially acting as case managers for children.

Social Links

One study specifically examined the social links between refugees and resettlement agencies in Sweden among 89 refugees (Jensen et al., 2020). The government had accelerated the digitalization of the resettlement processes. As a result, participants felt coerced to engage through digital means, as there was no alternative. Consequently, participants felt that increased digitalization had expanded the distance between them and resettlement services. They felt unable to understand how digital services worked because their interactions with local and national authorities had been primarily in person in their home country.

Finally, Bletscher's (2020) previously mentioned study of refugees in the U.S. examined all three domains of social connections: bonds, bridges, and links. Echoing the findings of other studies, multiple respondents reported that technology use increased social bonding, well-being, and access to support resources, such as food, global news, education, job preparation, and financial savings. However, increased social bonding with ethnic group members discouraged respondents from developing English fluency. Ultimately, the study found that while encouraging social bonding, technology discouraged bridging and linking.

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Alonso et al. (2020) found that over half of the participants used computing applications to find housing, and most were moderately satisfied with the experience and services obtained. As previously described, a collaborative platform that connects hosts with refugees seeking housing served the instrumental function of connecting refugees with needed resources and a social bridging function by connecting them to the community (Ferrari et al., 2020).

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Two studies have examined training refugees to work in the I.T. sector. Both studies took place at a coding school for refugees in Germany. Studying students enrolled in 2019-2020, AbuJarour and AbuJarour (2020) found them highly qualified; 70% held at least a bachelor's degree and had good German and English language proficiency, and 83% had prior coding skills. Rushworth and Hackl (2021) surveyed the school's alumni. They found that 40% of the responding alumni who had completed courses between 2016 and 2019 were employed full-time by summer 2020, in primarily digital fields of work. However, the authors emphasized the unrealized expectations among the remaining graduates. Attracted by promises that anyone can succeed as a coder, that I.T. specialists are needed, and that the international tech sector is inclusive and non-discriminatory, the graduates find instead a highly competitive market with demands for cultural conformity. They take unpaid or underpaid internships and short-term work with the unfulfilled aspiration that better opportunities will follow. Refugees are particularly susceptible to these false promises due to their experiences with deskilling, disqualification of their work history, and lack of pathways for reaccreditation of pre-existing qualifications.

Health and Social Care

As described earlier, several studies have established associations between technology-enabled social connections and overall well-being (Bletscher, 2020; Marlowe, 2020; O'Connell & Lucić, 2021; Svoen et al., 2021). Two studies examined how refugees used technology to find health information and access healthcare. Alonso et al.'s (2020) previously-mentioned study in Sweden found that about 40% of survey respondents had used computing applications to find information about healthcare services. A third of these were satisfied with the information they found. Udwan et al.'s (2020) study of Syrian refugees in the Netherlands found that they searched for practical health information online to help them understand and connect with the healthcare system, such as finding nearby physicians, clinics, and hospitals. However, some participants were hampered in this effort by inadequate linguistic and digital skills. Overall, respondents experienced difficulty getting detailed and adequate health information through official institutions and websites. Consequently, they used social media to share their experiences and feedback regarding health procedures and assistance in the host country, such as a refugee social media group dedicated to health and health care topics in the host country. However, most respondents preferred discussing their health issues via social platforms with trusted social networks or family members with medical backgrounds.

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Willey et al. (2020) examined the feasibility and acceptability of digital mental health screening among 17 refugee women from Afghanistan and Burma attending a prenatal clinic in Australia.

The women completed a standardized depression scale in their preferred language using a tablet. The app generated a report based on their score and sent the report with links to further information to the participants. The information was also immediately available to the healthcare provider, who could then discuss results with the women and initiate a referral as needed. The women found the program feasible and acceptable, offering them more privacy and opening up discussions with their health care providers about mental health.

Ashfaq et al. (2020) conducted a systematic review of mobile mental health services among Arab populations, including Syrian refugees in Denmark, Switzerland, Germany, and Sweden. The researchers broadly defined mobile mental health as medical and public health practice supported by mobile and wireless devices. The study found that the majority of Syrian refugees perceived mobile mental health positively. Mobile screening tools were found to be effective, but there was little data on the effectiveness of mobile interventions. Identified barriers to uptake included stigma, digital access and literacy, and general distrust of healthcare providers.

Studies by Goodman et al. (2020) and Rubeis (2021) highlighted the potential for digital mental health use by refugees. These digital interventions vary in professional guidance—from therapy by videoconference to text-messaging with a therapist to self-help using a website or app with no guidance. Apps have different therapeutic contents, such as writing tasks, a diary function, or psychoeducation. Both studies state that growing evidence is promising when comparing the effectiveness of digital versus face-to-face interventions, including the mental health conditions most frequently experienced by refugees: depression, anxiety, and post-traumatic stress disorder. The potential benefits of digital interventions for refugees are increasing access to mental health support in geographically underserved areas and reducing reliance on specialists, whose cost and limited availability pose barriers. Goodman et al. (2020) report that substantial efforts are underway to develop and test digital mental health interventions for refugees. Both studies stress the need to attend to sociocultural contexts, promote refugee agency, and center refugees in developing and using digital mental health interventions.

Finally, Tachtler et al. (2021) studied mental health technologies with unaccompanied migrant youth in Austria. They investigated how mental health apps integrate into the youths' social-ecological environment, how social-ecological factors support or hinder users' ability in using the resources, and how mental health apps can be better designed. The researchers conducted two workshops in which the youth were co-designers of mental health apps for sleep and stress to explore these questions. The focus was on the factors that influenced the youths' design decision-making. The findings showed that the youths' macro-system hindered their ability to use the apps due to a lack of privacy in their living situations. Therefore, the authors argued that mental health technologies need to account for the social and ecological factors in the everyday lives of unaccompanied migrant youth.

Leisure

Several of the studies mentioned above have also examined the role of technology in refugees' leisure activities. Anderson and Daniel (2020) note that the bulk of research on the role of technology in refugee integration has been concerned with how technologies can assist in the achievement of outcomes such as employment, social inclusion, and political engagement. They argue that this approach regards technology as a means of fulfilling presumed needs instead of considering what users themselves desire or how they want to incorporate technology into their lives. As such, non-instrumental uses of technology, primarily for entertainment (e.g., movies,

games, music), are dismissed as wasting time, although they have essential well-being outcomes for users. Some refugees express concern about using the phone for entertainment instead of instrumental uses such as paying bills (Pei & Crooks, 2020). Perhaps, for this reason, Anderson and Daniel (2020) found that using social media for entertainment was reported less than expected based on prior research.

From another perspective on social media and leisure, Udwan et al. (2020) and Almenara-Niebla and Ascanio-Sánchez (2020) reported that refugees in their samples experienced affective costs related to their social media posts about their offline leisure activities. In Udwan's study, Syrian refugees expressed feeling ashamed sharing their leisure experiences with family and friends in Syria who were still living in war. In Almenara-Niebla and Ascanio-Sánchez's (2020) study, the Sahrawi women were often targets of transnational gossip stemming from posts about their leisure activities in Spain.

Summary of Findings

This state-of-the-art literature review has shown that technology use affects every aspect of refugee integration. Additionally, consistent with the techno-realist paradigm, the current literature highlights both functions/benefits and risks of refugees' technology use. Table 2 summarizes these findings.

Foundation

Rights and Responsibilities

The recent literature on rights and responsibilities aligns with the contemporary critical techno-realist paradigm, examining the socio-political-economic contexts in which refugees use technology and identifying the benefits and risks. Cotton (2021) argues that the perspective of refugees is systematically overlooked in the development of digital apps to assist integration. This exclusion perpetuates a one-way view of integration that holds refugees solely responsible for their integration experience and suppresses their ambitions for integration in favor of those of the host society. Cotton advocates the discontinuation of refugee-specific apps and the promotion of mainstream apps already used by refugees to reduce refugee marginalization and build on existing trust networks. Alonso et al.'s (2020) findings in Sweden support this position, showing that although nearly 60% of newly-arrived refugees use the Internet to find information about their rights, only 8% use refugee-specific apps for this purpose due to lack of confidence and trust.

In contrast, beginning from the same premise of refugee exclusion, Bock et al. (2020) reach a different conclusion, arguing that refugee integration apps have value. However, future development must involve a diverse sample of end-users (disaggregated by gender, age, language, and geographic origin) from the initial stage throughout subsequent phases, leaving capacity for modifications once cultural attributes are better understood (Bock et al., 2020). Finally, Awad and Tossell's (2021) exploratory study of Syrian refugees in the Netherlands highlights how refugees' technology use is perceived simultaneously as a valuable tool and a burden imposed by the host society and family members abroad. Like Cotton, these authors call for a nuanced perspective on refugees' digital skills to avoid perpetuating the marginalization of refugees.

Facilitators

Language & Communication and Culture

Within the current literature on refugees' digital skills, the language and communication and culture domains are closely tied. The recent studies in these domains have reaffirmed the crucial role of technology in communication with both the home and host cultures and further explored themes of cultural and linguistic identity, cultural maintenance, and community rebuilding. Based on studies of diverse refugee groups in Australia and Sweden, Lloyd (2020) examined the role of technologies as information and communications resources. Consistent with the techno-realist perspective, Lloyd identified both enabling and constraining technology functions. Enabling functions included establishing new social networks that serve as information sources, confirming the veracity of information from multiple sources, and connecting with family through discussion of everyday activities and events, thereby creating transnational shared lives. Constraints included potentially inhibiting integration by creating virtual refugee communities disconnected from the broader host society. Additional constraints were fear of electronic surveillance, uncertainty about information due to the speed of information delivery and the complexity of the digital environment coupled with refugees' low host language proficiency, and limitations of algorithm-driven refugee-specific apps that do not account for individual differences and needs.

Alonso et al.'s (2020) study of 67 newly-arrived refugees in Sweden found that most used technology to communicate with family abroad, often through closed social media groups. However, when it came to communication with local businesses or people, the respondents preferred visiting or calling, expressing concerns about the security of their personal information online, and echoing Lloyd's (2020) findings regarding family connection as an enabler and privacy concerns as a constraint.

In a rare study examining technology use by refugee communities decades after resettlement, as opposed to recent arrivals, Halilovich and Kučuk (2020) described how local Bosnian communities in the U.S. and Austria have digitally recreated their physically destroyed native villages. These "cyber villages" include pictures of the former village, cultural symbols, videos featuring local music, an online library, blog posts by community members, and individual and group chats. These imaginary spaces provide a platform for political expression, social interaction, memory preservation, and maintenance of translocal identity.

Two studies further explored translocal identity maintenance. In a participatory art workshop in the U.K., recently arrived young Syrian men used digital photography and collage art software to create digital self-portraits to express their embodied feelings about speaking different languages, ways of communicating, and anything else they wanted to convey about their identity (Evans, 2020). The participants then discussed their creations and why they had chosen to include particular symbols, words, or colors. Their representations highlighted the process of becoming bilingual and bicultural.

A different form of expression, writing, was used with newcomer immigrant and refugee high school students from Honduras, Guatemala, and Rwanda in the U.S. (Kelly et al., 2021). In a literacy workshop, the students wrote brief sentences in English about topics such as "What I care about" and "School here and there." The students then crafted their work into digital presentations that they shared in roundtables. Content analysis of the students' presentations

identified aspirational, linguistic, familial, social, navigational, and resistant capital themes. In both studies, the digital expressions fundamentally provided their creators a forum for asserting a strengths-based counter-narrative to the dominant hostile, deficit-based discourse about them in their host countries. Neag and Supa (2020) observed adolescents' identity negotiation in a study where they monitored the social media posts by 16 unaccompanied refugee minors in Sweden and Italy. The study revealed that the youths' social media practices helped them maintain and develop multiple cultural identities.

Examining the language use of Colombian refugee families in New Zealand, Revis (2020) found that children's use of social media to connect with local and transnational Colombian friends helped them maintain their native language. Revis observed strategic use of social media in different languages for different purposes among the adults in these families. For example, one participant deliberately restricted her transnational, native-language social media interactions to engage more with members of the host country in their language. Such activity in the digital space provides yet another counter-narrative to the dominant view in the host society that refugees do not desire to integrate.

Digital Skills

In the domain of digital skills, Lloyd's (2020) studies on diverse refugee groups in Australia found that while refugees frequently use technology, they often lack the skills to navigate and judge the reliability of internet resources capably. Similarly, in a mixed-methods study of technology use among 70 Iraqi, Burmese, Congolese, and Somali refugees in the U.S., respondents generally felt only slightly confident about using technology (Bletscher, 2020). However, using technology for tasks such as online banking, applying for public benefits, and completing job applications, was extremely difficult for participants to learn. These interfaces were hard to understand due to their complex terminologies and navigation processes.

In recognition of the gap between access and skills, three recent studies have examined how digital skills are taught to refugees. Focusing on digital skills training using interviews with 21 resettlement service providers in the U.S., Dahya et al. (2020) found that some providers offer digital literacy programs, with a few explicitly addressing mobile literacy. Apart from resettlement service providers, public libraries are another resource used by refugees for digital skills training. Besides formal training programs, resettlement service providers teach clients how to use mobile apps for everyday life, such as texting, navigation, banking, and translation.

Digital skills training often occurs in other group learning activities, such as language and employment classes (Dahya, 2020). In this regard, Pei and Crooks (2020) and Tour et al. (2021) conducted ethnographic studies of refugees' digital use and skills in adult English language courses in the U.S. and Australia, respectively. Pei and Crooks (2020) studied the perspectives and practices of the students, and Tour et al. studied those of the teachers. While acknowledging the benefits of digital skills training, Pei and Crooks identified several emotional costs associated with the learning process: confusing advertisements often saturated screens, draining students' attention and time (i.e., participants struggled with the constantly changing digital environment that demanded ongoing learning), and participants were concerned about internet addiction and meaningless technology use.

From the teachers' perspective, Tour et al. (2021) found that despite being highly compassionate, empathetic, and goal-oriented, teachers generally held a normative deficit-

based view of their students that focused on what they lack more than what they bring. Nonetheless, the teachers used some strengths-based teaching practices for digital literacies. These included appropriately teaching for each student's developmental level, capitalizing on students' prior knowledge and skills, using authentic teaching materials reflecting the students' experiences and environments, developing trusting relationships and learning communities, and using strategies to empower students, promoting autonomy, and maintain lifelong learning. Tour suggested that the apparent disconnect between teachers' perspectives and practices may be because they recognized their students' strengths and leveraged them when teaching digital skills. Still, they did so intuitively rather than intentionally.

All three studies on digital skills pedagogy found that refugees, especially women, often depend on intermediaries such as family members (often children) for tech support. However, sometimes these intermediaries aim to simplify specific apps or processes without giving the users a deeper understanding of how to use the device overall, thereby limiting users' autonomy. Moreover, the users are often reluctant to ask their family members for help for fear of burdening them, resulting in extended periods where users cannot use their device, thereby hampering their digital and language learning. Further, any digital task essentially requires double the labor, thereby draining families' energy. Similarly, several participants in Bletscher's (2020) study indicated that their reliance on resettlement agencies to use technology limited their ability to become self-sufficient in technology use. The findings showed that resettlement agencies enabled this dependency.

Safety and Stability

Two studies addressed technology and violence against refugee women in the safety domain, and two concerned refugees' sense of safety. Henry et al. (2021) studied technology-facilitated domestic violence against immigrant and refugee women. Such violence includes online threats or harassment, monitoring and surveillance, revenge porn, and controlling access to technology. Based on interviews with 29 domestic violence survivors and 20 service providers in Australia, the authors found that perpetrators often used the women's marginalized positionalities (ethnic, religious, socio-economic, and migration status) to enhance their power and control over the women, to isolate them from their support networks further, and to bind the women even more to their abusive partners. In contrast, technology can also serve safety functions. In a study of 21 resettlement service providers in the U.S., Dahya et al. (2020) described how the staff taught female clients to use their mobile phones to call for help if harassed on the street based on their appearance or apparel.

In another perspective on safety, Udwan et al. (2020) and Wilding et al. (2020) described refugees' ability to reassure themselves of their loved ones' safety abroad through daily transnational digital connections, which in turn, engendered a sense of safety within the refugees and helped them perform their other life functions. Finally, two studies noted the benefit of online education in providing one form of stability in refugees' otherwise precarious life circumstances (Bock et al., 2020; O'Connell & Lucić, 2020).

Social Connections

Studies of social connections demonstrated reciprocal linkages between the three domains of this level—social bonds, bridges, and links—thus supporting the conceptual cohesiveness of this overall construct. For example, studies consistently find that increased digital social bonding

risks decreased social bridging. The studies also illuminate reciprocal connections across levels, thus supporting the overall integration model. For example, language & communication and culture are closely tied to social connections; in turn, social connections influence and are influenced by health and education. Specific instances of these linkages within and between levels and domains are highlighted below.

Bonds

The recent studies on technology use and social bonds are notable for their focus on specific refugee subgroups—women, LGBTQ people, and older adults—representing three of the four studies found in this domain. Almenara-Niebla and Ascanio-Sánchez (2020) conducted a social media ethnographic study with young Sahrawi refugee women in Spain. They found that the women's transnational social media networks pressured them to conform to traditional cultural gender norms through transnational digital gossip. To avoid becoming the subjects of such gossip and subvert these norms, the women employed various strategies such as using different social media profiles, privacy settings, or not posting photos.

The strategy of using multiple profiles also emerged in interviews with nine gay male refugees in Belgium (Dhoest, 2020). Although the respondents used digital media to stay connected to family and other people in the country of origin, stigma strained this bond. They used social media and dating sites to bond with other gay men, but this posed the danger of exposure in the country of origin. Thus, some participants created separate profiles to keep their gay lives disconnected from their family lives. This study found that identity formation and negotiation are central to LGBTQ refugees' digital and social media use. They aim to redefine themselves in a new context and develop new networks based on sexual orientation rather than nationality or ethnicity.

Wilding et al. (2020) conducted ethnographic interviews with 51 refugees aged 50 and over from Burma, Sri Lanka, and Somalia within Australia. Some refugees had lived in Australia for decades, while others had arrived more recently. The authors described the participants as sharing a strong desire to use digital media to contact transnational family members. The participants reported using digital media transnationally as a routine part of everyday life. They engaged in affective exchanges of both positive and negative emotions with their transnational family members, creating a sense of mutuality and togetherness.

In the final study within this domain, Udwan et al. (2020) conducted in-depth interviews with 22 male and female Syrian refugees in the Netherlands. The respondents reported feeling compelled to communicate with family in Syria daily. Although these bonds provided social support, they were also a source of emotional labor from deciding which feelings and information to share and which to withhold and negotiating different and conflicting online identities, as seen earlier in studies within the cultural domain.

Bridges

In the domain of social bridges, recent studies have examined a variety of digital modes of connecting refugees with members of the host society. These modes include social media, collaborative platforms, digital storytelling, learning, and mentorship. Several studies have examined the role of social media in social bridging.

Marlowe (2020) conducted a digital ethnography with 15 diverse refugees in New Zealand to examine the effect of their transnational social media practices on their sense of belonging. The participants unanimously agreed that social media helped them develop a sense of belonging. They emphasized that their initial contacts with host society members had been in person, primarily through formal educational programs. These initial interactions occurred in real life then evolved in digital space.

Marlowe (2020) further demonstrated the reciprocal linkages between and within the levels of integration the participants experienced by positing that:

> [I]nteractions with friends and family [social bonds domain] provided [participants] with the basic level of well-being [health & social care domain] they needed to engage in civic activities [social bridges domain] such as work, education, sports and community events [work, education, leisure domains] which in turn helped them to identify and access opportunities related to such activities [language & communication and digital skills domains]. (p. 281; content in brackets added by the present author).

The participants also articulated the risks of social media use. They cited the potential for isolation from the host society if a user's social media interactions are solely transnational. Furthermore, over half the participants referred to their social media use as an addiction.

Anderson et al. (2020) studied an anonymous social media forum dedicated to refugee issues. A qualitative analysis of 171 posts showed that refugees used the forum to seek advice, share their stories, and clarify misinformation about them. Members of the host society used the forum to offer help during times of crisis. Similarly, Modesti et al. (2020) studied refugee-led associations in Italy. They found that their participants also promote social bridging by sharing stories on social media about their social integration and active participation in their resettlement communities. As noted earlier, such messaging aims to counteract prevailing negative media representations.

Interviews with eight young refugees in Norway sought to examine how they use social media in their everyday lives in Norway, identify capabilities associated with this use, and make connections between these capabilities and their well-being (Anderson & Daniel, 2020). The three main motivations reported by the refugees for their use of social media were communication, accessing information, and learning. In addition to successfully attaining these capabilities, they also reported enhanced social connections.

Another Italian association illustrates a direct means to connect refugees and host community members using an online collaborative platform to connect hosts with refugees looking for housing to promote social inclusion (Ferrari et al., 2020). As such, the platform offers a service, stimulates reciprocity, and activates relationships aimed at inclusion. Combining online collaboration with face-to-face relationships encourages a sense of belonging and mutuality in the social inclusion process.

Digital storytelling fostered social bridging in an educational program where refugees co-developed digital resources (Svoen et al., 2021). The project, implemented with 300 refugees and 50 educators in four European countries, supported new digital skills and enhanced feelings of social inclusion and well-being as students created and shared knowledge of the new society and culture. The participants were selective in their choice of social media platforms and

expressed "social media fatigue" about the prospect of signing up for more accounts. Consistent with certain arguments in the rights/responsibilities domain, Svoen et al. advocate using social media platforms that refugees already use and regard as trustworthy. They recognize that refugees usually use the same platforms as host populations and should not be further stigmatized by having separate platforms and apps.

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As described earlier, several studies have established associations between technology-enabled social connections and overall well-being (Bletscher, 2020; Marlowe, 2020; O'Connell & Lucić, 2021; Svoen et al., 2021). Two studies examined how refugees used technology to find health information and access healthcare. Alonso et al.'s (2020) previously-mentioned study in Sweden found that about 40% of survey respondents had used computing applications to find information about healthcare services. A third of these were satisfied with the information they found. Udwan et al.'s (2020) study of Syrian refugees in the Netherlands found that they searched for practical health information online to help them understand and connect with the healthcare system, such as finding nearby physicians, clinics, and hospitals. However, some participants were hampered in this effort by inadequate linguistic and digital skills. Overall, respondents experienced difficulty getting detailed and adequate health information through official institutions and websites. Consequently, they used social media to share their experiences and feedback regarding health procedures and assistance in the host country, such as a refugee social media group dedicated to health and health care topics in the host country. However, most respondents preferred discussing their health issues via social platforms with trusted social networks or family members with medical backgrounds.

All the other studies within this domain have focused on mental health. Sharing digital stories of mental health recovery was an empowering experience for 10 first- and second-generation immigrants and refugees in Australia (McDonough & Colucci, 2020). The remaining studies in mental health have examined the use of technology for mental health screening and treatment.

Willey et al. (2020) examined the feasibility and acceptability of digital mental health screening among 17 refugee women from Afghanistan and Burma attending a prenatal clinic in Australia. The women completed a standardized depression scale in their preferred language using a tablet. The app generated a report based on their score and sent the report with links to further information to the participants. The information was also immediately available to the healthcare provider, who could then discuss results with the women and initiate a referral as needed. The women found the program feasible and acceptable, offering them more privacy and opening up discussions with their health care providers about mental health.

Ashfaq et al. (2020) conducted a systematic review of mobile mental health services among Arab populations, including Syrian refugees in Denmark, Switzerland, Germany, and Sweden. The researchers broadly defined mobile mental health as medical and public health practice supported by mobile and wireless devices. The study found that the majority of Syrian refugees perceived mobile mental health positively. Mobile screening tools were found to be effective, but there was little data on the effectiveness of mobile interventions. Identified barriers to uptake included stigma, digital access and literacy, and general distrust of healthcare providers.

Studies by Goodman et al. (2020) and Rubeis (2021) highlighted the potential for digital mental health use by refugees. These digital interventions vary in professional guidance—from therapy by videoconference to text-messaging with a therapist to self-help using a website or app with no guidance. Apps have different therapeutic contents, such as writing tasks, a diary function,

or psychoeducation. Both studies state that growing evidence is promising when comparing the effectiveness of digital versus face-to-face interventions, including the mental health conditions most frequently experienced by refugees: depression, anxiety, and post-traumatic stress disorder. The potential benefits of digital interventions for refugees are increasing access to mental health support in geographically underserved areas and reducing reliance on specialists, whose cost and limited availability pose barriers. Goodman et al. (2020) report that substantial efforts are underway to develop and test digital mental health interventions for refugees. Both studies stress the need to attend to sociocultural contexts, promote refugee agency, and center refugees in developing and using digital mental health interventions.

Finally, Tachtler et al. (2021) studied mental health technologies with unaccompanied migrant youth in Austria. They investigated how mental health apps integrate into the youths' social-ecological environment, how social-ecological factors support or hinder users' ability in using the resources, and how mental health apps can be better designed. The researchers conducted two workshops in which the youth were co-designers of mental health apps for sleep and stress to explore these questions. The focus was on the factors that influenced the youths' design decision-making. The findings showed that the youths' macro-system hindered their ability to use the apps due to a lack of privacy in their living situations. Therefore, the authors argued that mental health technologies need to account for the social and ecological factors in the everyday lives of unaccompanied migrant youth.

Leisure

Several of the studies mentioned above have also examined the role of technology in refugees' leisure activities. Anderson and Daniel (2020) note that the bulk of research on the role of technology in refugee integration has been concerned with how technologies can assist in the achievement of outcomes such as employment, social inclusion, and political engagement. They argue that this approach regards technology as a means of fulfilling presumed needs instead of considering what users themselves desire or how they want to incorporate technology into their lives. As such, non-instrumental uses of technology, primarily for entertainment (e.g., movies, games, music), are dismissed as wasting time, although they have essential well-being outcomes for users. Some refugees express concern about using the phone for entertainment instead of instrumental uses such as paying bills (Pei & Crooks, 2020). Perhaps, for this reason, Anderson and Daniel (2020) found that using social media for entertainment was reported less than expected based on prior research.

From another perspective on social media and leisure, Udwan et al. (2020) and Almenara-Niebla and Ascanio-Sánchez (2020) reported that refugees in their samples experienced affective costs related to their social media posts about their offline leisure activities. In Udwan's study, Syrian refugees expressed feeling ashamed sharing their leisure experiences with family and friends in Syria who were still living in war. In Almenara-Niebla and Ascanio-Sánchez's (2020) study, the Sahrawi women were often targets of transnational gossip stemming from posts about their leisure activities in Spain.

Summary of Findings

This state-of-the-art literature review has shown that technology use affects every aspect of refugee integration. Additionally, consistent with the techno-realist paradigm, the current

literature highlights both functions/benefits and risks of refugees' technology use. Table 2 summarizes these findings.

Table 2. Functions/Benefits and Risks of Refugees' Technology Use in Integration

Integration Level and Domain	Functions/Benefits	Risks
Foundation		
Rights and Responsibilities	• Access to information about rights and responsibilities • Right to freedom of expression	• Property concerns • Privacy concerns • Exploitation concerns • Exclusion of some subgroups due to technical and cognitive limitations • Forced reliance on technology to access services • Refugee perspectives excluded in app development • Refugee-specific apps marginalize refugees
Facilitators		
Language and Communication	• Online language learning tools • Translation apps • Native language maintenance • Digital communication	• Speed of digital communication is overwhelming to those with limited linguistic and digital skills
Culture	• Online communities • Online native language content • Online religious content • Digital storytelling and expressive arts • Digital storage of memories • Transnational identity development and maintenance • Counter-narratives and political expression	

Digital Skills	• Refugees use mainstream apps, not apps created for them • Resettlement agencies and libraries are learning resources	• Generally limited skills and limited confidence in using technology • Steep learning curve • Reliance on family members or resettlement providers
Safety	• Access to resources • Mobile phone as a safety tool to call for help, receive reassurance from family abroad	• Cybersecurity concerns • Misinformation/disinformation • Personal safety concerns • Technology-facilitated domestic violence
Stability	• Technology is a source of stability in otherwise precarious circumstances	
Social Connections		
Bonds	• Maintenance of transnational bonds • Bonding with multiple groups through use of multiple identities among particularly marginalized subgroups (e.g., LGBTQ refugees)	• Emotional labor of maintaining transnational bonds and/or multiple identities • Increased bonding is associated with decreased bridging, linking, and language learning

Bridges	• Access to information about host culture • Bridging via social media following face-to-face interaction • Collaborative platforms, digital language learning, digital education, digital mentorship all build bridges	• Digital communication with host society may replace or hinder face-to-face interactions
Links		• Digitalized services create distance between refugees and service providers
Markers & Means		
Work	• Seeking employment • Entrepreneurship	
Housing	• Seeking housing via social media and collaborative platforms	
Education	• Seeking educational opportunities • Video tutorials on language and other skills • Remote learning • Game-based learning apps	
Health and Social Care	• Seeking health and health care information • Increased access to mental health services • Digital mental health apps • Digital storytelling and digital bonds and bridges all enhance well-being	• Limited access to adequate information from official websites
Leisure	• Online entertainment (movies, videos, music, games)	• Internet addiction • Shame

Discussion

Contributions to Knowledge: Emerging Research Issues and Needs

In a 2020 special issue of *The International Journal of Information, Diversity, & Inclusion* (IJIDI) on the topic of forced migration, the editors identified two epistemological standpoints at the intersection of information science and refugee studies. The first standpoint is rooted in an analytic endeavor to understand the situational challenges surrounding the refugee experience. The second pursues the pragmatic aim of reshaping a world that incorporates and builds on refugees' social reality and imaginaries (Caidi et al., 2020). This present study extends knowledge within this latter standpoint, focusing on refugees' practical use of information and communications technology as they navigate their new lives.

This state-of-the-art literature review has identified several emerging research issues and needs related to the role of digital skills within each level and domain of refugee integration. At the foundation level, the recent literature demonstrates continued and consistent calls for increasing refugee agency in technology development and reducing refugee marginalization by discontinuing refugee-specific apps and promoting mainstream apps instead. Research also emphasizes refugee agency at the level of facilitators, highlighting digital expression as a medium for producing and disseminating counter-narratives to host societies' negative discourses about refugees. More critical and human rights perspectives are needed in digital migration studies to further the field's social justice aims (Leurs & Smets, 2018). The recent literature strengthens prior findings showing that digital expression such as storytelling and photography is associated with multiple benefits, including empowerment, identity development, cultural maintenance and development, digital skills learning, social bridges, and well-being. Additional insights from the recent literature concern safety, which researchers examined from the lens of gender-based violence in two studies. Other studies expanded the concept of safety beyond refugee family units in their host setting to include transnational relatives, demonstrating how service providers must view refugees' sense of safety from a collective perspective in which digital communication plays a crucial role.

At the social connections level, the accumulation of studies from the current review (as well as prior literature) demonstrates that digitally mediated social bonding provides benefits such as transnational social support and linguistic and cultural maintenance, and is associated with emotional labor, decreased social bridging, and linking (both digital and in-person), and decreased host-language acquisition. The recent literature has also illustrated the challenges that multiply-marginalized refugee subgroups—such as women or gay men—face in performing multiple social media identities for multiple audiences. The recent literature includes a rare study of older adult refugees, highlighting their benefits from digitally mediated transnational social bonding. These studies help address the ongoing need to research technology use among understudied refugee subpopulations (Alencar, 2020; Leurs & Smets, 2018; Patil, 2019).

Regarding the means and markers of integration, recent studies have illuminated the linguistic and knowledge barriers some refugees encounter in using technologies for seeking employment. Studies have highlighted the value of technology in informal education and its critical function as a gateway to vocational and higher education. In the health and social care domain, in January 2019, Patil presciently asked, "Can we leverage social media and mobile applications during emergency outbreaks to disseminate important health information?" (p. 4). Descriptions and evaluations of such interventions during the COVID-19 era are undoubtedly forthcoming.

Responding to another research need, as expressed by Patil (2019), "How can social media and the internet help in supporting the mental health of refugees?" (p. 4), the recent literature has emphasized the potential value of digital mental health interventions, ranging from digital screening to mental health apps to videoconferencing.

Overall, the recent literature suggests that digital screening is acceptable and effective. Mobile interventions suggest potential benefits for refugees (e.g., increased access to mental health services) but have not yet been evaluated. Future research is needed to develop evidence-based, culturally competent, user-centered conceptual frameworks and adaptations of mobile mental health for refugees (Ashfaq et al., 2020; Goodman et al., 2020). Regarding the use of technology for consuming or sharing leisure activities, both researchers and refugee participants perceived such activity as beneficial to well-being on the one hand, yet simultaneously a waste of time and source of shame on the other.

Perhaps the most important development in the recent literature is the appearance of studies on assessing, teaching, and learning digital skills among refugees. These studies confirm that refugees in resettlement generally have limited digital skills for necessary integration tasks such as navigating websites and assessing the credibility of online information. The studies have yielded initial descriptions of where and how refugees are taught and learn digital skills, without evaluating these educational efforts. The research also illuminated the unintended consequences of technical assistance from family members or resettlement service providers, fostering dependency instead of promoting autonomy. Future research is needed to develop key performance indicators for technology use assessment, identify potential differences across geographic and demographic settings, and develop core indicators for monitoring and evaluating technology education projects for refugees (Bletscher, 2020; Patil, 2019).

Contributions to Theory

This review lends further empirical support to Ndofor-Tah et al.'s (2019) theoretical framework of refugee integration and its predecessor model (Ager & Strang, 2008). This review supports the validity of the framework in three ways: (1) it provides evidence for the theorized linkages across different domains within each level as well as across levels themselves; (2) it provides evidence for the exhaustiveness of the framework, as all reviewed studies could be classified into one or more domains, meaning that the framework encompassed all aspects of refugee integration as reflected in the literature; and (3) it provides evidence supporting the recent addition of digital skills to the framework, showing how digital skills connect to all the other domains.

This refugee integration framework may provide a useful interdisciplinary lens unifying the diverse yet interrelated fields of inquiry engaged in scholarship on digital skills and refugee integration. As reflected in the journal titles of the reviewed studies, these fields include sociology (6), library and information science (4), human-computer interaction (4), education (4), cultural studies (4), migration studies (3), information systems/information technology (3), health (2), anthropology (2), technology policy (1), communications (1), psychology (1), and linguistics (1). The findings of this study also support calls for adding an information perspective to this framework (Eskola et al., 2020; Lloyd, 2020) and forced migration studies more generally (Caidi et al., 2020).

Eskola et al. (2020) proposed adding a cross-cutting dimension of information literacy to the integration framework. They defined this as a set of integrated skills for finding information,

understanding how information is produced and valued, and using the information to produce new knowledge. Lloyd (2020) situates information literacy practice within the broader context of refugees' fractured information landscapes, which necessitate rebuilding refugees' information experiences, sources, practices, and behaviors. This perspective focuses on information as a core resource essential for successful integration. Accordingly, some relevant overarching research questions for information science scholarship include: How does digital technology affect refugees' construction of new information landscapes? What are the actions and outcomes of refugees' information practices as they participate across local and global digital networks? How do language, illiteracy, and non-literacy affect refugees' digital information experiences? What influences refugees' trust/mistrust in digital information, misinformation, and disinformation? How are varying information experiences, sources, practices, and behaviors associated with the varying domains of integration?

Implications for Programming

The literature bears two direct implications for action. First is the need to develop, tailor, scale, evaluate, and sustain formal and informal, in-person and online digital skills training for refugees in integration. This need follows from the documented centrality of digital skills to all other domains of integration; just as a linguistic skill has always been a significant indicator of and gateway to successful refugee integration, so today are digital skills. As found in this review, the research on digital skills training specifically for refugees in integration is nascent. However, several systematic reviews of digital skills programs for marginalized populations, including low-income, low-skill, low-literacy, and hard to reach, find that successful programs share several characteristics. These include social support, collaborative learning, hands-on experience, inclusive program design, a multi-faceted approach, and simple user interfaces (Borg et al., 2019; McGillivray, 2017; Zelezny-Green et al., 2018). These are relevant principles for application with refugee populations, as are the previously described strengths-based teaching practices identified by Tour et al. (2021). Further, future research should examine what specific technology skills are most helpful to learn during different stages of the integration process (Bletscher, 2020).

Existing digital skills curricula for refugees commonly include information on how to mitigate safety risks, such as identifying misinformation, avoiding scams, and protecting private information (Cultural Orientation Resource Exchange, 2021; HIAS, 2021). However, they do not address the risks identified within the other domains, such as emotional labor and shame; social bonding at the expense of bridging, linking, and language learning; reduction of face-to-face interactions; and the risks of exploitation, exclusion, and marginalization. Future research and program development must address these risks, including input from all stakeholders.

The second programmatic implication is the need for inter-agency and interdisciplinary collaboration in this effort. One natural partnership appears between the two existing primary providers of digital skills training: libraries and resettlement service agencies (Cultural Orientation Resource Exchange, 2021; Dahya et al., 2020; Felton, 2015; HIAS, 2021; Bowdoin et al., 2017). Project Welcome (2018), a U.S. national initiative to assist libraries with addressing the information needs of refugees and asylum seekers in the resettlement and integration process, stresses the collective impacts to be gained through collaboration among libraries, resettlement agencies, direct and indirect service providers (e.g., educational institutions, museums), and ethnic community-based organizations.

A growing number of public libraries employ social workers, many of whom serve immigrant and refugee patrons. These staff could serve as natural liaisons of library/resettlement agency collaboration. There is a natural partnership between the two professions based on shared historical roots, a strong alignment of values, and shared goals of addressing community needs, with today's libraries serving similar functions for immigrants and refugees as the social work settlement houses of the past (Soska & Navarro, 2020).

Academic libraries can also play essential roles in multiple ways. Some approaches for supporting research about refugees include:

- collecting, archiving, and digitizing primary materials;
- providing guides to library resources and information literacy instruction;
- collecting digital stories for future research and education; and
- providing refugees access to resources, such as native-language digital media, that may not be available through the public library (Bowdoin et al., 2017).

Limitations

This state-of-the-art review is limited by its cross-sectional nature, which provides a snapshot of the current literature. The risk of subjectivity arising from having one reviewer was necessitated by the time-sensitive nature of this type of review (Grant & Booth, 2009). Additionally, this review is limited to published literature accessible online through public websites or subscription databases. Because technology evolves more rapidly than academic publications, the author assumes that this review does not fully represent developments in the field.

Conclusion

Perhaps the most revealing insight from this state-of-the-art review is how similar refugees are in their use of technology to everyone else; in many ways, they experience the same benefits and risks in all domains of their lives as do other users. Nevertheless, some of the emotional, social, financial, and human rights risks refugees face arise from their forced displacement and their marginalized position in their host society. Thus, the author hails the contributions of the studies in this review and calls for continued interdisciplinary research and practice in this evolving area of inclusion and equity.

Endnotes

[1] OECD is an intergovernmental organization of 38 primarily high-income countries working to find solutions to common challenges.

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