

Exploring the Digital Literacies of Refugees from a Funds-of-knowledge Perspective

Linda Molin-Karakoc¹
University College London, London, United Kingdom

Abstract: Despite multiple assets in the form of languages, cultures and community-based knowledge, refugee students frequently confront barriers in education, including having their rich repertoires of cultural and linguistic knowledge dismissed by teachers (Hos, 2019; Shapiro et al., 2018). Rapidly advancing digital technologies have shifted understandings of language and literacy beyond traditional conceptions, raising the question of how students' digital practices could be integrated to overcome deficit orientations. Informed by the notions of 'digital literacies' (Jones & Hafner, 2021) and 'funds of knowledge' (Moll et al., 1992), the present study seeks to explore research on refugees' digital literacies, including their potential for facilitating asset-based practices in language and literacy education. A scoping literature review was conducted to summarize and synthesize existing knowledge on the topic. A search was performed using a set of keywords and three databases (ERIC, ProQuest, and Google Scholar), resulting in the identification and analysis of 31 papers. The findings indicate that research on refugees' digital literacies encompasses various geographical contexts, refugee groups, ages, methodologies, and tools, with some areas receiving more extensive research than others. The findings additionally reveal five themes of incorporating refugee learners' digital literacies to facilitate asset-based pedagogy, including bridging informal and formal practices, utilizing multimodal technology for identity affirmation, promoting agency through choice of language or mode, establishing social relationships, and fostering intercultural online communities. The study concludes with recommendations for practitioners and researchers to enhance further the reciprocity between refugees' digital literacies and the literacy practices promoted by educators and educational institutions.

Keywords: Digital literacy, funds of knowledge, refugee students, scoping literature review

Growing levels of migration have resulted in an increased number of refugees enrolling in second-language and literacy classrooms worldwide (Shapiro, 2018; Warriner et al., 2020). The cultural, linguistic and educational diversity of refugees has brought new challenges for language teachers where 'traditional' approaches to language and literacy learning are no longer sufficient, as some students come with interrupted education or limited alphabetic literacy (Decapua, 2016; Hos, 2016, 2020). The current gap in language and literacy provision has often resulted in deficit perspectives, whereby the challenges faced by refugee learners in language and literacy learning are attributed to refugee individuals, rather than the educational practices used to support them (Alford, 2014; Roy & Roxas, 2011; Shapiro & MacDonald, 2017).

¹ PhD candidate, Department of Culture, Media and Communication, Institute of Education, University College London. Email: linda.molin-karakoc.17@ucl.ac.uk.

highlights the need to develop new perspectives and practices, taking into account the rich sociocultural resources refugee students bring to the classroom from other settings (Hos et al., 2019; Moll et al., 1992), including their digital practices.

Many refugees have rich technological knowledge, stemming from out-of-school experiences. Studies have found refugees to engage in sophisticated literacy practices using the latest technologies, including online games for second-language socialization (Duran, 2017), multilingual writing on social media (Alencar, 2018; Vanek et al., 2018) or recording speech and practising reading or writing using mobile applications (Eilola & Lilja, 2021; Tammelin-Laine et al., 2020). When utilized to support new learning, such digital practices potentially promote asset-based practices in the language classroom; however, this area of expertise has been neglected in the pedagogical knowledge of language teachers (Carhill-Poza, 2017; Tan & McWilliam, 2009; Tour et al., 2021). There is also a dearth of information regarding the variety of digital practices refugees engage in (Guichon, 2024; Tour, 2020), and how these practices match the academic literacies and forms of learning valued by educators and educational institutions (Barnes & Tour, 2023; Bletscher, 2020; Smith et al., 2022). Moreover, the existing literature on digital learning among refugees has largely focused on digital literacy as technical skills or refugee learners' access to technology as opposed to leveraging their digital strengths (Rice & Cun, 2023). A deeper understanding of the digital practices refugees engage in is nonetheless significant for overcoming deficit views by recognizing their strengths and resources, in other words, their *funds of knowledge* (Moll et al., 1992). Doing so is also important to align language and literacy education with the growing digital landscape, as further emphasized by the shift to online learning during the pandemic. The present study aims to address this gap by synthesizing research evidence on refugees' digital literacies to inform researchers, educators and policymakers. To organize knowledge on the topic, the study asks the following two questions:

1. How have the digital literacies of refugees been investigated in educational research?
2. How can the digital literacies of refugees inform asset-based practices in education from a funds-of-knowledge perspective?

Using a scoping review method to answer the research questions, this study is underpinned by asset-based approaches and sociocultural conceptions of (digital) literacy. The study is undergirded by two theoretical concepts in particular: *funds of knowledge* (Moll et al., 1992) and *digital literacies* (Jones & Hafner, 2021) that emphasize the importance of drawing on students' sociocultural knowledge to support language and literacy development. In the sections that follow, the background of the study is presented, including overviews of the extant literature and the theoretical framework. Then, the study methodology is carefully described, after which the findings of the research are reported, critically analyzed, and discussed. Finally, a summary of the main findings and future research recommendations are given.

Background and Context

Refugees: statistics and definitions

More than 117 million people around the world are currently forcibly displaced due to political persecution, conflict, violence, human rights violations or other events seriously disturbing public order (UNHCR, 2024). Approximately 43.4 million of all displaced people are asylum-seekers or refugees, 40 per cent of whom are under the age of 18 (UNHCR, 2024). In this paper, the term 'refugee' is used in reference to people who cannot return to their

countries of origin “owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership in a particular social group, or a political opinion” (UNHCR, 1951, p. 6). Whilst acknowledging legal distinctions, both asylum-seekers and refugees are included in this definition, given that both groups leave their countries for similar reasons. Even if *refugee* instead of *refugee-background* student is used as a term, it comes with the acknowledgement that the refugee label is both partial and temporary (Shapiro, 2018). To avoid essentializing refugee learners, their varied identities and cultural practices are elucidated throughout the paper.

Refugees in language education

Although formal education is not universally accessible to all refugees, increasing migration levels have led to a higher number of refugees enrolling in language classes, particularly in the Western context (Shapiro, 2018; Warriner et al., 2020). Upon arrival in a new country, many refugees undergo extremely difficult situations, including limited choices regarding the place of living, education or personalized social networks. Their precarious situations demand particular sensitivity, not the least from educators who teach refugees in second-language classrooms.

Despite possessing multiple assets in terms of languages, cultures, and community-based knowledge, refugees frequently encounter distinct challenges that complicate language and literacy learning in the host country's educational setting. Many refugees have experienced educational interruptions or have limited first language or alphabetic literacy, complicating, for instance, writing in a second language (Decapua, 2016; Hos, 2016, 2020). Some refugees also face socio-emotional difficulties due to family separation or war-related trauma (McBrien, 2005; Roy & Roxas, 2011) or are met by racism and discrimination in their new communities due to cultural or religious affiliation (Bigelow, 2010; Mendenhall et al., 2017). Together, the unique challenges refugees confront render the creation of positive educational experiences crucial, as such experiences can promote motivation and confidence among refugees as language learners, paving the way for bright futures (Hos, 2016; Hos et al., 2019; McBrien, 2005). However, due to limited existing information on their individual needs, challenges or resources, many refugees continue to struggle educationally.

From deficit to asset-based approaches

Given their diverse educational pasts and profiles, the language and literacy experiences of refugees often diverge from locally-born students or other immigrants. A lack of attention to refugees' unique language and literacy practices masks important differences that mediate learning experiences in a classroom (García, 2009; Mendenhall et al., 2017; Shapiro, 2018) and de-emphasize the agency, and resilience of refugee learners, including the social, cultural, semiotic, and intellectual resources students bring with them to the classroom (Shapiro & MacDonald, 2017; Warriner et al., 2020). A deficit-oriented perspective attributes the difficulties refugees encounter in learning a new language and its written system to individuals themselves rather than the educational practices used to support them (Alford, 2014; Roy & Roxas, 2011). This perspective is particularly prevalent in second-language programs that focus on traditional literacy and student remediation (Emert, 2014; Hos et al., 2019; Shapiro, 2018) in which students are encouraged to develop second language skills rapidly; yet, are often denied the right to draw on personal resources in so doing (Iddings et al., 2021; Naidoo & Adoniou, 2019). A deficit view has also been linked to the lack of preparedness among teachers to recognize refugee assets and the meaning they carry for language and literacy development (Michalovich et al., 2022; Warriner et al., 2020). Consequently, many refugees continue to be

limited in the knowledge and skills they can draw on for language and literacy learning, leading to further challenges and negative experiences (Bigelow, 2010; Shapiro, 2022).

All refugees bring a cultural and linguistic wealth of knowledge that can mediate and foster learning opportunities. Focusing on student assets means creating a learning environment where refugee students can participate in increasingly complex tasks, build on previous skills and experiences, setting high expectations for all learners (Warriner et al., 2020). Attending to how refugee students are positioned or position themselves is similarly significant in overcoming deficit-oriented views that dominate second-language classrooms (Karam, 2021; Oikonomidou & Karam, 2020). This includes exploring their uses of digital technology, through which many refugees demonstrate diverse forms of knowledge, including multilingual and multicultural practices.

Digital literacies and culturally and linguistically diverse students

The rapid development of digital technology has changed how we communicate, highlighting new practices surrounding language and literacy. In digital environments, literacy encompasses not only the use of print but also the ability to utilize various technologies and modes to comprehend and compose texts (Jones & Hafner, 2021). Compared to face-to-face methods, multimodal and multilingual representation becomes considerably easier in digital environments whilst enabling students to engage in collaborative meaning-making through comments and text remixing (Jones & Hafner, 2021; Mills, 2015; New London Group, 1996). Various online communities can additionally provide learners with opportunities to share knowledge across settings, fostering connections between learners, other individuals, and sociocultural contexts (Gee, 2007; Lankshear & Knobel, 2015). Consequently, the role of digital tools in enhancing language and literacy practices in educational settings is significant and has become more pronounced after the pandemic.

Research has demonstrated that the incorporation of digital media such as digital storytelling, multimodal presentations, fan communities, or social media writing into language classrooms with multilingual students enhances learner engagement and facilitates the production and consumption of multimodal texts with authentic purposes (H. Chen, 2013; Kendrick et al., 2022; Lam, 2014; Schreiber, 2015). For instance, studies have found that the use of digital tools among students from Latinx and Southeast Asian backgrounds, enables students to showcase multiple literate actions, cultures, identities, social abilities, and other skills in a classroom setting with benefits for their learning (Y. Chen et al., 2017; Lee, 2014; Stewart, 2014). As engaging in digital practices appears to facilitate more meaningful classroom learning for culturally and linguistically diverse students, their potential to support refugees must be likewise investigated.

Digital literacy research involving refugees

A burgeoning body of literature has begun to explore the digital literacies of refugees. This research has been approached from three distinct perspectives: refugees' technical skills or digital access (Andrade & Doolin, 2016; Dryden-Peterson et al., 2017; Halkic & Arnold, 2019), classroom-based digital learning interventions (e.g. Bradley et al., 2017; Epp, 2017; Malessa, 2021; Sirin et al., 2018) or digital practices refugees engage in informally (Artamonova & Androustopoulos, 2019; Eilola & Lilja, 2021; Khvorostianov, 2023; Omerbašić, 2018). The predominant focus of this research has been on technology access and technical skills; in other words, preparing refugees for the digital age. Much like deficit perspectives prevalent in face-to-face settings, the majority of research both before and during the pandemic has thus concentrated on refugee challenges, knowledge gaps, and adverse

experiences in digital and online learning on a global scale (see e.g. Baganz et al., 2024; Menashy & Zakharia, 2022; Mudwari et al., 2021). As a result, the digital strengths of refugees and the benefits of digital tools or online learning modalities for language and literacy learning have been less investigated (Drolia et al., 2022; Rice & Cun, 2023). Further research is hence needed to balance-challenge-oriented perspectives.

Refugees, especially those from the Internet generation, often possess substantial digital knowledge deriving from informal settings. Emerging research shows that refugees engage in advanced literacy practices using the latest technologies, such as socializing in a second language through online games (Duran, 2017), multilingual writing on social media platforms (Alencar, 2018; Bigelow et al., 2017; Vanek et al., 2018), and utilizing mobile applications to record or translate texts to practice speaking, reading or writing (Eilola & Lilja, 2021; Tammelin-Laine et al., 2020). Being an emerging line of inquiry, the spectrum of digital practices and how they vary across refugee settings is nonetheless unclear to researchers and educators (Guichon, 2024; Tour, 2020). Significantly, how such practices align with the academic learning and literacies valued by educators and educational institutions warrants more attention (Barnes & Tour, 2023; Bletscher, 2020; Smith et al., 2022).

Despite the multifarious affordances of digital technologies for language and literacy learning among refugees, this area of expertise has largely been neglected in teacher training. How to utilize digital technologies to support refugees in language classrooms is thus often missing from the pedagogical knowledge of language teachers (Carhill-Poza, 2017; Tan and McWilliam, 2009; Tour et al., 2021). For example, Tour and Barnes (2022) discovered that while Australian language teachers acknowledged the importance of multimodal digital composition for refugees facing print-based challenges, teachers were unable to identify specific literacy benefits associated with such practices. In addition, Tan and McWilliams' (2009) research showed that many teachers prioritized traditional literacy, numeracy, and print-based instruction over technology-enhanced learning, despite its potential to connect refugees with familiar literacy practices. In this regard, Warriner et al. (2020) emphasize that a deeper understanding of refugee learners, including their linguistic resources, and unique life experiences is important to enable educators to effectively leverage resources such as multilingualism, multimodal practices and technical knowledge. Addressing the scarcity of information, subsequent sections outline the theoretical framework underpinning the present study on harnessing refugees' digital literacies to create new learning opportunities and foster asset-based perspectives, before detailing the study's research aims and methods.

Theoretical framework

Funds of knowledge

Asset-based approaches emphasize the importance of recognizing and utilizing students' strengths and resources in education. In this context, the concepts of *funds of knowledge* (Moll et al., 1992) and *funds of identity* (Esteban-Guitart & Moll, 2014) propose that students possess diverse sets of knowledge, skills, and identities derived from their rich, lived experiences in-home or other community settings. Drawing from Vygotsky's sociocultural theory, the concept of Funds of Knowledge (FoK) was introduced by Velez and Greenberg (1992) and further interpreted by Moll et al. (1992), who connected it to the incorporation of the cultural and linguistic repertoires of minoritized students to provide more personalized and meaningful language education. This concept has since been utilized by educators, researchers, and other professionals to gain insights into students' prior knowledge, experiences, and cultural backgrounds, using this knowledge to scaffold student learning.

FoK is regarded as an inclusive pedagogical approach to language and literacy education, predicated on the assumption that the cultural traditions and lived experiences of

learners are valuable tools or resources in classroom learning (McNeill, 2022). As such, the approach holds promise for addressing deficit perspectives in refugee education and acts as a catalyst for constructing learner-centered environments. FoK offers educators and educational institutions a more comprehensive understanding of learners (Chen et al., 2017), forging critical and humanizing connections between teachers, students, and other learners (Iddings et al., 2021) whilst making learning more relevant and meaningful (Espinoza et al., 2021). In the digital age, the approach necessitates the consideration of the students' digital "funds of knowledge", addressed under digital literacies in the next section.

Digital literacies

Digital literacies is a multifaceted and evolving concept. As Hafner and Jones (2021) remark, the notion has been approached from multiple angles, some of which include technical skills in the information age (often under the singular form digital literacy), the critical ability to analyze digital content, or digital practices influenced by culture, identity, or social context. Considering the agentic decisions and sophisticated literacy practices afforded by new technologies in the present time and age, it is clear that digital literacies encompass more than just technical skills (Hafner et al., 2015). It calls for a broader understanding of how digital tools shape and are shaped by the cultural practices of different individuals, groups and contexts.

The present study follows a sociocultural view of literacy and digital literacy. According to a sociocultural understanding of literacy, literacy learning can best be conceptualized through practices in social and cultural contexts where knowledge is tightly connected to cultures, identities or social affiliations (Gee, 2007). Similarly, digital literacies can be described as the "practices of communicating, relating, thinking, and 'being' associated with digital media" (Jones & Hafner, 2021, p. 17)². The conceptualization of literacy and digital literacy as a set of sociocultural practices provides a larger frame beyond cognitive or operational skills, "mobilizing and building on what learners acquire and know from their wider cultural participation and affinities" (Lankshear & Knobel, 2015, p. 18). It follows that such practices are intimately connected with identity and belonging, as the use of digital tools for communication differs across online cultures and social groups (Mills, 2015; New London Group, 1996). Digital literacy is thus reflective of a variety of practices, and unlike operational skills, is not singular or universal.

Similar to funds of knowledge, a sociocultural view of (digital) literacy considers students' diverse cultural practices as positive features of a classroom that can foster meaningful learning (Vygotsky, 1978). The underlying belief is that by 'empowering' students to harness digital tools, students are better positioned to showcase their knowledge, including their use of multiple modes, cultures, and languages for educational purposes (Cope & Kalantzis, 2009; Mills, 2015; New London Group, 1996). The aim of embedding digital practices of communicating, relating, thinking, and being is to find new ways to make students agentic, creative, and critical designers with access to social power, civic participation, financial gain, global citizenship, and diverse life worlds in educational settings (Serafini & Gee, 2017). Leveraging students' digital literacies in the classroom is therefore considered helpful for bringing about role reversals and redrawing lines between valued forms of knowledge, moving understandings of literacy beyond traditional conceptions (Hafner, 2019).

Both FoK and digital literacies are informed by sociocultural theoretical perspectives and are hence compatible as analytical constructs. Emphasizing refugee students' cultural

² Aligned with the sociocultural view (i.e. literacy as a social practice), terms such as 'digital literacies' and 'digital (literacy) practices' are used interchangeably in this paper.

practices and resources, these constructs are thus powerful in potentially shifting deficit views by showing the variety and relevance of students' digital practices to mediate meaningful experiences and showcase student knowledge and identities.

Methods

Research aims and design

This study examines the digital literacies of refugees and addresses how these digital literacies might be incorporated into classroom settings to foster an asset-based approach. To accomplish this goal, a scoping review methodology was adopted. A scoping review is “a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to an emerging area or field by systematically and iteratively searching, selecting, summarizing and potentially synthesizing existing knowledge” (O'Brien et al., 2016, p. 9). This method is associated with a ‘family of methods’ known as systematic research approaches or literature reviews (Booth et al., 2016; Moher et al., 2015), characterized by rigorous and transparent methods to identify and analyze relevant literature on a research question in a comprehensive manner.

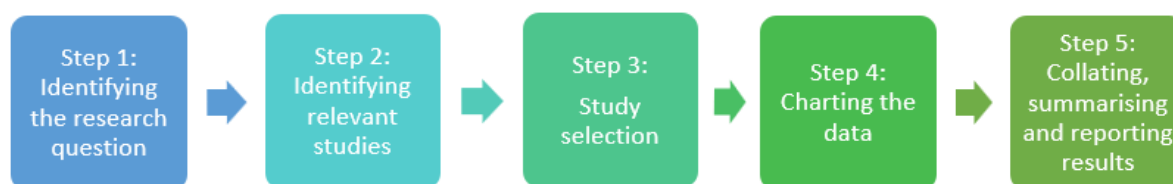
Concomitantly, scoping reviews are distinct from systematic reviews. Scoping reviews aim to provide an overview of the research material, describing the nature and extent of current evidence without necessarily critically appraising or systematically synthesizing this evidence. As such, their purpose is not to exhaustively appraise the literature but to map the body of literature on a topic and provide pointers for further research (Michalovich, 2021). Conversely, systematic reviews must include extensive quality appraisal to judge the best available research evidence on a particular research question (Arksey & O'Malley, 2005; Booth et al., 2016).

Research procedures

To ensure rigor and place scoping studies under a sound methodological framework, researchers have proposed certain steps and procedures (see, for example, Arksey & O'Malley, 2005; Levac et al., 2010). The present study adhered to the five-step framework outlined by Arksey and O'Malley (2005) to ascertain a methodologically sound and robust approach (see **Error! Reference source not found.**):

Figure 1

Scoping review process following Arksey and O'Malley (2005).



First, the research questions and review method to answer them were identified. Second, a search protocol was developed to define the objectives and procedures of the review (e.g., inclusion/exclusion criteria, search strategies, and data extraction), after which three databases (EBSCO, SCOPUS, and ProQuest) were selected for the search. The choice of databases was based on access to databases facilitated by the researcher's research institution. A wide coverage of educational research material (books, educational articles, book chapters, etc.) was sought, and a set of predetermined keywords was used to search for relevant studies. To retrieve

a broad enough sample and secure a high number of relevant studies, the search was not restricted to topic-specific publications.

Third, after locating a sufficient number of studies, the inclusion and exclusion of the retrieved studies were determined. This process included scanning titles, keywords, and abstracts and reading entire research papers or sections of papers to check their relevance. Inclusion criteria involved selecting peer-reviewed, English-language papers that addressed digital technologies in the context of refugees, language or literacy learning, or teaching. Furthermore, the timeframe was confined to the last ten years (2014–2024) to accommodate the most recent knowledge on this topic. Exclusion was exercised for grey literature (e.g., conference papers) and policy papers (e.g., UNICEF) as these had not been peer-reviewed; hence, their academic or ethical quality could not be ascertained. Similarly, studies that addressed larger learner groups (for example, ELLs) without addressing refugees specifically were aborted, as they were not specific enough to answer research questions. Studies focusing only on teachers or digital technologies from the viewpoint of technical skills or access were likewise eliminated as they primarily focused on challenges and were only tangentially related. After deciding on materials to include, all papers were imported into the reference management system Zotero. The final selection of papers (31 papers) included in the review is found in Appendix A.

Fourth, each of the 31 papers was carefully read, and segments of text were highlighted and embedded with comments on Zotero. Full papers were then coded to determine how they answered the research question and detect broad patterns. To assist with the coding and charting, data from each study were inputted into a Microsoft Excel spreadsheet, noting trends in methodology, age group, setting, participants, tools, and digital literacies, which subsequently helped visualize and compare studies in the next step. All codes from the papers were transferred to a Word sheet for deeper analysis.

Fifth, descriptive statistics were conducted via Excel functions, where percentages were calculated for methodology, age group, setting, participants, tools, and digital literacies represented across the studies (RQ 1). Thematic analysis (Braun & Clarke, 2006) was also conducted to generate more specific themes from the papers based on coding (RQ 2). In undertaking thematic analysis, Braun and Clarke's (2006) six-step approach was followed, including familiarization with the material, creation of initial codes, identification of themes, review and definition of themes, and final selection of themes for reporting. A theme was considered a meaningful pattern in the data, and its salience was determined if it was represented by at least one or several codes. For codes to represent a significant pattern, they had to span multiple studies. The analytical process resulted in the identification of five themes, as illustrated in Table 1 below:

Table 1.
Themes in the reviewed studies.

| Theme | Theme coverage (coded articles) |
|--|---|
| (1) Bridging informal and formal learning activities | (Artamonova & Androutsopoulos, 2019; Bradley et al., 2020; Dooley, 2019; Eilola & Lilja, 2021; Emert, 2019; Gilhooly & Lee, 2014a; Kaufmann, 2018; Kendrick et al., 2022; Norlund Shaswar, 2021; Sirin et al., 2018; Smith et al., 2022; Tammelin-Laine et al., 2020; Tour et al., 2023; Zaidi & Sah, 2024) |
| (2) Using multimodal technology for identity affirmation | (Cun, 2022; Johnson & Kendrick, 2017; Karam, 2018; Kendrick et al., 2022; Michalovich, 2021, 2023; Michalovich et al., 2022; Taira, 2019; Vanek et al., 2018; Zaidi & Sah, 2024) |
| (3) Promoting agency through choice of mode or language | (Barnes & Tour, 2023; Dooley, 2019; Eilola & Lilja, 2021; Gilhooly & Lee, 2014a; Guerra-Nunez, 2017; Karam, 2018; Kaufmann, 2018; Kendrick et al., 2022; Smith et al., 2022; Tammelin-Laine et al., 2020; Veronis et al., 2018) |
| (4) Building social relationships | (Artamonova & Androutsopoulos, 2019; Cun, 2022; Dooley, 2019; Duran, 2017; Eilola & Lilja, 2021; Emert, 2019; Epp, 2017; Gilhooly & Lee, 2014a; Guerra-Nunez, 2017; Michalovich, 2021; Netto et al., 2022; Noguerón-Liu & Hogan, 2017; Omerbašić, 2015; Vanek et al., 2018) |
| (5) Fostering intercultural online communities | (Barnes & Tour, 2023; Hebbani et al., 2023; Noguerón-Liu & Hogan, 2017; Veronis et al., 2018; Zaidi & Sah, 2024) |

Findings and Discussion

Refugee digital literacies represented in research

The review of studies on refugees’ digital literacies revealed particular trends in how the topic has been investigated. Not unexpectedly, research on digital literacies was predominantly qualitative (Figure 2).

Figure 2
Research methodologies used in the studies.



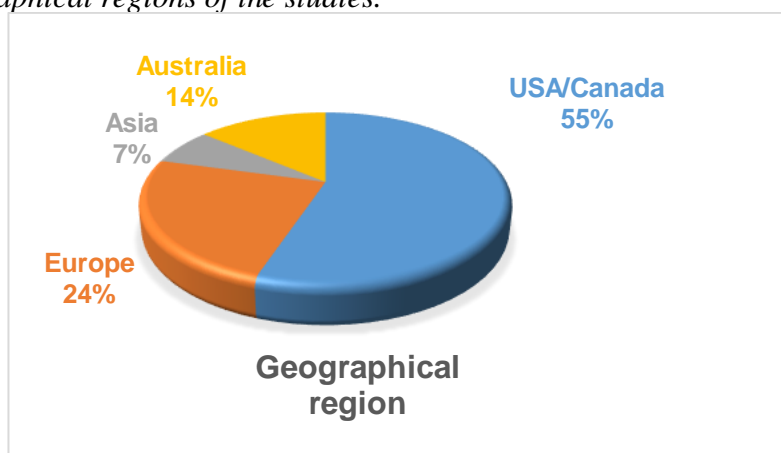
As Figure 2 illustrates, ethnographies (32%, 10/31 studies) and case studies (32%, 10/31 studies) were the most frequently employed methodologies for portraying digital literacies among refugees, followed by surveys or practitioner inquiry (Other, 13%). Some studies involved the design of digital environments (10%, or three studies), and a few studies used experiments or reviews.

The dominance of qualitative methods can be interpreted as a positive trend in promoting an in-depth understanding of refugees' digital practices, as such studies offer detailed examinations and frequently incorporate student voices. Similarly, action research (AR) or design studies may entail more learning and new roles for researchers or teachers who may participate in student practices (Bigelow et al., 2017). To complement small-scale research, further review studies could benefit the systematization of knowledge on the topic, including how refugee digital practices differ across countries, regions or schools.

The review of studies also indicated that digital literacy studies were geographically somewhat dispersed, with most studies originating in North America (Figure 3).

Figure 3

Geographical regions of the studies.



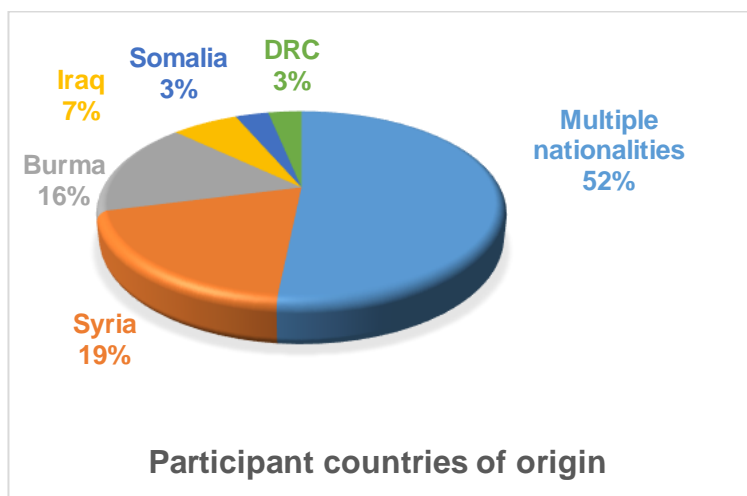
As Figure 3 shows, 55% (16/31) of all papers addressed refugees' digital literacies in the U.S. and Canada, followed by studies in Europe (7/31 or 24%). Notably, research on digital literacies involving refugees was less common in other parts of the world, including Australia (14% or 4/31) and Asia (7% or 2/31), and no studies were published from Africa, where the largest refugee populations reside.

While digital literacy research stemming from North America or Europe is valuable for educators working with refugees in these contexts, the findings from such studies may have little transferability for digital practices in developing contexts. Differences in digital access in various parts of the world may also mean that studies on refugee digital literacies in low-resource contexts have focused more on challenges than assets (Baganz et al., 2024; Menashy & Zakharia, 2022; Mudwari et al., 2021). As the review included only English-language papers, publications on refugee digital literacies in developing regions may also exist in languages other than English. Since most refugees reside in developing regions (Dryden-Peterson et al., 2017; UNHCR, 2024), more research is needed to understand how digital literacies can be leveraged to support refugees in different settings to complement existing knowledge.

Digital literacy research on refugees has included a variety of student populations. The review found a multiplicity of nationalities represented in the studies (see Figure 4).

Figure 4

Participants' countries of origin in the studies.



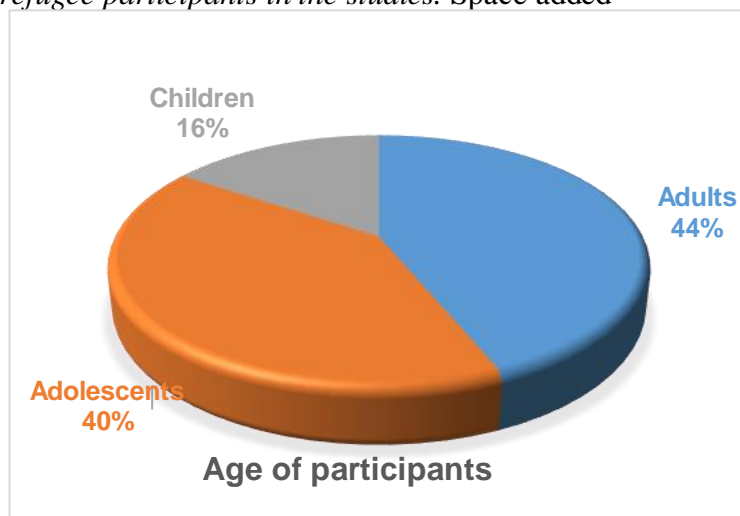
As Figure 4 illustrates, in the majority of studies, participants belonged to different nationalities (55%, 16/31), and some studies focused more specifically on certain refugee groups (Syrian, Burmese, Iraqi, Kurdish, Somali, and students from the Democratic Republic of Congo, DRC). Of all refugees, students from Syria and Burma received the most attention (35% or 10 studies).

The representation of particular nationalities appears to coincide with migration patterns as whereby certain refugee groups are centralized to specific regions (for example, Syrians in Austria or East Africans in Minnesota, see Kaufmann, 2017 and Bigelow et al. 2017 respectively). The prevalence of particular localities and refugee groups in research is also contingent on researcher access. However, as migration patterns constantly evolve, digital literacy research should continue to investigate additional nationalities and refugee groups.

The review of papers additionally showed that research on digital literacy practices has been unevenly spread in terms of participant age groups (Figure 5).

Figure 5

Age of refugee participants in the studies. Space added

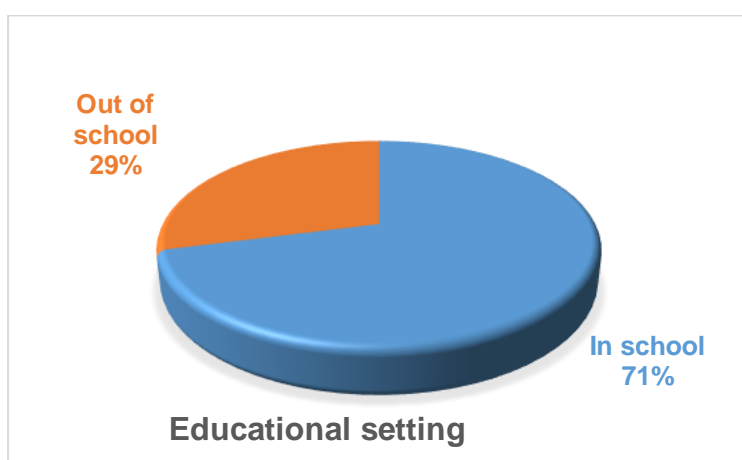


As revealed by Figure 5, 44% of the studies (14/31) addressed the digital literacy practices of adults, followed closely by adolescents (40%, 13/31)³. Refugee children (defined here as learners under age 12), on the other hand, were considered in only 16%, or five studies. More research on younger refugees' digital practices is imperative, as a lack of research suggests that digital technology use among learners from this age group is less prevalent or considered less important (see e.g., Cun, 2022). Expanding the current evidence base to include more studies on refugee children is also crucial to inform teachers about how digital literacies can be implemented at various school levels.

In terms of settings described in the study, the analysis showed that refugees' in-school digital practices are more well-researched than their out-of-school practices (Figure 6):

Figure 6

Educational settings of the studies.



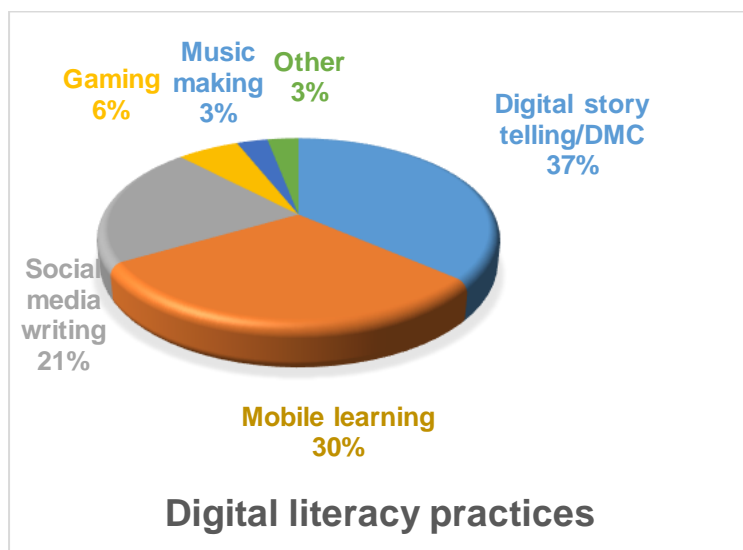
As evident in Figure 6, most studies (71% or 22/31) documented digital practices in the context of second-language classrooms or after-school programs, whereas only 29% (9/31) focused on digital literacies outside school (e.g., at home). Combined with the participants' age, it became clear that studies in out-of-school environments involved children or adults, whereas in-school studies focused exclusively on adolescents and adults. Besides the lack of information on the digital practices of refugee children in formal settings, a paucity of knowledge regarding refugee adolescents' digital practices in informal environments is hence discernible. More research is thus necessary to overcome current gaps regarding what digital practices are documented and for whom.

As for the literacy practices themselves, a plethora of digital tools and practices were reported (**Error! Reference source not found.**):

³ NB: two of the studies included both adolescents and adults

Figure 7

Digital literacy practices reported. space added between title and figure



As Figure 7 shows, the most frequently reported digital practice among refugees was digital storytelling or digital multimodal composition (DMC). These practices were featured in as many as 37% (11/31) of the studies and associated with digital technology use in formal settings. In such practices, the use of multimedia (e.g., visual, moving image, audio) and the creation of digital artifacts for narrative writing or other tasks were emphasized. It was followed by mobile learning, specifically the use of apps to mediate text- or voice-based practices or social interactions, mostly in informal settings. Social media writing was another relatively well-represented literacy practice (21%, 7/31), whereas other practices (3% or 1 study) encompassed online learning or browsing. Surprisingly, video gaming and music production received only meager attention, with only two (6 %) and one (3 %) studies, respectively.

Aligned with the literature on digital literacies among culturally and linguistically diverse student populations (H.A. Chen, 2013; Kendrick et al., 2022; Lam, 2014; Schreiber, 2015), the digital literacies exemplified by the studies demonstrate the multifarious possibilities afforded by digital tools to support refugee students' language and literacy learning. However, the review also noted discrepancies between the digital practices refugees demonstrated informally (e.g., apps, gaming or music) and those promoted by teachers or researchers in schools (e.g., DST, DMC or social media). For instance, in two studies (Cun, 2022; Duran, 2017), online gaming was a dominant practice among refugee children at home; however, this digital practice was virtually absent from the school. In addition, it became evident that gaming was only reported for certain refugee groups, in this case refugees of Syrian or Burmese children (Cun, 2022; Duran, 2017; Sirin et al., 2018). Future digital literacy research should thus investigate the compatibility between digital practices to ensure the meaningfulness of digital practices taken up with refugees in schools.

Refugee digital literacies as a means to incorporate asset-based perspectives

In addition to reporting trends in research, the present study aimed to understand how refugees' digital literacies support FoK or an asset-based approach. The analysis revealed five themes concerning how digital literacies can aid the integration of asset-based views in refugee education. These themes are discussed in the following subsections. Removed double space below

Bridging informal and formal learning activities

A central theme emerging from the review was the potential of refugee students' informal digital practices to serve as a bridge to academic activities. In this respect, Dooley (2019) described how deploying the app GarageBand and PowerPoint with two recently arrived refugees from the Democratic Republic of the Congo enabled learners to compose songs in English. Addressed the students' interest in music, the combination of the app and presentation software facilitated the writing of elaborate lyrics through different fonts and images. Incorporating formal learning activities with digital technology addressing student interest was additionally found to be benign for promoting students' confidence in their language and literacy skills (Dooley, 2019; Kendrick et al., 2022). Other studies offered similar evidence of bridging, reporting, for instance, the use of social media to support narrative writing among Somali students or fostering relational skills and building pragmatic and vocabulary knowledge through gaming among Karen refugees (Bigelow et al., 2017; Duran, 2017).

However, the findings also showed that bridging refugees' digital practices from informal to formal was oftentimes difficult for teachers or researchers and far from successful in all studies. One illustrative example was how the music-making and social media practices of nine Burmese refugee girls were considered incompatible with the school's language and literacy activities by their teachers, who preferred to use digital technology for basic computer skills, involving word processing (Omerbašić, 2015). In other cases, the lack of bridging was linked to a lack of resource material (Taira, 2019) or teacher training on such practices (Barnes & Tour, 2023). The findings hence confirm previous research outlining a lack of knowledge among teachers as inhibitive for incorporating students' funds of knowledge, including digital literacies (Tan & McWilliam, 2009; Tour et al., 2023; Tour & Barnes, 2022). To further support bridging, teacher training is critical and could aid narrow, skill-based conceptualizations of student literacy (see Tan & McWilliam, 2009).

Using multimodal technology for identity affirmation

Another key theme revealed by the present study was the identity affirmation that the digital literacy practices afforded refugee learners in the studies. For example, Netto et al. (2022) and Cun (2022) described how refugee participants' digital engagement promoted a view of language and literacy as multilingual. Consequently, incorporating digital practices fostered teachers', families, and other children's acceptance of refugees' multifarious identities, as revealed by their digital engagement, including the languages used. The affirmation of refugee identities was likewise linked to the multimodal texts refugee students created using digital technology (Gilhooly & Lee, 2014b; Omerbašić, 2015; Vanek et al., 2018), enhancing portrayals of ethnic affiliations or otherwise hidden aspects of refugee lives that words alone could not describe. Multimodal texts were also highlighted as crucial for the re-positioning of refugees against discriminating discourses. For instance, in Karam's study (2018), multimodal storytelling helped Zein, an Iraqi refugee, disrupt deficit discourses surrounding refugees through his artful compilation of slides. By creating a multimodal personal story from a strength-based perspective, Zein positioned himself as an avid and skilful gamer and coder from whom other students could learn about these topics. Barnes and Tour (2023) similarly noticed how refugee children selected and used multimodal resources to construct texts that challenged and redefined dominant discourses about refugees, basing their stories on key milestones, and interests.

These findings underscore the vital role of digital, especially multimodal, compositions, in enabling refugees to reposition themselves to question deficit positions (Michalovich et al., 2022; Shapiro, 2018). Incorporating such practices may therefore be useful for offsetting experiences of racism and discrimination that many refugees confront in the resettlement

context (Bigelow, 2010; Mendenhall et al., 2017). This suggests that multimodal digital practices can increase awareness among other people about refugee students' "digital" funds of knowledge and identity (Esteban-Guitart & Moll, 2014), where the seamless integration of contexts and life trajectories afforded by digital technology extends funds of knowledge conveyed face-to-face (Oikonomidou & Karam, 2020).

Promoting agency through choice of mode or language

Enhanced student agency through digital practices was another salient theme in the studies. Broadly understood as increased autonomy, choice, control, or ability to inflict power over one's situation, student agency appeared most vividly as an increase in choice between different modes or languages to communicate more freely in digital environments. Guerra-Nunez (2017) described a classroom study with Latin American refugees in which teachers incorporated practices and tools that were chosen by the learners themselves. The author showed that affording student choice resulted in power reconfigurations, leading to increased dialogue and collaborative learning in the classroom. Significantly, this role reversal and positive changes onset by increased agency were absent from non-digital, teacher-led lessons (Guerra-Núñez, 2017). Increased student choice was also prevalent in Veronis' (2018) and Vanek et al.'s (2018) studies, where, compared to traditional literacy practices, more control over what to read or write on social media and how (e.g., sharing written texts or images, writing in one's native language or English) resulted in enhanced confidence and text production. Studies exploring mobile learning additionally showed that choices of time or place led to more refugee student engagement and motivation to study a second language and associated literacy (Kaufmann, 2018; Netto et al., 2022). Viewed from an asset-based perspective, applying digital technology to encourage more student control could help countermand remediation that often reflects teacher rather than learner choices in pedagogy (Emert, 2014; Shapiro, 2018).

Building social relationships

A significant theme related to refugee learners' digital literacy practices was their potential for building online and offline social relationships. Studies reported that in settings with mixed student groups (e.g., refugees and immigrants), digital technology enhanced collegiality between students (Emert, 2019) or between students and teachers (Norlund Shaswar, 2021). Detailing the digital literacy practices of a Kurdish adult refugee and her teacher, Norlund Shaswar illustrated how the digital literacy practices the refugee learner and her teacher participated in outside classes (e.g., instant messaging) brought the two closer together affording the use of the host country language (Swedish) in a less formal setting. Crucially, messages exchanged through phones facilitated the negotiation of social differences between the two participants by building a social space that did not exist in the classroom.

Previous research has similarly shown that incorporating students' digital literacies affords less hierarchical and more collaborative forms of learning (Carhill-Poza 2017; Mills 2015; New London Group 1996). As shown by Norlund Shaswar's example, actively incorporating students' digital literacy practices in terms of messaging can foster deeper social relations between refugees and other people, such as their teachers, aligned with a FoK approach (Espinoza et al., 2021; Iddings et al., 2021). As the next theme shows, incorporating these practices could also contribute to an increased sense of belonging within different learning communities in the host country.

Fostering intercultural online communities

Another prevalent theme was the intercultural learning and community-building that refugee learners' digital practices contributed to. In a study involving social media writing among 29 Syrian refugees, representing different religions and cultures, Veronis (2018) noted that composing social media texts online increased cultural sharing. Through such practices, students could more easily negotiate cultural differences, mediate tensions, and foster new intercultural connections than offline, as the space was perceived as less threatening. Similarly, in Bigelow et al.'s (2017) and Vanek et al.'s (2018) research with participants of Somali origin, language teachers and researchers gained valuable cultural knowledge from their students who shared the Somali language and culture (e.g., recipes, pictures, and beauty rituals) through social media interactions. This confirms previous research on the affordances of digital technology for developing culturally sensitive pedagogies (Y. Chen et al., 2017), where findings suggest that digital tools are useful mediators in interactions around culturally sensitive topics.

The findings further indicated that intercultural learning opportunities also involved discovering more about students' digital literacy practices. This became evident in the concessions teachers or researchers made in studies where the digital tools or practices learners preferred were initially unknown to the researchers or teachers (Duran, 2017; Epp, 2017). Considering that digital literacy practices vary according to cultural context and social groups, it underlines the importance of taking an inquisitive stance towards potential variations in refugees' cultural resources and practices (Michalovich et al., 2022; Shapiro, 2018; Warriner et al., 2020). This further confirms the necessity of treating digital literacies not as singular or universal but as a set of practices that vary considerably (Lankshear & Knobel, 2015), even in refugee settings. As such, even when teachers or researchers are familiar with a host of digital literacies, student practices may not correspond to assumptions or expectations regarding practices.

Recommendations and Conclusions

This study explored how the digital literacies of refugees have been studied in the literature and how their digital practices can be utilized to promote asset-based approaches in formal educational settings. The study drew upon the theoretical perspectives of funds of knowledge and digital literacies to encourage deeper theoretical understandings of the notion of digital literacy and potential practices educators can use to support refugees in the classroom. The review summarized and synthesized evidence on digital literacy practices reported among refugees from different age groups across 31 studies. It reported trends regarding methodologies, settings, participants, tools, and digital literacy practices in the studies and identified recurring themes concerning how refugees' demonstration of digital literacies may facilitate asset-based approaches.

The findings of this review have two implications. First, the review showed that although research on refugees' digital literacies is expanding, existing limitations necessitate further work. The underrepresentation of digital literacy research among refugees in low-resource contexts from a strength-based perspective should be improved by large-scale or systematic review studies and primary research to determine the transferability of documented practices to refugees in various settings. Additional research that includes new groups of refugees is also recommended for wider applicability. The review also indicated that further studies are particularly acute concerning the digital literacies of refugee children, as this age group appeared in only a handful of studies. Similarly, research describing adolescent refugees' digital literacies in informal settings is nascent, yet critical for informing student-led practices.

To gain a more comprehensive understanding, more systematic and broad research in the aforementioned areas is necessary.

Second, the review found that refugee digital literacy practices have significant value in supporting refugee education. The educational value of digital practices emerged in relation to the ability of refugee learners to showcase aspects of self, communicate confidently, collaborate with teachers and other learners, and create engaging presentations using sophisticated forms of literacy. Viewed from an asset-based lens, the plethora of digital practices described additionally revealed that many refugees are highly skilful ~~with~~ in using digital technologies for language and literacy purposes.

Five themes were identified that demonstrated how incorporating refugees' digital literacy practices potentially promotes a funds-of-knowledge (FoK) approach. Suggestions include bridging informal and formal practices (e.g., by drawing on interest-based digital activities such as music), using multimodal technology for identity affirmation (e.g., by having students create multimodal presentations), promoting agency through choice of mode or language (e.g., social media writing in multiple languages), building social relationships (e.g., by creating new social spaces via informal messaging) and fostering intercultural online communities (e.g., through sharing cultural materials via online groups). At the same time, the findings revealed a discrepancy between the digital literacy practices of students (cultural practice-oriented) and those of teachers or schools (technical skills-oriented) in some classrooms. Further research on how educators and educational institutions have successfully integrated refugee learners' practices involving digital media into formal settings is thus welcome and could be seen as significant in light of the growing presence of digital technology and online learning, as further emphasized by the pandemic.

The current scoping review does not represent a full systematic review of all the evidence on the topic, given that the number of databases searched is small. Although the number of articles retrieved comprised a representative sample to demonstrate generic trends and nuanced aspects of the subject, expanding the scope to include a full systematic review with additional databases and types of publications (e.g., grey literature, non-English papers, or regional publications) could add to the breadth and depth of review findings. As refugee students' digital practices undergo constant change alongside rapidly evolving technologies, continued research on emerging practices (e.g., involving AI) is critical to stay abreast of developments. Such knowledge is also vital to foster new asset-based practices whereby refugees' digital 'funds of knowledge' continue to be applied and recognized by schools and educators.

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Notes on Contributor

Linda Molin-Karakoç is a PhD candidate at the Institute of Education, University College London. She obtained her M.A. in English language and literature from Åbo Akademi University and her TESOL professional degree from Arizona State University. Linda has extensive experience working as a second and foreign language teacher for students from immigrant backgrounds and as a curriculum developer for refugees with interrupted or limited education. Linda's research interests include refugee and immigrant students, computer-assisted language learning and second language teaching and learning.

ORCID

Linda Molin-Karakoç, <https://orcid.org/0000-0002-7907-6993>

Appendix A.

Study selection.

| Author(s) | Year | Aim | Context/ population | Educational setting | Methods | Main findings |
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| Zaidi & Sah | 2024 | To identify and map evidence to examine the extent, trend, and nature of research using multilingual and multimodal literacy interventions to explore newcomer and second/third-generation racialized high school students' intersectional identities and experiences of inequalities | Newcomer and immigrant/refugee youth across countries/nationalities | In school | Scoping review | The use of multilingual, digital stories or visual story-telling to tell about life in transit, helped explored the lived experiences of immigrant/refugee youth and also for students to express and negotiate their identities |
| Smith et al. | 2022 | To co-design, co-produce, pilot, evaluate and revise an Integrated Digital Literacy and Language Toolkit | 27 refugee participants from Higher Education institutions in Europe (UK, Ireland, Finland, Slovenia, Spain) | Out-of-school | Design study | The usefulness of the tool kit and its digital learning practices for supporting student autonomy, improving digital capabilities and academic language mastery; a positive experience of students and a flexible learning experience along with access to open resources. |
| Bradley et al. | 2020 | To investigate how mobile technology can be designed to support migrants' language learning process. | 34 Arabic migrants in Sweden | In school | Design research with three case studies including surveys, observations from design workshops; interviews with participants | The study identified a rich set of mobile language learning activities Arabic speaking migrants are engaged in, such as learning Swedish through dedicated language learning apps, translating words and watching YouTube films. Learners desired more content for everyday Swedish. |
| Sirin et al. | 2022 | To use an online, game-based learning intervention to meet the language learning and socio-emotional needs of refugee children | 147 Syrian refugee children in Turkey | In school | Controlled field experiment | The results show potential of using online and game-based learning interventions with refugees in language educational settings to develop language knowledge, increase a sense of hopefulness and help students gain leeway or entry into school. |
| Dooley | 2018 | To map refugee youth's afterschool digital practices to linguistic capital in school | Two Congolese refugees taking part in an afterschool club in Australia | In school | Qualitative case study (observations, interviews, artifact collections) | The practices at the afterschool club promoted students' development of multimodal communication, social relationships that provided more linguistic and educational capital as well as self-initiated practice in using different academic skills (production, analysis etc.). |

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| Norlund Shaswar | 2021 | To describe the digital literacy practices of a refugee and the L2 program to highlight differences and account for the full linguistic repertoires of the learners | One Kurdish-background refugee in an introductory L2 program for Swedish learners in adult education in Sweden | Mostly out-of-school | Ethnography (classroom observations and individual semi-structured interviews with the student and her teacher) | The learner had limited opportunities to participate in digital literacy practices in her everyday life and most of these involve social interaction with family and friends. The teacher and SFI programme only encourage limited digital literacy practices, although some additional practices are going on between the teacher and student of a semi-private nature. Connecting pedagogical purposes to the student's transnational practices could aid in helping the teacher to understand the learner's entire linguistic repertoire and range of literacies for learning. |
| Michalovich | 2021 | To describe patterns in the literature regarding the affordances of digital media production for refugee-background youth | Refugee youth, digital media production (no national context) | In school | Scoping review | Digital media production afforded refugee-background youth: (1) Ownership of representations across time and space; (2) opportunity to expand, strengthen, or maintain social networks; (3) identity work; (4) visibility and engagement with audiences; and (5) communication and embodied learning through multimodal literacies |
| Kendrick et al. | 2022 | To develop innovative pedagogies that build upon and enhance the digital literacies and representational practices of culturally and linguistically diverse youth from refugee backgrounds | Nine youth from Syria, Afghanistan, Iraq, El Salvador, and Nepal studying in a Canadian high school | In school | Ethnographic case study (observations, informal conversations, student interviews and artifacts) | The use of digital story telling helped mediate refugee students' 1) use of multimodal meaning making to communicate complex, critical understandings; 2) emergence of digital literacies; 3) challenges of communicating in digital spaces; and 4) investment in identity affirmation in language learning. |
| Barnes & Tour | 2023 | To exploring how digital multimodal composing can be employed to interrogate and challenge entanglements of language, immigration status and power in language and literacy classrooms | 23 primary-aged English as an Additional Language (EAL) students (Years 3–6) from refugee backgrounds in Victoria, Australia | In school | Case study (observations, photographs, teachers' written reflective journals, interviews and students' reflections) | The study shows how students selected and used different semiotic resources for their digital texts while challenging and redefining dominant discourses based on their lived experiences and interests. Both students and pre-service teachers found value in students' access to digital technologies and experimenting with multimodal and multilingual resources to create digital texts, reflecting cultural and linguistic identities. The creation of digital multimodal and multilingual texts allowed for opportunities for students to reposition themselves as knowledgeable and active meaning-makers with strategic support from teachers and peers |
| Johnson & Kendrick | 2017 | to showcase how engaging with multimodal video production can enable refugee students to express identities and share aspects of their social world in language classes | A Syrian teenage refugee student in Canada | In school | A multimodal analysis of presentation slides | Engaging with nonlinguistic modes provided enhanced opportunities for the student to explore and make visible complex and abstract facets of his life and identity, particularly as they relate to difficult past experiences. |

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| Waird Taira | 2019 | To account for secondary newcomer and refugee youth's digital literacy practices to maintain global connections, identity, and self-worth in a classroom in Southwestern US | Language teacher and refugee students (from the Democratic Republic of Congo, Iraq, Syria, Somalia, and Togo) in the U.S. | In school | A qualitative case study (observations, oral histories, student interviews, narrative products) | The participants demonstrated numerous and varied literacy practices (e.g. writing posts on Instagram); yet, these practices, remained mostly invisible in the school and classroom, surfacing only when recruited for narrow curricular and academic purposes. |
| Karam | 2018 | To examine how an adolescent refugee English learner uses language to construct his identity and position himself as a digital bricoleur, using different materials to produce new artifacts. | Zein, an Iraqi refugee in a U.S. high school classroom | In school | Interviews, observations, multimodal artifacts | Classroom tasks with multimodal dimensions can provide spaces for refugee students to negotiate their engagement with classroom tasks to better align them to their interests and identities, make connections between their school-based and out-of-school literacy practices, and practice their agency to produce counternarratives that challenge deficit perspectives of refugee students. |
| Omerbasic | 2015 | To portray the digital practices of refugee teenage girls in an afterschool English language program in the US. | Nine teenage girls who were resettled as refugees from Burma/Thailand in Southwestern U.S. | In school (after-school program) | Qualitative case study (multimodal interviews, participant observation, digital documents) | Findings show that the girls' digital literacy practices at home and in the classroom varied; with home being associated with creative play, identity negotiation and school with only formal learning. The girls mostly had access to iPads, computers or iPods for digital production in the home. Translocal literacy practices in digital settings allowed the girls opportunities to build virtual spaces where they could showcase cultural affiliations, histories and affirm hybrid ways of knowing. These daily practices took place primarily on Facebook, but also on ooVoo and YouTube. The content the girls accessed, shared, and produced reflected their interests, such as for example music videos or writing to people on social media. |
| Kaufmann | 2018 | To study the mobile literacy practices of recently arrived refugees | 10 Syrian refugee participants in Vienna, Austria | Out-of-school | Ethnography (participant observation, interviews) | Various mobile literacy practices were mentioned of making use of smartphone dictionaries, teaching apps, and videos for language learning purposes. Refugees regularly spent their commutes to revise German grammar or watch tutorials of Arabic native speakers on YouTube. Translation tools were essential for scaffolding language and interactive skills and Google was used to identify products and learn more about those in stores. |
| Tour et al. | 2023 | To explore how 30 adults from migrant and refugee backgrounds navigated challenging digital literacy practices related to settlement (incl. linguistic) | 30 adults (from Myanmar, Ethiopia, Iraq, China, Sudan etc.) enrolled in an Adult Migrant English Program (AMEP) and | In school | Questionnaires and interviews | Refugee participants engaged in a wide range of digital literacy practices (e.g. engagement with content apps, translation) as they were establishing new lives in Australia. They were willing to develop their digital literacies but also found engaging in digital literacy practices challenging (due to a lack of available social, material or temporal resources such as teachers, time or devices). |

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| Emert | 2019 | To investigate the experiences of a group of middle school-age refugee girls engaged in a series of dovetailed literacy lessons focused on digital storytelling. | six EAL teachers in Australia 10 refugee students, one teacher and 8 college students in a middle school in the U.S. | In school (after school) | Action research (surveys, interviews, observations, digital stories, researcher journal) | Through video production, students demonstrated their comprehension of sophisticated content such as applying a traditional storytelling frame to a personal story and their quick grasp of the technology. They were also more collegial and attentive to their classmates, leading to increased social participation and academic confidence in language classes. |
| Nogueiron-Liu & Hogan | 2017 | To explore how visual media are used by refugee adults and adolescents as resources in the production of digital texts, and as artifacts to elicit accounts and memories | Four participants (two adolescents and two adults) from the Michoacan region in Mexico, who had escaped drug violence to the U.S. | In school (but also involving out-of-school) | Practitioner inquiry | Digital projects can become resources to bring together parents and teachers in dialogue about immigrant youths' online practices. These conversations should go beyond efforts to enforce acceptable use of digital tools, such as blocking "inappropriate" content. Transnational media consumption requires deeper understandings of the cultural practices and ties immigrant families maintain. The involvement of caregivers can bring together multiple interpretations of texts, videos, and news produced in other countries. These conversations are especially helpful in new migration contexts, where educators and families are still grappling with the meaning of new Latino identities and the recognition of immigrants' knowledge in schools. |
| Netto et al. | 2023 | To explore how Rohingya refugees' use of smartphones shapes and is shaped by language and literacy, and to propose ways forward for developing digital solutions | Rohingya-Burmese refugees residing in Malaysia | Out-of-school | Case study | The most popular use of phones by refugees was for social networking, with music, radio listening, video watching, messaging, communication and navigation apps. Results further revealed varying degrees of digital literacy, linguistic capital and literacy in three main languages: the Rohingya language, Bahasa Malaysia, the national language of Malaysia and English. |
| Vanek et al. | 2018 | To study how English-learning adolescents in the U.S. state of Minnesota use social media to engage in social, academic, and identity work. To explore the potential for using social media to support learning in a high school English as a Second Language (ESL) class of recently-arrived migrants in the U.S. | 24 adult students of Somali origin in an EL classroom in U.S. (three focal participants) | In school | Qualitative case study (Facebook posts, video recordings of class interactions, student presentations, and interviews) | Findings showed that through the process of building social presence (SP), learners asserted identities through social media posting and writing. These identities were affirmed by classmates, who legitimated their written, multilingual contributions. This legitimation resulted in rich, socially interactive learning experiences in the group. |
| Gilhooly & Lee | 2014 | To increase understanding of how refugee students use digital technologies and | Three adolescent Karen brothers in the | Out-of-school | Ethnography (Participant observation, interviews, | The three refugee brothers' digital literacy practices involved for instance music production, video production, chatting/social networking, using smartphones, taking photos, translating |

| | | what it means for their resettlement | U.S. (Georgia) | | multimodal artefacts) | and reading online texts. Their involvement in various online literacy spaces helped (1) maintain and build coethnic friendships, (2) connect to the broader Karen diaspora community, (3) sustain and promote ethnic solidarity, and (4) create and disseminate digital productions. The practices and tools offered new ways to showcase the participants' 'funds of knowledge' and as second-language learners allowed them a space free from the restrictions imposed by the local language. |
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| Michalovich | 2022 | To explore the possibilities afforded by a dramaturgical pedagogical approach to digital multimodal composing (DMC) for nine adolescent newcomer students' investment in classroom learning. | 9 adolescent participants (four refugees) at a Canadian high school | In school | A longitudinal qualitative study (15-month period) spanning multiple video productions (reaction videos, video podcasts, visioning videos, COVID safety videos). | With proper facilitation, play-based dramaturgically structured digital multimodal composing projects could help adolescent newcomer students: (1) invest in authentic roles, scripts, props, and actions through redefined situations, contributing to their meaningful participation in classroom activities; (2) practice impression management part of their investment through idealized performances that could help them gain social and cultural capital; and (3) establish, maintain, and develop relationships and affection among each other and with their teachers. The study carries implications for teachers for enhancing the students' investment in learning as part of language and literacy classes. |
| Guerra-Nunez | 2017 | To study and bring attention to the multiplicity of factors that may shape an educational technology intervention with immigrant-background youth in language classrooms and propose ways in which educational third spaces can be created via technology | Four fifth-grade students from various Latino backgrounds in a U.S. classroom | In school | Ethnographic case study (interviews, observations) | A bottom-up approach to technology use reconfigured power dynamics in the classroom. Students became empowered (i.e. gained ability, agency or control to make decisions) and started learning from each other. By using this technological approach, Gaby, Pedro, Pepe, and Adi became active participants in a power-sharing dialogue that encouraged motivation, reassured their knowledge, and increased their academic self-esteem as language learners. |
| Duran | 2017 | To explore the language socialisation practices of refugee children who participate in an online video gaming community | Three Karen refugee children (6-9-year-olds) in their home setting in the U.S. | Out-of-school | Ethnography | The study found that access to digital-mediated literacies facilitates English language learning (e.g. vocabulary, oral practice among the participants). Playing video games further encouraged socialization by belonging to a community of practice where they could frequently switch between modes. |
| Michalovich et al. | 2022 | To investigate how reaction videos and design choices may mediate identities for refugee students in language classrooms | Six refugee-background youth in a Canadian classroom | In school | Ethnographic, qualitative case study | The study showed that students positioned themselves and their identities anew through their reaction videos via (a) knowledge brokering; (b) navigating gaze; and (c) playfully disrupting cohesion. |
| Tammelin-Laine et al. | 2020 | To account for digital literacies in the context | Immigrant and refugee background | In school | Case studies (student/teacher | Students preferred to use smartphones and various digital applications (games, social media, translation etc.) on these |

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| | | of adult education for migrants | adult students in Finland | | interviews and screenshots of student practices) | devices as their access to other devices such as PCs were limited. Voice messages and voice translation helped students with limited print literacy interact, find information and learn Finnish. Different voice-based applications (games) also helped students demonstrate skills. |
| Veronis | 2018 | To investigate the everyday practices of social media and their role in the resettlement of Syrian refugees in Canada | 29 adult and adolescent Syrian refugees in Ottawa, Canada | Out-of-school | Qualitative case study (focus group discussions) | Social media enabled cultural sharing and learning among refugees, bridging cultural differences and building connections while negotiating the participants' sense of belonging. Using social media enabled refugee agency as they could control what to post or read and as a transcultural 'virtual' space enhanced refugees' resettlement, including their linguistic integration. |
| Hebbani et al. | 2023 | To explore and test a Whatsapp-based service (Chatloop) for supporting newcomer students' language learning | 31 recently arrived migrants in Australia | In school | Experiment (mixed methods) | Accessing mobile-based learning services was deemed as advantageous for the students compared to traditional classroom learning. It provided an opportunity to learn more about Australian culture and communication patterns. These findings suggest that such mobile interventions can be a valuable means of enhancing migrant's English language learning and warrants future research. |
| Artamova & Andrasoutpoulos | 2019 | To explore the mobile literacy practices of two refugee families residing in Germany and the implications these carried for their communication and language practices | 9 Afghan and Syrian refugees (15-56-year-olds) in Hamburg, Germany | Out-of-school | Ethnographic interviews, video records of use, fieldnotes, mediagrams | Results show that the participants used a wide range of resources for learning German and communicating. Younger refugees had different practices compared to her parents, which were also more diverse (gaming, video-watching or making). All refugees relied less on language learning apps than e.g. video tutorials, translation or self-help online networks. As accessible tools, smartphones played an especially important role in social communication and information retrieval for this group. |
| Epp | 2017 | To explore the utility of a language learning app for supporting the language learning needs of a group of recently arrived migrants | Adult migrants in Canada (including refugees) | In school | Case study | Migrants in the study used a variety of tools (mostly language learning apps) besides the experimental app. They also videos etc. to support their language skills and translation to fill in gaps or overcome barriers in interaction. Students requested more use of digital and mobile technology for collaboration. |
| Eilola & Lilja | 2021 | To describe a refugee student's engagements with smartphones during an intervention in Finnish second language classes for adults | An adult Syrian refugee student in a language program in Finland | In school | Case study (using video and multimodal conversation analysis) | The study showed how Ali the refugee participant used his smartphone to mediate interactions with people and his language learning both outside and inside the classroom. This was possible through the multimodal functions and translation capabilities with supported Ali's use of Finnish and participation in learning activities as a newly arrived student. The study illustrates how smartphone-based practices could be |

used to support language learning as a social activity.
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| Cun | 2022 | To explore the digital literacy practices and identities of two children with refugee backgrounds. | Two refugee children (girls, 7 and 9 years old) from Burma, residing in the U.S. | Out-of-school | Ethnographic field notes, audio recordings of conversations, student artefacts | Children described their digital literacy practices, such as playing video games, video chatting and watching cartoons, and that what the participants learned through their digital literacy practices helped them explore their multiple identities (e.g. digital literacy experts). Such practices supported the participant's bilingual development and active use of multiple languages in the home. Their digital practices thus helped highlight the children's identities as multilingual speakers who have various cultural and religious assets, understand how to mobilize languages in different social contexts, sustain their family relationships and are skilful at navigating digital literacy texts through for instance video games. |
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