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## Editorial

### Marginalized communities, emerging technologies, and social innovation in the digital age: Introduction to the special issue



#### 1. Introduction

The intersection between digital information worlds and marginalized communities is a critical research area within information sciences and human-computer interaction. As we move deeper into the “digital age,” there is growing research interest in understanding and addressing issues regarding accessibility, bias, social exclusion, cyber-racism, cyberbullying, digital divide, misinformation, and usability (Du & Haines, 2017; Gatehouse, Wood, Briggs, Pickles & Lawson, 2018; Karlova & Fisher, 2013; Kitzie, 2019; Vyas & Dillahun, 2017) in the information and technology experiences of marginalized and vulnerable groups, such as ethnic people of color, immigrants, LGBTQ populations, the homeless, the elderly, people with disabilities, and people with low socioeconomic status.

However, much remains unknown about emerging technologies and social innovation in the context of marginalized communities. For example, how do we define or conceptualize marginalization? What are the main digital disadvantages for marginalized communities? What are the unique needs and information behaviors of these communities? To what extent do technologies empower marginalized communities and what are the associated challenges? What applied methodologies should researchers adopt and adapt in order to have an impact in the area of racial and social justice? How should we evaluate the role of emerging technologies such as virtual reality, social robots, artificial intelligence, digital library interface design, and big data analytics in promoting social and emotional wellbeing and are their uses culturally appropriate? These are just a few of the many questions that need to be investigated as digital innovation rapidly advances and threatens to further disadvantage marginalized groups.

The special issue is a follow-up to a series of workshops organized by the editors, including: a recent workshop held at the 2017 iConference “Vulnerable communities in the digital age: Advancing research and exploring collaborations” (Du et al., 2017); a workshop on ethics in “sensitive HCI” – that is, human-computer interaction research in sensitive settings (Waycott et al., 2017); and a workshop on the design of virtual reality for use in health and therapeutic settings at the 2018 Designing Interactive Systems Conference (Waycott et al., 2018). These workshops have provided space for discussions and debates on various topics associated with marginalized communities and led to the open call for this special issue.

#### 2. In this issue

The ten articles included in this special issue present a unique collection of studies investigating issues in relation to empowering marginalized and vulnerable communities in the digital age and the creative design and use of emerging technologies to promote social innovation, as briefly reviewed here.

##### *Refugees and immigrants*

The first four articles, including two conceptual and two empirical articles, are about migrant populations including forced migrants such as refugees and asylum seekers, U.S. Latina migrants, and older migrants in Australia and Canada. Lloyd's (2020) paper discusses the resettlement of forced migration especially refugees in a third country from an information perspective. In this conceptual paper, Lloyd aimed to develop an understanding of the complexity and experiences of refugees who become immersed with the process of resettlement into a receiving country. Firstly, Lloyd problematized forced migration, considering themes such as precarity and resilience in the context of the lived experience. Then she introduced theories and concepts that have been employed in an account of the lived experience of the fracturing and remaking of information landscapes fundamental to successful resettlement. Lloyd described themes of disjuncture, intensification, and liminality in relation to rebuilding landscapes fractured through forced

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migration, using social theories (practice theory and social capital theory) as the analytical lens to shape the contours of fracture. Finally, the author articulated how technology is implicated in remaking fractured landscapes. Technology affordances are viewed as opportunities that enable and/or constrain refugees' resettlement at functional, emotional, social and instrumental levels.

In the second theoretical paper, [Ruokolainen and Widén \(2020\)](#) performed a comprehensive review on the concept of misinformation, and two new concepts were introduced, namely, perceived misinformation and normative misinformation, in the perception of the accuracy of information. The authors then reviewed information practices of asylum seekers in Finland who came across different types of misinformation. The diverse misinformation experienced by asylum seekers includes official information that is inadequate or presented inadequately, outdated information, misinformation via gatekeepers and other mediators, information giving false hope or unrealistic expectations, rumours and distorted information. A Social Information Perception (SIP) model was proposed to illustrate social, cultural and historical aspects as well as situations and contexts that are involved in the mental process which determines whether asylum seekers perceive information as accurate, misinformation or disinformation. The paper contributes to a holistic view on the information situation of marginalized groups by embedding the concepts of perceived and normative misinformation into the SIP model. To a broad perspective, this paper conceptually adds aspects of misinformation or disinformation into the existing information practices models, which will guide future empirical studies.

Both articles of [Adkins and Moulaison Sandy \(2020\)](#) and [Caidi, Du, Li, Shen and Sun \(2020\)](#) address the combining effects of the intersectional identities of immigrants who entailed multiple characteristics of immigration status with gender, age, culture, or geographic location. [Adkins and Moulaison Sandy \(2020\)](#) conducted an empirical study on the information behavior and ICT use of Latina immigrants to the U.S. Midwest by considering intersectional identities of the Latina migrants: (1) women [in a family-centric culture defined by strong gender roles], (2) immigrants [potentially with linguistic and socioeconomic status disadvantages] and (3) residents of the U.S. Midwest [a low-population/rural area with lesser access to resources and an increasingly xenophobic host community]. Digital exclusion was taken as an analytical lens to investigate systematically the ICT use by these rural and low-population density immigrant Latinas. The complex social environment (language, family and gender roles) navigating Latina immigrants' information practices and use of technology-mediated information was explored to break down technology barriers for these women.

[Caidi et al. \(2020\)](#) reported a qualitative interview study with 16 Chinese older adults who were recent immigrants under family reunification schemes to Australia and Canada. Using the translocational meaning making (TMM) framework, the authors examined the older immigrants' information practices as well as the transnational dimension of their settlement process which were not well presented in prior research. The research questions leading this examination were: How do older adults experience resettlement in a new country? And how do their information practices change across time and space as a result of migration? As for older Chinese migrants, settlement-related information practices were dynamic, shifting from imaginary during pre-immigration to experiential as the participants gained an increased understanding of the new country. Reuniting with family largely frames older Chinese migrants' social imaginaries of immigration in the destination country. Older migrants lived in Australia/Canada lived their lives in Chinese, either digitally through social media WeChat, or with co-ethnics they met locally in the community. The combined effects of ageing, family sponsorship, cultural norms and values, and limited proficiency in English shaped the migration experiences (and associated information practices) of the older Chinese newcomers in unique ways. This article inspires new thinking about the realities of aging migration and diasporic identities.

### *Developing countries and regional areas*

In the next three articles, the focus shifts from immigrants and refugees to people living in rural regions and/or developing countries. In a reflective article that discusses their experiences of doing fieldwork in rural India, [Potnis and Gala \(2020\)](#) identified considerations for "best practices" when conducting fieldwork with marginalized communities. They developed a "financial, information, and digital literacy toolkit to equip people living in poverty with the skills and knowledge necessary to use mobile phones to carry out financial transactions." This information communication technology for development (ICT4D) project involved travelling to libraries in rural India to deliver the training program and to conduct surveys and observations of participants engaging in the workshops. The rural locations and the financial and educational vulnerability of participants led to several practical and ethical challenges. In the article, the authors discussed and drew on these challenges to identify several lessons, which they classified as issues to consider *before* conducting fieldwork, *during* fieldwork, and *after* fieldwork. The authors intended for these lessons to be valuable for other researchers conducting ICT4D fieldwork in similarly remote and low socio-economic regions.

Also focusing on rural libraries, [Mehra, Sikes and Singh \(2020\)](#) examined how libraries use technologies to promote community engagement and help address marginalization and the digital divide in the Southern and Central Appalachian region of the United States. Although this research was set in the United States, rather than a developing country, marginalization was still an acute issue for residents of the rural communities that were the focus of this research. Mehra et al. noted that historically, the counties in question have experienced low socio-economic status, unemployment, and low digital and information literacy. Drawing on interviews and focus group discussions with rural librarians, Mehra et al. painted a picture of the important role that libraries play in helping residents to overcome this marginalization through the provision of technology-based services and support. Services ranged from basic access to information and resources (e.g., access to wireless internet) to more tailored educational and creative programs (e.g., training classes and maker spaces). Providing wireless access was important because residents in rural and remote areas often had limited telecommunications services. Meanwhile, training programs were seen as valuable for helping to enhance digital literacy in the region, an important step in overcoming some of the digital divide, or digital exclusion, challenges that affected library patrons in this region.

In a departure from research employing fieldwork methods to examine information and digital literacy programs, [Mossie and Wang \(2020\)](#) described a system they have developed for detecting online hate speech directed at ethnic groups in Ethiopia. They addressed the challenge of monitoring and detecting words used in a minority language, Amharic, that has few existing computational resources to draw from. Using deep learning algorithms, they have been able to detect the presence of hate speech in social media and determine which ethnic groups are vulnerable to being targeted. This research has several potential applications, including the automatic banning of social media users who employ hate speech to target ethnic minorities and the automatic removal of hate speech from social media platforms.

#### *Older adults, blind and visually impaired users and black Wikipedians*

Moving from people living in rural areas and/or developing countries, the last three articles investigate the theme of the special issue from three unique vulnerable/marginalized groups: older adults, blind and visually impaired users, and Black Wikipedians. In order to assess the use of interactive virtual reality (VR) technology in residential aged care facilities (RACF), [Baker et al. \(2020\)](#) performed an exploratory study with five older residents and five staff members. The authors applied a qualitative method consisting of pre- and post-interviews, a visual rating survey, and field observation. Each participant engaged in up to four, one-hour VR sessions in two weeks, and the intensive data collection process offered rich data for analysis. The researchers employed thematic content analysis to identify themes in relation to the benefits and challenges of VR use, as well as usability issues of VR deployment. On the one hand, VR can extend participants' connections with family and friends, specifically for residents who are less interested in traditional group social activities; on the other hand, head-mounted displays had a negative impact on participants with dementia. This empirical study adds new knowledge about RACF residents' experiences with interactive VR and their perceptions of future applications of VR technology in relation to their values and issues. Moreover, the identification of usability problems of VR technology can help researchers and designers understand the impact of these issues, as well as enhance the design of interactive VR, to support residents' enjoyment of social activities.

Through the lens of the social model of disability, [Xie et al. \(2020\)](#) highlighted vulnerabilities of blind and visually impaired (BVI) users when accessing and using digital libraries (DLs). The research suggests that problems BVI users face are the result of sight-centered DL design. Building on prior research on the identification of help-seeking situations that BVI users experience when using DLs, the authors designed and implemented help features to address these situations, and conducted the first study testing the implementation of help features corresponding to BVI users' needs. Forty subjects were divided into a control group who interacted with a baseline DL and an experimental group who interacted with the same DL equipped with new help features. After analyzing the data collected from pre-questionnaires, think-aloud protocols, transaction logs, and pre- and post-search interviews, the authors found that the newly implemented help features reduced the number of help-seeking situations. Most important, the authors found a significant difference between the two groups in which the experimental group rated the DL higher than the control group in terms of perceived DL feature usefulness, DL ease of use, and DL satisfaction. The significance of the study can be reflected in the following: (1) it shows that DL design should take account of diverse user needs, and the findings of user studies can be translated into DL design principles; and (2) it demonstrates that DL design can be enhanced to support BVI users' if designers consider their specific user needs and problems. This pioneering study opens a new channel for developers to design DLs and other types of information retrieval systems to effectively support diverse users.

Emphasizing Black Wikipedians, [Stewart and Ju \(2020\)](#) examined their motivations behind content contribution. They proposed a research model that consists of multiple factors, in particular black altruism, perception of information quality, social presence and self-interest, which motivate Black Wikipedians to contribute to Wikipedia. The authors calculated the degree of association among the factors by applying partial least squares, a structural equation modelling technique based on the data collected from an online survey of 318 Black Wikipedia contributors. They concluded that while self-interest and perception of information quality directly inspired Black Wikipedians to contribute, social presence and black altruism indirectly influenced users in their content contribution. In addition to proposing a research model to identify the four factors leading to content contribution by Black Wikipedians, Stewart and Ju also conducted the first quantitative study to assess relationships among these factors. Theoretically, this research validates their proposed research model and further enhances the understanding of Black social media participation. Practically, this study calls for the need for library and information organizations, and educators, to promote and support the digital content contributions of Black Americans.

### **3. Conclusions and future directions of research with marginalized communities**

The articles presented in this issue give us a diverse and interesting snapshot of the field, which promotes theoretical and methodological advances and contributions to this important area of study. Future research needs to consider the following issues:

- The definitions of marginalized groups, vulnerable groups, and other related groups, as well as their similarities and differences in the digital age.
- How emerging technologies and social innovations mitigate existing challenges or introduce new challenges for marginalized/vulnerable groups in the digital age,
- How to develop new theoretical frameworks to guide research on marginalized/vulnerable groups in the digital age, and
- How to apply new methods to investigate unique information searching and sharing behaviors of the marginalized and vulnerable groups in the digital age.

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