"You Don't Feel That You're So Far Away": Information Sharing, Technology Use, and Settlement of International Student Immigrants

Adam Worrall
University of Alberta
Edmonton, AB, Canada
worrall@ualberta.ca

Erin Ballantyne
University of Alberta
Edmonton, AB, Canada
eballant@ualberta.ca

Jen Kendall
University of Alberta &
Parkland Regional Library
Edmonton, AB, Canada &
Lacombe, AB, Canada
jlkendal@ualberta.ca

ABSTRACT

While immigrants and international students' information behaviour and practices are known, less is understood of their online information sharing, associated use of information and communication technologies (ICTs), and the roles of these technologies in their settlement. We conducted semi-structured interviews with 20 international students to help fill this gap. We find international students' ICT use and information sharing shares similarities and differences with other students and immigrants; a set of settlement barriers and helps associated with ICTs; and clear roles for ICTs in supporting the informational, social, and emotional needs of international students. Transferable findings fill existing gaps in our knowledge of international student immigrants' use of ICTs and online information sharing; can inform LIS research and practice in facilitating their successful settlement through informational, sociotechnical, and emotional lenses; and encourage further work to confirm and expand on our findings.

KEYWORDS

Information sharing, information and communication technologies, immigrants, settlement, helps and barriers

ASIS&T THESAURUS

Information science – Information behavior – Information sharing
Information science – Informatics – Social informatics
Countries and Regions – North America – Canada

INTRODUCTION

A historical average of 235,000 newcomers to Canada per year [Statistics Canada, 2016] is expected to rise to over 350,000 for 2021 [Hussen, 2018]. These newcomers will include many of the over 572,000 international students who studied in Canada in 2018 [Canadian Bureau for International Education [CBIE], 2019], given that 60% intend to immigrate and settle in the country after graduation [CBIE, 2018]. International student immigrants find online information sharing important and significant in their lives

[Sin & Kim, 2013], just as other settling immigrants rely on online social networks, ties, media, and ICTs to find and share information and social support; connect their global and local lives; improve their social, emotional, and psychological well-being; and better understand information and settle into Canadian culture and communities [Caidi, Allard, & Quirke, 2010; Mehra & Papajohn, 2007].

While immigrants and international students' information behaviour and practices are known, less is understood of their online information sharing, associated use of information and communication technologies (ICTs), and the roles of these ICTs in their settlement. Social media and ICTs may have significant impacts on international students' information sharing and settlement, their everyday and academic lives, and, in turn, our universities, communities, cultures, and society. This paper reports on a research study filling this gap, examining the online information sharing, ICT use, and settlement of international students in Canada. The study asked the following four research questions:

1. How do international students, as prospective immigrants to Canada, use ICTs in their academic and everyday lives?
2. What role(s) do ICTs play in their settlement process?
3. How do they choose to share everyday and academic information with others using technology?
4. Are there differences or similarities in ICT use and sharing based on their move from their home country to a new one, or in academic vs. everyday life uses?

BACKGROUND AND LITERATURE REVIEW

Online Communities

Online communities are social aggregations of people who, with the mediation of ICTs, interact and communicate with each other [Ellis, Oldridge, & Vasconcelos, 2004; Rheingold, 2000; Rosenbaum & Shachaf, 2010]. These are social resources incorporating human emotion, personal and social ties, and emergent social constructions [Haythornthwaite, 2007; Tufeckci, 2013; Wellman & Gulia, 1999; Worrall, 2015], and often information-centric with a

focus on creating, sharing, and using information and knowledge as a primary activity [Worrall, 2019]. Communities and ties reinforced online can serve informational and social purposes for international students as they study and settle, influencing their ICT use and settlement as we address through RQ1 and RQ2.

Information Sharing

People tend to seek the most accessible information, favour interpersonal sources over formal ones, and find emotional and affective needs important [Harris & Dewdney, 1994], making information sharing a common information behaviour and practice [Case & Given, 2016]. Information sharing in academic and everyday life contexts is influenced by individual, cultural, community, and societal contexts [Case & Given, 2016; Savolainen, 1995] and various social, emotional, and cultural support factors and social and community ties [Ardichvili, 2008; Choi, Kitzie, & Shah, 2014; Haythornthwaite, 2006; McLure Wasko & Faraj, 2000, 2005; Worrall & Oh, 2013], including altruism, communality and social interaction, difficulties in communicating or translating, empathy, enjoyment, perceptions of cultural or information values, reciprocity, reputation or status, self-efficacy, social cognition, social isolation, and social or cultural norms [Caidi et al., 2010; Jaeger & Burnett, 2010; Oh & Syn, 2015; Worrall, Cappello, & Osolen, 2018]. These may motivate academic and everyday sharing, explored further through our RQ3.

Immigrants, International Students, and Settlement

Information sharing is important for new immigrants, taken here to mean those living outside the country they consider their original "home" [Caidi et al., 2010]. Recent views of immigrants consider the varied "forces that drive immigration" and immigrants [Lee, 2009, p. 732] within complex, transnational contexts as immigrants move between countries for education, work, and everyday lives [Alba & Nee, 2003; Lee, 2009; Verdery, Mouw, Edelblute, & Chavez, 2018].

Immigrants, including international students, rely on online social networks, ties, media, and ICTs to find social and informational support and connect the global and local facets of their lives, improving their understanding of community, culture, and information and their psychological, emotional, and social well-being [Andrade & Doolin, 2016; Caidi et al., 2010; Dekker & Engbersen, 2013; Fisher, Durrance, & Hinton, 2004; Mehra & Papajohn, 2007; Verdery et al., 2018]. Those who are part of information-centric online communities use them for informational and emotional reasons; sharing personal stories, information, and resources helps immigrants "settle in Canada successfully" [Chien, 2005, p. 157], satisfy informational and social support needs, and build relationships in their new country as they settle into true communities [Chien, 2005; Komito, 2011; Saw, Abbot, Donaghey, & McDonald, 2013; Sin & Kim, 2013].

Immigrants' and international students' general information behaviour and practices are quite well understood [Caidi et al., 2010; Case & Given, 2016, pp. 341-345]. However, we know less about their information sharing in online environments or—beyond Chien [2005] and Mehra and Papajohn's [2007] work—their use of ICTs and social media as part of their settlement process [Caidi et al., 2010]. All four of our research questions help fill this existing gap.

METHODS

The first and third authors conducted semi-structured qualitative interviews [Kvale & Brinkmann, 2009] with 20 international students at a Canadian university. Participants were recruited through email and Facebook invitations sent to students via the university's international student services office, leading to a purposive sample of interested international students of all levels who were users of ICTs and/or social media. Interview questions asked were intended to address (a) the students' background, including their home country, how long they have been in Canada, and whether they intend to stay beyond their studies; (b) their adjustment and settlement process; (c) their use of technology including web sites, phone, apps, etc.; and (d) their connections and sharing of information with others. The interviews focused on critical incidents [Fisher & Oulton, 1999] of the interviewees' experiences with their settlement, technology use, and information sharing, but also incorporated broader discussion. Interviews took place in person on the university's main campus, were audio recorded, and continued until the first and third authors agreed saturation of findings was reached, based on thoughts on and preliminary analysis of completed interviews.

After interviews were transcribed by the authors, the first and second authors analyzed the transcriptions using an open qualitative coding process similar but not identical to grounded theory and its constant comparative method [Bradley, Curry, & Devers, 2007; Strauss & Corbin, 1994]. Each independently developed emergent codes based on the four research questions. After three interviews were analyzed, both coders came together and reviewed the coding as developed, discussing similarities and differences as part of an inductive and iterative process [Ahuvia, 2001]. This led to the development of a master coding framework to ensure consistent categorization and to standardize key codes, while allowing for further emergent coding within the established categories. The first two authors continued analysis of the remaining interviews while discussing emerging findings and any minor discrepancies week by week (as informed by Bradley et al. [2007]). While subtle differences existed as coding was completed, no significant discrepancies were observed and analysis aligned with the third author's earlier thoughts. This process helped ensure the trustworthiness of the findings, an approach to validity best suited for qualitative research [Lincoln & Guba, 1985].

FINDINGS

Our coding and analysis process looked to answer the four research questions mentioned in the introduction. The following subsections report these findings in relation to ICT

use; roles played, outcomes seen, and differences observed in ICT use relating to settlement; factors that served as helps or barriers for successful settlement; and sharing of everyday and academic information by participants.

ICTs Used (RQ1)
A list of ICTs in common use by participants can be found in Table 1, placed in emergent categories for ease of presentation but acknowledgethat many ICTs and their use could fall into multiple categories. Interviewees use academic ICTs to complete coursework and assignments; access course materials; conduct academic research; learn about campus activities and resources; and register for courses and obtain final grades. Google Drive was used by interviewees to help organize their files and projects, especially in relation to academics. Many of these uses are typical [see e.g. Case & Given, 2016] of students' use of ICTs, as is the common use of Facebook Messenger and email as communications technologies; interviewees used these for academic and everyday interactions with fellow students, friends, and colleagues in their current and home countries. Many used WhatsApp, a messaging app in common use beyond North America, for everyday communication and in a few cases for academic purposes.

Everyday activities are represented by many financial, shopping, news, and entertainment apps and web sites used by interviewees, most commonly Amazon, banking apps, and grocery store apps. Many participants mentioned using mapping apps on their phones, frequently seen in prior reviewed literature for immigrants and others in a new environment (such as first-year students), alongside the municipality's train / bus transit app. Social media sites and apps, most commonly Facebook and Instagram, were used most for everyday information practices, although in many cases information sought or shared was associated with the university and student groups (e.g. events happening on or near campus). Other information exchanges took place with friends and family locally and in many home countries. A range of utilitarian web sites and apps, including Google Search, were used as one would expect of other students.

Our findings were somewhat mixed as to whether academic and everyday uses overlapped for international students. For some interviewees there were differences in the technologies they used in each context. "For academic [information]," P15 "would choose Facebook … and I kind of [use] Instagram," but "for more personal information, [they use] WhatsApp." P2 mentioned they and others they know "don't really, like, email friends … [and] not everyone sees your email or checks every 10 minutes. So it's just easier" to text friends instead of emailing them. Other interviewees would use ICTs across both academic and everyday life contexts. P9 stated "for things like Facebook, I do share stuff that's sometimes personal and sometimes academic." P10 would "use email but … also use texting" for communicating with their supervisor, even WhatsApp sometimes, because they did "not necessarily need to be that formal."

ICT Type	Common Examples
Academic	Google Docs, Microsoft Office, university web sites (home page, library, learning management system, course registration)
Communication	Facebook Messenger, WhatsApp, email
File & Project Management	Google Drive
Finance, Shopping, News, Entertainment	Amazon, banking apps, grocery store apps
Hardware	Computer / laptop, cell phone
Navigation	Maps (Apple, Google), municipal transit app
Social Media	Facebook (including events, groups), Instagram
Utility / Misc.	Google Search

Table 1. List of ICT in common use by international student participants.

The ICTs our participants used in everyday life, while similar to other students, were somewhat different because of the adjustment and settlement process from one culture to another. For example, our participants made use of a greater variety of social media, communication, and utility apps and web sites, many stemming from common use in their home countries (e.g. Baidu Search, Vibr, WeChat, Weibo). Most participants with strong attachments to ICTs not popular in North America had adopted many social media and communication apps (e.g. Facebook, Facebook Messenger, Instagram) common in Canada alongside their existing apps.

Roles, Outcomes, and Differences (RQ2 and RQ4)
In preparing for the move, participants used ICTs they were familiar with to find information on the culture and environment. P7 "watched a lot of YouTube videos" about Canadian culture, feeling like they were "having a good idea about that" prior to the move. P11 provided another example of preparation via information available via social media:

> ...before I came to Canada, some of the, like, previous students, like students who older than us, they would create social groups [on WeChat]. And then I get in one, invited in it, and they would tell us what you will face when you come here … and they kind of, like, it's kind of like 'tutorial 101,' like how, like, Canadian [city] looks like, how's the campus life look like. (P11)

Two participants, P1 and P17, already felt familiar with North American culture because of prior knowledge and experiences from study in the United States, and had some

familiarity with what kinds of ICTs to expect and how they would use them before becoming students in Canada.

Once they moved to Canada, many participants mentioned ICTs played a more frequent role in their lives than when in their home country, using them to interact with friends and family, university services, and other social services such as the healthcare system. P5 stated they "use more of the social medias [*sic*] now … I'm not into social media, but I cannot leave it" due to connections with friends and family. P8 noted "this university uses a lot of social media to engage the students in different activities, which is great" and "doesn't happen" in their home country. P10 stressed "you have everything connected here. The healthcare, services, and social services and everything … So here I've used more [ICTs] myself."

The many different ICTs playing a role was of concern for a few, facing a potential overload of options. For example, P12 mentioned "everybody was just on one app" in their home country, "but here everybody's on, like, different apps, so then you have to make sure you have every single thing so you make sure you can maintain contact."

Others related fewer differences in their frequency of use of ICTs, but a change in the specific nature of ICTs playing a role in their lives since the move. P11 felt "the process [of ICT use] is basically the same, just what [specific apps and web sites] I use for my activity has been changed." P17 compared the provision of university-specific email addresses in Canada and a prior experience in a US university as "promoting a sense of belonging" that they liked, unlike the lack of such email addresses provided to students studying in their home country.

Some of the differences seen in ICT use could be ascribed to differences in culture, but these were not raised by our participants as frequently as we expected; while there was an initial adjustment period, many found ICTs were supportive towards settlement. Technologies changed and shifted nonetheless, as participants found themselves in a culture more supportive of certain ways ICTs could be used, mediate information sharing, and play a role in providing informational, social, and emotional support. As mentioned by P11, some of the most significant differences were between specific apps (e.g. Facebook Messenger and texting in Canada vs. WhatsApp or other options elsewhere).

The roles played by ICTs in international student immigrants' lives sometimes led to unfortunate negative outcomes, as participants' emotions came into play. P11 would "go through all the pictures that my friends post [and note] they were, like, so happy; they are travelling, and they have good food. At that moment and when I stay individually, I kind of, like, feel depressed." P2 would "get really anxious if I'm constantly receiving messages from people"; they stressed they "have a comfort zone" with communication and preferred to stay within it.

In contrast, ICTs were helpful and promoted positive outcomes for the emotional side of many participants' settlement. P3 stated "IT helps with [their] emotions, because otherwise [their parents] are like, when will you come to [our country]?" ICT allowed their parents to have "a feeling of satisfaction" about their health, making the student's "life easier. You won't be having tension…" P12 similarly stressed that "because I had more contact with my friends ... I wasn't feeling completely lost and lonely, and when I did feel lonely I had people to talk to."

Settlement Helps and Barriers (RQ2 and RQ3)

Our analysis identified many factors either helping international student immigrants with their settlement, or serving as a barrier to successful settlement in their new country, which in turn impacted the roles of ICTs (RQ2) and information sharing (RQ3), which we focused on in our analysis. A summary can be seen in Table 2.

Culture

In moving from their home country to a new environment, many participants faced significant culture shock, with P11 a prime example of culture serving as a barrier in settlement:

> For example, I want to go to the [mall]? I have to, like, Google here, what's the bus I should take … but although I got the information, it's still hard for me to find the bus station. Yeah. And also when I get in the bus, and I don't know I have to push the stop button before my destination. … So it's a total difference from what I do in my country. (P11)

Other participants had prior experiences in other countries which diminished culture shock, but led to possible reverse culture shock if they returned to their home country, as P17 did. They "loved it" when in the US for a study year, but "when I went back [to my home country] … I did not do well in my third year [after returning] … because of the [reverse] culture shock." Much of this was due to different teaching and technology practices back "home," with P17 saying they asked themselves "Where am I? Why are these people teaching me this way? Where is the technology?"

Information

Given the importance of information across cultures and societies and its significance to students, it was not surprising to see information be both a help and a barrier to international student immigrants. Many expressed support for university resources, as accessed via ICTs, as part of settlement and their information behaviour and practices for academic purposes. P3 had found the "online library portal" and its "chat option" useful in finding book chapters; they "just chatted with [library staff] and in a matter of minutes [they] just sent me the PDF. … That makes life easier, definitely." P18 had had similar luck with the international student services office about "a question about work on campus, like, requirements for international students … they answered me in, like, not even in two hours. They just got back to me and I was like, 'oh, that's really quick.'"

Factor	As Help	As Barrier
Culture	Learning more about new culture leads to a stronger feeling of "fitting in."	Not knowing intricacies of new culture can lead to confusion in ICT use and information sharing.
Information	ICTs and those who provide them help find academic and everyday information useful for studies, settling in.	Can be difficult if international students miss specific steps or information sources that would help, or lack access when available only via a specific ICT.
Information Behaviour and Practices	Sharing can help with relaxation, emotional support; information found can be crucial to settlement.	*Not seen as a barrier by participants.*
Students	Classmates and "senior" students can help mentor, be a first source for information, especially of an academic nature.	*Not seen as a barrier by participants.*
Support Structure	Connections with new friends (especially when from same / similar home culture) or local family / family friends, in person and via ICTs, a huge help for many international students. Academic connections and information can help expose to new contacts and social ties.	If introverted, can be difficult to make new friends at first and feel sidelined from the "majority."
Language	*Not seen as a help by participants.*	Lacking knowledge of specific words and phrases can cause communication issues, culture shock.
Information and Communication Technologies	Technologies support informational and emotional connection to friends and family in home country, entertainment and academic study needs and desires.	Lack of use of specific ICTs not popular in one's home country can cause informational barriers.

Table 2. Summary of settlement helps and barriers identified.

Other participants found they lacked information, and this served as a barrier to their successful settlement. P5 found it "hard to find information sometimes," stating "as an international student, when you get here you don't know where to start. … I was missing, kind of, a list of different steps I was supposed to go through." P17 found "nobody told me about" there being "so much paperwork" for things like healthcare, and "because I also missed the [university] orientation, because I came in late, so I didn't know I had to do the identification card and like all of those things."

Information behaviour and practices
Information behaviour and practices were a significant help for participants, with an emphasis on information sharing. Many interviewees focused on the emotional support coming from their use of ICTs to share academic and everyday information with others. P9 shared "about every aspect of life" and found sharing helpful "because I got to relax and I got to share, like, not everything … But I feel like I'm sharing something and I feel like I'm not isolated. So yeah, it helps my emotions." P9 further stated they had a photo album on social media with photos of the university's campus "that I think are really beautiful, and my friends are really interested in" them; as a result, "two friends [were] already planning to" attend the university in the next year. Another interviewee, P18, was offering similar support to "another cousin that [recently] came here. So, I'm almost

like a mentor to him. … I just tell him everything that he doesn't know" about Canada.

Other participants had received informational support towards settlement through the processes of information seeking and sharing mediated by ICTs. P19's experience is illustrative. Before moving to Canada, they found out from "a group in Telegram" of students from their home country that an apartment was up for rent. So they "texted them [on Telegram] and so I went there and saw." Later P19 "found another place on, I think, [a rental search] web site. And I went there too … and I decided to stay there." Information seeking, mediated by Telegram and the rental search web site, had supported P19's successful settlement.

Students
As international student immigrants are students, their fellow classmates and other students they interacted with were supportive of their settlement. Fellow students helped P9 "learn a lot of things … not only about the culture outside of the campus, but also about specific things about the industry, about the program, about everything." P12 had a similar positive experience from a formalized peer mentoring program:

> …they sort of team you up like a pair, bunch of international students with a senior peer who is also an international student. … So if I had any

questions, when I did have questions, usually my first place of contact would be [them]. So I would usually just ask [them] what to do, and then if [they] couldn't help me I would probably ask my friends, and then… yeah, so it was easy because I didn't really have any big issues. (P12)

Support Structure
As helpful as fellow international students were, participants would rely on their broader support structure and network of social ties to support their settlement. ICTs provided for connections with new friends (on and off campus) and local family or family friends, many of which provided emotional and informational support. P8 found events through the university's web sites and Facebook, and "used to go" with their friends; they used ICTs to "talk with my family … not just [for] my adjustment but to be able to communicate with [my] family…" P9 "was lucky to have a family … who were like my parents' friends living in [the same city]," which influenced their choice of university to attend; they considered themselves "really lucky … 'cause I got to learn a lot about Canadian life, but I also was not really, like, being separated 100% from [their home country's] culture." P16 similarly found various communities "very helpful … especially the people from [my country] too" since they "share the same culture and stuff, and they went through the same thing before me, so I can, like, lean a little [on] them." These friends led one participant to say they "felt like home when I was with my friends" and settlement became "kind of easy. It was alright" (P4). Academic connections, too, were helpful for some, such as P13, whose advisor was from a country near theirs and had connections there, "so I've already known them [back there] before I came here." Their department also had existing students from their home country, "so it was easy to make this transition."

For participants who had faced difficulties, at least at first, in making new social connections, their lack of social ties became a barrier to their settlement and to feeling like they "fit in," P2 said "it was really hard for me [to], like, find people that would, you know, like stuff that I do." They commented they were "really introverted … [and] don't like big groups, like big crowds of people," finding this to be a barrier. P11, while less introverted, faced similar challenges:

> To be honest, I didn't really like [this city] when I came first. Like, I kind of feel depressed 'cause I don't have any new friends yet, and I have troubles with communications, and I, I just, like, can't get into, I don't know, the… majority? (P11)

Language
Given almost all of our participants did not speak English as their primary language, it was a bit surprising that language was raised as a barrier by only a few interviewees. They stressed lacking knowledge of specific words and phrases could lead to challenges "trying to communicate with people and make new friends" (P18) and to further "culture shock struggle[s]" as they learned "what words do you use, [and] are these words explaining what you mean the best" (P1).

Information and Communication Technologies
As has been illustrated by many of the comments above, ICTs often served in support of international students' informational and emotional connections to friends and family. "If I hadn't [had] all those technologies," P5 shared, "it would have been harder for me to make the decision to come here and leave my country." P12 found social media "made the entire transition easier. Because I had more contact with my friends." P5 summed this up: for an international student immigrant in a new environment, ICTs make it so "you don't feel that you're so far away."

ICTs supported emotional and informational connections to entertainment and academic needs, as with other students. As one example, P11 stated "'cause I live individually, if I don't have my laptop when I'm eating, when I'm studying, I kind of feel lonely." They found watching videos and listening to music (via Netflix and YouTube) important for their well-being, because "if I lost it or I don't have it, I will feel crap." Another participant stated:

> Well, I think they are really helpful. Like, they are much better than having to write long notes in your book. [Interviewer laughs.] … access to online stuff is more like, it giving you more accessibility and also, like, you have more time, compared to having to write all that. … Like, it's compact everything, to get it in the computer … you can also upload it online and you can read it later or whatever. (P18)

Lack of access to, or use of, a specific ICT could become a barrier, such as in cases where a specific ICT was not as important in one's home country. P10's experience is perhaps most evocative of this barrier to settlement:

> …it's because I don't have Facebook … and it's something that I think that is important right now, because I didn't have any Facebook [prior to coming to Canada], so I didn't get to know all of the things … People give away things [online], right? … So I didn't know that, so I spent [time] living on the floor for two months instead of knowing that someone in, I don't know, they are giving [away] a bed or something, right, that they don't need. … So the thing is that I realized that when my wife came [interviewer laughs] … because my wife, she has a Facebook, and she starts to get involved in, those uh, how do you say, groups, on Facebook. So she gets to know a lot of things. So it was like, easier for my family than for me… (P10)

Information Sharing (RQ3)
Information sharing was significant in our international student interviewees' settlement and use of ICTs. Their methods and reasoning for sharing were not unexpected considering their status as both students at a North American university and immigrants and newcomers to Canada. They

ask friends, family, mentors, and perceived experts such as senior students or faculty advisors for advice; they help out friends and colleagues by themselves sharing information on facts, events, activities, and locations they feel will be useful in academics and everyday life; and they seek, share, and use information for informational, social, and emotional reasons, often at the same time. Not all participants are frequent sharers of their social, everyday lives online, but many do either publicly or semi-privately; we saw a similar range in use of and information practices around social media and communications as seen in the student and general North American populations of around the same age. While not all participants talked at length about sharing academic information via ICTs, many discussed using tools like Google Drive, Slack, Skype, WhatsApp, texting, and email for private or semi-private information sharing relevant to courses being taken and research being conducted as part of their academic lives, as one would expect of many students.

For many participants, information and information sharing online, and the ICTs that support this, were key to their lives. P1 stated "not being able to have access to the world of information around me" would be problematic, since "our devices basically became an extension of our hands…" Others made express decisions to share and seek more via face-to-face means, perceiving a difference between information found via ICTs and experience obtained from talking to people face-to-face. For example, P15 commented "when you read, for example, on the website it said some information, but it's different when you talk to people and they share their experience." P7 stated they would "rather go outside and meet people and do things directly" than engage via Facebook or WhatsApp, feeling the latter did not inform them of culture. P14 "usually [tried] to meet once a week or every two weeks" with close friends, stating they "always have preferred face-to-face. Because I sometimes feel that technology makes everything more, like, not that personal."

P4 struck a middle ground between face-to-face and ICTs, stating they "share most just by talking" and when they see friends, but nonetheless used WhatsApp, Facebook, and Facebook Messenger to semi-privately share with friends and family. They further stated "you always need a phone, you always need to phone" for connections to family. P19 felt similar about sharing in public, but still valued Facebook, Instagram, and Telegram for semi-private sharing.

Some participants sought to bridge the gap between themselves and ICTs when they were less confident of how to look up information, where to look it up, or another barrier existed. P8 commented they "first of all … [tried] to look for help with people," and after "a year … I am more comfortable and I can find things online." P12 similarly had moved beyond having to talk to student support services to going to the university web site, and would "usually" find the answer. P14 echoed the helpfulness of people over ICTs when first getting settled: "My main advice, and I always tell this to everyone, is just to be proactive and ask for help. …

And if you ask for help, especially here at the university you have resources for everything."

Still others would be selective, using certain platforms for sharing information and others for other information practices. For example, P7 used "Instagram … just for sharing purpose … and WhatsApp just for contacting. But Facebook, like, I would say that I'm learning things"; each ICT had a unique purpose for them that drove their motivation for using it. P8 chose the app to use for sharing dependent on which "I know they check more" and, akin to P4, did not share information publicly online with much frequency. Some related drawbacks to relying on face-to-face interactions; for example, P7 mentioned "[a] number of people are also lost" in their Canadian city and had found it less useful to ask people for directions, instead using Google Maps to navigate.

Supporting their settlement, social connections, and the needs and practices of others were big factors motivating many other participants to share publicly or privately using ICTs, as with P4. P15 found sharing "pretty great to feel more comfortable here, and because in [my home country] I was very connected and still am … So it helps me a lot." P11 found "when I'm sharing stuff, it strengthens my connections with my classmates, with my friends." P17 had an altruistic motive, sharing information "more" in Canada because "it's beneficial for everybody" and they felt Canadian culture did not enforce "survival of the fittest," unlike their home country where sharing seemed less beneficial. P2 offered a nuanced view stressing that sharing, and associated ICT use, should be useful: "Like using Facebook or Instagram to share important events that are happening and, like, that's really good. But sometimes when you just use it for useless stuff, it's just, like, that's when it starts getting bad."

DISCUSSION AND IMPLICATIONS

The international students we interviewed, as prospective immigrants to Canada, use ICTs in ways that share similarities with the ICT use of non-international students, in line with the marginal differences seen in social media site use by Saw et al. [2013]. They use ICTs in ways similar to other immigrants [see Andrade & Doolin, 2016; Caidi et al., 2010; Dekker & Engbersen, 2013; Fisher, Durrance, & Hinton, 2004; Komito, 2011; Mehra & Papajohn, 2007; Verdery et al., 2018], but with nuances that represent the unique challenges and situations they face in their dual student and immigrant roles. These ICTs, in turn, play roles in their settlement process beginning as early as their preparation for moving and increasing for many as they move to Canada. If their use does not increase, the specific nature of the ICTs playing a role in their lives changes, as they adopt new ICTs and adapt existing ones to new needs and desires for not just informational, but also social and emotional support. While behaviour and practices online and face-to-face may remain information-centric sometimes, other needs go beyond the findings of Sin and Kim [2013] to include desires for the human emotion and personal and

social ties found in online communities [Tufeckci, 2013; Wellman & Gulia, 1999; Worrall, 2015], desired in sharing information [Harris & Dewdney, 1994], and often significant in successful settlement [Chien, 2005].

Our international student interviewees' use of ICTs can end up helping or hurting their settlement in connection with several factors including culture, information, information behaviour and practices, fellow students, support structures and social ties, language, and their use of the ICTs themselves. Some negative impacts and outcomes occur on their settlement, and for a few ICTs go beyond barriers to settlement to actively presenting negative feelings and emotions. While rare in comparison to positive outcomes, such negative affective factors in ICT use should be considered in research and practice through sociotechnical perspectives, frameworks, and models incorporating the importance and significance of feelings and emotions as part of ICT adoption and use [e.g. [Toombs, Bardzell, & Bardzell, 2015; Zhang, 2013], alongside the study of affect in information behaviour and practices [Case & Given, 2016, pp. 116-117; Nahl & Bilal, 2007]. For most, ICTs act more often as a help to and in support of settlement than as a barrier. Many human, sociotechnical, affective, cultural, and critical issues impact on and influence international students' settlement and their relative success, as seen in our findings and the broader literature on immigrants' settlement processes [e.g. Andrade & Doolin, 2016; Komito, 2011; Sin & Kim, 2013].

Our interviewees share everyday and academic information using technology in ways that, as with their use of ICTs, echo the online information sharing of other students and immigrants. The primacy of interpersonal sources [Harris & Dewdney, 1994] and concerns over privacy [e.g. Marwick & boyd, 2014] are not unfamiliar from the past 25 years of information behaviour and practices research and the past 15 years of social media research, which in turn informed information systems and services. When they are coupled with the processes of settling and adapting to a new culture, community, and environment, they present unique challenges for how international students seek and share information and how LIS researchers and professionals can best support these behaviours and practices. Many participants have strong altruistic tendencies, and this may be transferable to other populations of international students, as it has been seen in other information sharing communities online [McClure Wasko & Faraj, 2000; Oh & Syn, 2015]. A "share and share alike" mentality is one we believe LIS researchers and professionals should encourage and support as part of facilitating international students' information behaviour and practices and use of ICTs, drawing on our findings and other studies of motivations for online information sharing [e.g. Ardichvili, 2008; Choi, Kitzie, & Shah, 2014; Oh & Syn, 2015; Worrall, Cappello, & Osolen, 2018; Worrall & Oh, 2013] to further inform information system and service design, implementation, and use.

Based on their move to a new country from their original home and academic vs. everyday life uses, some participants experienced different factors impacting their ICT use, information sharing, and settlement. Even with these differences, clear roles emerge for ICTs in supporting the informational, social, and emotional needs of our interviewees, a significance we believe has strong transferability to the broader populations of international students and immigrants across North America. The importance and significance of such roles echoes literature on social and emotional support factors in online information sharing among many other populations [Ardichvili, 2008; Choi, Kitzie, & Shah, 2014; Haythornthwaite, 2006; McLure Wasko & Faraj, 2000, 2005; Worrall & Oh, 2013], further implying the potential trustworthiness of these findings. We encourage further research into the informational, social, and emotional roles of ICTs for international students and other immigrants to further confirm and expand on our findings. We advocate for continued and greater consideration of social and emotional contexts alongside informational ones in research on ICTs and information sharing and in the practical design, adoption, and use of ICTs and associated library and information services and systems.

CONCLUSIONS

Our study helps fill a gap in our knowledge of international student immigrants' online information sharing, use of ICTs, and the role these play in their settlement. Although our findings are limited to the experiences of 20 interviewees at one Canadian institution, we believe our findings have strong transferability to other populations of international students and immigrants, based on connections with the existing research literature. ICTs and information sharing often support immigrants' informational, social, and emotional needs and desires as they find themselves in a new context and environment. LIS researchers and professionals should look for ways to facilitate and support sharing and ICT use as helpful, not hurtful, to immigrants' settlement processes, information needs, and social and emotional well-being. Our own future work intends to continue to examine the online and offline communities of international students, immigrants, and expatriates, and the roles technology and information sharing play as part of their immigration, settlement, and transnational experiences. Through such research and practice work, our hope is international students and other immigrants will feel they are not "so far away" from successful experiences as they advance their education, career, and lives in new contexts and countries.

ACKNOWLEDGMENTS

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