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# Reconfiguring Knowledge Ecosystems: Librarians and Adult Literacy Educators in Knowledge Exchange Work

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**Abstract**

Knowledge exchange, also called knowledge translation, mobilization, or transfer, increasingly factors in university strategic plans and funding agency mandates. The growing emphasis on research that includes community engagement and making research knowledge more accessible and useful for nonacademic constituents often brings in knowledge brokers, whose activities promote sharing of research knowledge among different actors. In this article, we consider how librarians and adult literacy educators engage in this work as professionals uniquely positioned to advance knowledge exchange initiatives. Three initiatives in British Columbia, Canada, involve academic librarians and adult literacy educators engaging in knowledge exchange work in transformative ways. We describe how they are reconfiguring knowledge making, sharing, and use with constituents and bridging nonacademic and university communities. This approach disrupts traditional notions of who produces and consumes knowledge and who is an expert while acknowledging how place-based approaches are essential for advancing knowledge exchange initiatives.

*Keywords: knowledge exchange, knowledge brokering, university-community-engagement, academic librarians, literacy educators*

Knowledge exchange (KE), the sharing of information between two or more people or groups (Shaxson, 2012, p. 2), has become a central focus in higher education, and is rooted in reciprocity and collaboration amongst university and non-academic constituents (Canadian Mental Health Association, 2008; Nathan et al., 2017). Knowledge brokers are important players in KE. Brokers straddle the space between those who produce and those who consume knowledge and thereby contribute to knowledge flow and uptake (Contandriopoulos et al., 2010). In many ways, librarians and adult literacy educators are knowledge brokers, though for librarians, the terms "information intermediary," "information manager," or "embedded librarian" may come to mind more readily.

The terms "information" and "knowledge" are not always synonymous. Buckland's (1991) classic article, "Information as Thing," distinguishes information as an entity (information-as-knowledge; information-as-thing, e.g., documents, objects) and a process (information-as-process, e.g., "becoming informed"; information processing; p. 352). Information may be further differentiated according to its tangibility. For instance, knowledge is intangible, but it can be represented "in the brain in some tangible, physical way" or in information-as-thing, e.g., a manuscript, image, or artifact (p. 352).

These conceptualizations are important in the current discussion. Librarians and archivists, for example, may be more commonly associated with tangible or material

forms of information: collecting, organizing, and storing documents and records in physical and digital information systems; hence the label "information manager."

These professionals can also act as "information intermediaries" to help people become informed (information-as-process), as well as participate in transforming knowledge in their communities and in the cocreation of meaningful representations of knowledge for their constituents. According to Buckland (1991), doing so may involve considerations of "*how* beliefs change . . . or *which* knowledge is represented".

The work of knowledge brokers in research mobilization efforts involves understanding the publishing landscape and local context, building capacity, facilitating relationships, identifying and addressing knowledge gaps, and teaching people how to locate, evaluate, and use information effectively (Howells, 2006; Lomas, 2007; Mallidou et al., 2018; Meyer, 2010). Thus, the competencies and activities of knowledge brokers and library and literacy professionals are indisputably similar.

Van der Graaf et al. (2018) claimed that the role of information professionals in knowledge exchange "has not been fully recognised and is under-researched" (p. 211). Specifically, they found that information managers involved in public health interventions in the United Kingdom were adept at locating, synthesizing, and contextualizing information, and at presenting it in ways that made it digestible. However, the conflicts between economic and health imperatives created barriers to use of this information in decision making. Van der Graaf et al. observed that information professionals engage in information and relational activities but are challenged to navigate organizational cultures to expedite information uptake and use (Shaxson, 2012), illustrating the complexity of knowledge creation, sharing, and use.

University campuses, government organizations, and geographic, cultural, and language communities are rich intra-acting ecosystems that shape how knowledge is privileged, stored, preserved, and communicated. These ecosystems shape and are influenced by human values and activities, and may be insular or incompatible with each other, as per Van der Graaf et al.'s (2018) example. For instance, "research" may be viewed as an independent or collaborative intellectual pursuit by academic faculty, a measure of productivity by universities (Acord & Harley, 2013), a policy driver by governments (Williamson et al., 2019), or a burden by underrepresented communities (Tuck, 2009).

Librarians and literacy educators have long played key roles in the scholarly communication functions of information access, preservation, curation, and dissemination (Borgman, 2010), but legitimizing knowledge outside the academy is increasingly imperative. Community engagement, knowledge sharing, and open access publishing feature heavily in university strategic plans, funding agency policies, and government directives. There is growing expectation—indeed, a mandate—that university research be accountable to and directly benefit society. Consequently, academic librarians are expanding their roles in scholarly communication in community-based settings. Community-based adult literacy educators are also increasingly involved in university–community collaborations in efforts to generate and legitimize local knowledge.

We argue that these professionals are uniquely positioned not only to span the disparate and often disconnected components of the scholarly communication ecosystem that produce and use knowledge, but also to help reconfigure who is a knowledge creator and expert and to mitigate issues of representation, ethics, reciprocity, literacy, and ownership that limit research participation. In this article, we begin by defining knowledge brokering and articulating its connection to the work of librarians and adult literacy educators. We then present cases of knowledge making, sharing, and use that demonstrate the strengths of librarians and literacy educators in facilitating these activities. Our work is motivated by the desire to build the capacity of community groups and researchers to create, find, evaluate, share, and use research, and to facilitate wider access to and use of scholarly research. In doing so, we locate librarians and adult literacy educators in the "transformative act" of brokering, where "brokered knowledge is knowledge made more robust, more accountable, more usable; knowledge that 'serves locally' at a given time; knowledge that has been de- and reassembled" (Meyer, 2010, pp. 120, 123). Although librarians and literacy educators excel at "de- and re-assembling

knowledge," the real transformation is in the ways communities can be empowered to cocreate, share, and use research.

## What Is Knowledge Brokering?

A wide variety of terms are used to describe individuals and organizations "whose job it is to move knowledge around and create connections between researchers and their various audiences" (Meyer, 2010, p. 118). These include consultants, knowledge brokers, technology brokers, intermediaries, and bricoleurs (Howells, 2006), but librarians and literacy educators are seldom referenced explicitly. Meyer describes the one-way transmission of knowledge between researchers and their potential audiences. Lomas (1997) underscores building and maintaining relationships between those who produce and use knowledge as integral to brokering, with the bottom line being "getting research used" (p. 131). These and other definitions distinguish producers—those who generate knowledge—and consumers—those who use and benefit from knowledge (Contandriopoulos et al., 2010). Typically, academic researchers, universities, and publishers are positioned as the "socially legitimate" producers, whereas government, policymakers, professionals, and entrepreneurs are consumers who also enjoy "institutionally and socially sanctioned positions"; intermediaries span these two groups and allow information to move between them (Contandriopoulos et al., 2010, p. 455). Absent in this conceptualization are members of the general public, community organizations, cultural groups, and patients in health care. The producer–intermediary–consumer spectrum conveys implicit assumptions about who makes, shares, and uses knowledge; whose knowledge is privileged; who is an expert or authority; and that research is indeed beneficial.

A more nuanced model is that of Shaxson (2012). Shaxson's K* spectrum identifies several roles and associated categories of activities: informational, relational, and system. Informational activities pertain to information access provision; relational activities encourage people to make sense of and use information; and system activities involve shaping sociotechnical systems by means such as publishing or policy implementation. Shaxson positioned four roles along this informational–relational–system spectrum (Figure 1). Beginning on the left are those that focus on getting information to constituents, either in its current form (intermediaries) or in a more accessible or relevant format (translators). Moving rightward on the spectrum, emphasis shifts toward "the co-production of knowledge, social learning and innovation" (Shaxson, 2012, p. 3). This area involves a deeper understanding of the audience, the information they want, and desired formats (knowledge brokers); innovation brokers recognize the value of knowledge held by communities and engage with them in co-creating knowledge.

The K* spectrum is a useful model for considering the role of librarians and adult literacy educators in knowledge exchange. Libraries are a common site of informational activities where, for example, information intermediaries provide access to print and

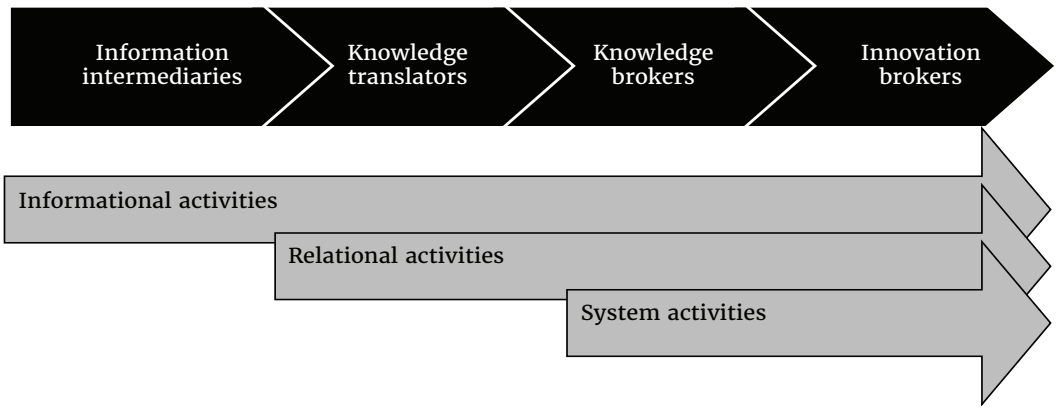


*Figure 1.* Adaptation of K* Spectrum. Adapted with permission from "Expanding our understanding of K* (KT, KE, KTT, KMb, KB, KM, etc.): A concept paper emerging from the K* conference held in Hamilton, Ontario, Canada, April 21–25." by L. Shaxson, 2012, p.13.

digital materials. Literacy educators help translate texts into more accessible formats while also promoting information, reading, writing, and digital literacy skills in their communities (brokering). Librarians and literacy educators also innovate through the development of tools and policies for open education, open access, and open data initiatives, community-focused service provision, and advocacy for digital inclusion.

Although librarians and literacy educators can and do play many roles across the K* spectrum, they may not identify as "knowledge exchange" workers, possibly because they are user- or learner-needs driven and their practices are focused on helping people articulate what they need and supporting them in meeting those needs. This stance differs from one of actively recommending or encouraging uptake of certain messages or types of information, or designing information systems for people without directly asking them what they want to do with such a system (Lankes, 2015). However, the transformation and movement of knowledge are natural outcomes of engaging in service provision, facilitating information access, and providing education and enrichment opportunities. Academic libraries as community spaces are sites of active knowledge exchange where the generation of social capital brings people into contact with each other in the course of daily life (Horrigan, 2018). Meyer (2010) suggested that brokering does not "take place anywhere and everywhere" (p. 119) but is "privileged" to specific spaces (e.g., technology transfer offices). Yet this observation may reflect how knowledge exchange has been formally defined and measured in some settings, such as universities or businesses, rather than its nonoccurrence in other settings, and negates issues of physical and intellectual "safety" required for knowledge creation (Lankes, 2015, p. 48). It highlights the need for place-based approaches to understanding knowledge exchange activities in public and community spaces. Such activities may be informal, tacit, and undocumented, but nevertheless critical to community-based knowledge exchange.

## The Importance of Context in Knowledge Exchange Work

Shaxson's spectrum is a useful framework for thinking about the myriad activities and roles in knowledge exchange work. It emphasizes the intersection of knowledge, practice, and policy, and the importance of contextual factors—including geographic, sector and social, cultural, economic, and political environments—on knowledge supply and demand. In recognition of the importance of context, we situate our discussion in cases from our local context of British Columbia, Canada, where we work as academic librarians, university educators, and researchers. Although we are part of different professional and research networks, we are connected through common interests in making research accessible to nonuniversity audiences. This commitment is formalized in the Supporting Transparent and Open Research Engagement and Exchange project (https://storee.ubc.ca/about-storee/), which builds upon and is derived from existing community-based initiatives, including the Making Research Accessible Initiative (MRAi; https://learningexchange.ubc.ca/community-based-research/making-research-accessible-initiative/), a partnership between the University of British Columbia (UBC) Learning Exchange (https://learningexchange.ubc.ca/) and UBC Library's Irving K. Barber Learning Centre (https://ikblc.ubc.ca/initiatives/making-research-accessible/).

The goal of making research accessible to members of marginalized communities that are often the subject of academic research is both complicated and enriched by "top down" and "bottom up" initiatives unfolding in our local communities, at our universities, and at the national level. In our context, many Canadian universities and funding agencies prioritize societal access to research outputs to enhance accountability and relevance, and scholars are encouraged to engage with communities to articulate research priorities and to design studies and interventions (e.g., Government of Canada, 2016; Social Sciences and Humanities Research Council, 2019a, 2019b; UBC, n.d.). Such top-down mandates lack granularity, however, when it comes to the unique needs, strengths, ways of knowing, and agency of diverse groups, including Indigenous peoples. These groups are, themselves, demanding that research be conducted for and with them, rather than about them; for example, as expressed in *The First Nations Principles of OCAP* (ownership, control, access, and possession; First Nations Information Governance Centre, n.d.) and *Research 101: A Manifesto for Ethical Research in the Downtown Eastside* [of Vancouver] (Boilevin et al., 2019). University

researchers can be caught between funders' and employers' impetus to engage with communities and the reality that research and engagement may be considered unnecessary and unwelcome from the community's viewpoint.

In this context, academia needs to reconfigure research to be more democratic, agentic, and meaningful for people and communities who have traditionally been constructed as research subjects or recipients of knowledge. Thus, we are interested in how librarians and literacy educators participate in the K* spectrum and, more important, how they can transform and disrupt legacy systems related to the conduct, dissemination, and use of research, and how research processes are entangled in issues of literacy, social justice, social inclusion, ownership, ethics, and reciprocity. In the following sections, we illustrate reconfigurations of knowledge making, sharing, and use, highlighting the strengths of librarians and literacy educators in these roles.

## Literacy Educators and Research-in-Practice

Our first case is located in literacy education undertaken in the Downtown Eastside (DTES) neighborhood of Vancouver, a community under considerable research surveillance. As of 2017, over 700 research papers related to the DTES community had been published (Boilevin et al., 2019, p. 26). Yet the DTES community does not feel that it has always benefited from this research, as illustrated in reports of repetitive research, limited reciprocity, researcher (rather than community-driven) priorities, and lack of positive impact (Boilevin et al., 2019; Towle & Leahy, 2016). When it comes to research, questions of what has been accomplished and who has benefited are prominent.

Constituents in literacy education programs are often among those who have been marginalized in mainstream research and knowledge systems (Alkenbrack, 2008), resulting in an environment of distrust in research processes. Educators may be uncertain what information might be valued in different communities, given that information is context-dependent and not always integrated into knowledge that can be readily shared or acted upon. Literacy educators, therefore, strive to engage in literacy pedagogies that position constituents as producers of knowledge and that recognize the experiences that learners bring to various texts. They also engage in practitioner inquiry and collaborative research projects to generate and contextualize knowledge close to the settings where information and transformation are most needed (Fenwick & Farrell, 2012; Horsman & Woodrow, 2006).

### Literacy Pedagogies

Literacy education supports people to find and make sense of information, but the heart of the work is moving information into understanding and knowledge through critical reading, writing, and discussion. Achieving this outcome calls for experiential and relational pedagogies (Cardinal & Fenichel, 2017) that are diverse in nature but often involve generating knowledge about people's positionalities and relationships to information, making connections between existing schema and new information, and developing learners' confidence in reading different kinds of texts and in viewing themselves as coproducers of knowledge (Auerbach, 2006; Duckworth & Tett, 2019). For example, reading a text about a new research study on the mental health effects of homelessness (a topic that has garnered much research attention in the DTES) can result in frustration that well-established community knowledge around the importance of secure housing is "new" to researchers or policymakers. As community members in the DTES have expressed, "Don't read us the book that we wrote" (Boilevin et al., 2019, p. 16). Engaging with such texts can also prompt people to share traumatic experiences that require skilled, trauma-informed facilitation (Horsman, 2013). Information is entangled in these flows of power and affect, shaping its perceived value and determining its potential for knowledge exchange.

### Practitioner Inquiry

Literacy education is anchored in local contexts and information systems, and evidence generated in academic research is often difficult to apply to the real-world lives of learners and education contexts (Horsman & Woodrow, 2006; Niks et al., 2003). The adult literacy movement of research in practice (Cochran-Smith & Lytle, 2009; Horsman & Woodrow, 2006) or practitioner inquiry (Robbins, 2014) addresses this tension by engaging in embedded knowledge-making practices with and for learners. An example of one such practitio-

ner inquiry study is *Improvements . . . No Less Than Heroic* (Alkenbrack, 2007). Alkenbrack, a literacy educator and scholar, works with people trying to stay engaged in literacy learning while contending with substance use difficulties. She documented the ways in which harm reduction methods challenge the abstinence-only approach to working with participants in education settings, and experimented with literacy pedagogies oriented to harm reduction in her teaching context. Alkenbrack describes her process:

> As a practitioner, I also seek out every opportunity to exchange ideas with others in my field and have enormous respect for their experience and wisdom. But for this research project, I was drawn to the [harm reduction] literature, and indeed found it easy to apply to my work in adult literacy. This could be because most of the literature reviewed here is practice-oriented and written by Harm Reduction practitioners, with whom I feel a great affinity. (p. 12)

Practitioner inquiry carried out in this manner is not merely a translation of research findings into local contexts, but also a process for generating new knowledge through practice, experimentation, and reflection.

### Collaborative Inquiry

Literacy educators engage in collaborative research with learners to shape and pursue knowledge that is hidden or latent in the community so it can become a trustworthy resource that is mobilized through reading, writing, and storytelling. One example is *Invisible Heroes: Aboriginal Stories from Vancouver's Downtown Eastside* (Bull et al., 2015). *Invisible Heroes* emerged from conversations at the Carnegie Learning Centre about the community leaders who work quietly to lift up fellow community members and build strength and resilience. According to Lucy Alderson, one of the book authors and a facilitator at the Carnegie Learning Centre, there was a desire to

> recognize the significant, invisible work being done by Indigenous community members and their incredible perseverance and resilience, despite the deeply hurtful policies of colonization. We wanted these stories of courage and determination to be the kind of learning materials Indigenous learners would find on our Carnegie Learning Centre shelves, that they might see their lives or their family's lives in this book. As adult educators, we also knew that there was a lot to learn in order to support Indigenous learners and we hoped that this book would improve the context for Indigenous adult learners. We knew that only through a deeply respectful and open-ended process of exploration, supported by Indigenous resource people and Elders, would this knowledge emerge. (L. Alderson, personal communication, June 29, 2020)

Working toward these goals involved engaging in decolonizing methods, honoring Indigenous ways of knowing and researching, undoing stigma, respecting process and ceremony as modes of knowledge generation, and making stories recognizable and accessible within the community. More than a book that documented the lives and work of community leaders, *Invisible Heroes* was also a living resource. Authors presented their work to different audiences, the stories inspired reading and writing activities at the Carnegie Learning Centre and were shared with other community organizations, and some of the invisible heroes (who were not so invisible anymore) assumed new leadership roles in the community.

## Making Research Accessible Initiative

The Making Research Accessible initiative (MRAi) is another project connected to the Vancouver DTES community that grew out of conversations about extractive research projects and findings housed behind publisher paywalls (UBC Learning Exchange, 2020). Members of community organizations expressed interest in accessing high-quality research and archiving their own research materials to share with broader audiences in order to promote university–community knowledge exchange. In addition, some community constituents wished to learn more about current projects happening in the DTES, hoping this could lead to more productive research interactions.

In response, the UBC Learning Exchange (UBCLE) initiated a partnership with the UBC Library's Irving K. Barber Learning

Centre (IKBLC) to develop the Downtown Eastside Research Access Portal (DTES RAP). The UBCLE is a nontraditional academic space in Vancouver's DTES that bridges the DTES community and university campus through innovative programming and knowledge exchange activities informed by an asset-based community development philosophy (Towle & Leahy, 2016). The Learning Exchange has been in the DTES community since 1999 and over many years has built strong relationships within the community. The DTES RAP evolved over the course of a 5-year relationship between the UBCLE and UBC Library.

The DTES RAP "provides access to research and research-related materials about Vancouver's Downtown Eastside (DTES) . . . , including academic materials such as scholarly articles and research summaries, as well as materials such as reports, historical documents, and more" (DTES RAP, n.d.). One goal of the DTES RAP is to increase the accessibility and impact of academic research by providing easier online access to information about the DTES. Central to this discussion are the ways in which the DTES RAP creators have considered how research is represented and disseminated using digital platforms, and how the academic librarians involved in the project have needed to both work within and push against entrenched sociotechnical systems.

## Reconfiguring Research Dissemination

Research is frequently published in academic books and journals that are not accessible to people outside academic institutions (Piwowar & Priem, 2017). In the early stages of the project, a student librarian was employed and cosupervised by the community engagement librarian in IKBLC and the academic director of the Learning Exchange. Library work included identifying open access scholarly articles and conducting outreach to researchers to expedite the depositing of research items in UBC's open access digital repository, known as cIRcle. Student librarian activities, with guidance from the cIRcle digital repository librarian, included collecting licensing agreements from interdisciplinary faculty doing research in and about the DTES and depositing articles on their behalf, as well as identifying these items as part of the MRAi collection with a geographic location tag: "Downtown-Eastside (Vancouver, B.C.)." During the first 2 years the collection quickly grew from 40 to 300 items archived in UBC's digital repository with support from cIRcle staff and librarians. In 2017, the MRAi, led by UBCLE, also worked with several DTES community organizations to digitize and archive approximately 100 more community-generated items and obtained permissions to archive them in cIRcle.

Through experimentation with UBC Library's infrastructure, different approaches to providing public access to archived materials were tested, including content management systems such as Springshare's Libguides and WordPress. Community consultations with DTES residents and service organizations were conducted to better understand their research culture, information needs, and aspirations for a research portal. Gaps were identified between what the institutional digital repository was primarily intended for—showcasing the intellectual output of UBC and its partners, as well as supporting the teaching, research, and learning activities on campus (https://circle.ubc.ca/about/)—and what people in the community needed: access to alternative and related forms of research, such as clear summaries of research and researchers' contact information. In 2018, the Irving K. Barber Learning Centre provided additional funding and in-kind expertise, enabling UBC Library to lead the discovery, design, and development of a full feature portal and to establish a technical team to support this new phase of the work. This expansion brought additional capacity and expertise to the project, including the systems librarian and the library business support analyst from Digital Initiatives, as well as several designers, developers, and a project manager from Library Information Technology.

## Reconfiguring Representation of Research Outputs

In order to provide a better search experience for DTES RAP users and to challenge issues of representation and stigma, the development team created a way for the MRAi to use metadata flexibly and iteratively, freeing the project from requirements to adhere to professional practices and classification schemes such as Library of Congress (LC) or internal Library policies. As one example, a custom topic-based browsable controlled vocabulary was developed to allow the system to better reflect terminology suggested by the community.

This form of accessibility was important, given the anticipated diversity of the portal's audience, which includes community service providers, journalists, social justice activists, and residents, as well as academic faculty researchers, students, and others. For example, the DTES RAP uses the topic "Substance Use" as descriptive metadata instead of the Library of Congress Subject Heading (LCSH) "Substance Abuse," or the more specific "Substance Use Disorders," and the team chose "Housing and Homelessness" over the LCSH's "Homeless Persons" (DTES RAP, n.d.). Many stakeholders, including UBC librarians and technical staff, the MRAi Steering Committee, Learning Exchange staff, and graduate students contributed ideas to the current topic list, which will adapt over time with changing audience needs and the growth of the collection. The act of codesigning topic search terms constitutes a rich KE process in which biases and values embedded in standard classifications are made visible.

Librarians' roles in knowledge exchange in the DTES RAP project unfolded through iterative informational, relational, and systems-related activities that were not set out in advance. Providing access to information through the portal required input from multiple university and DTES community stakeholders. Building and sustaining relationships between people with subject matter expertise and those with lived experience enabled a critical examination of classification as a sociotechnical system that affects community representation and can reinforce stigma. The DTES RAP development process surfaced important questions about who has knowledge, how it is privileged and shared, and the obligations of researchers studying underrepresented communities to ensure their work is accessible to those communities. It also illustrates bottom-up KE, whereby a university initiative was developed in response to community-identified aspirations and challenges around reciprocity and knowledge exchange.

## The Community Scholars Project

The Community Scholars Project (CSP) is an initiative that supports people who work in nonprofit organizations in British Columbia to access paywalled and other ebooks and online journals through a dedicated portal (Simon Fraser University Library, 2021). The program was initiated in 2016 at Simon Fraser University, and now operates throughout the province at Vancouver Island University, University of Northern British Columbia, Thompson Rivers University, and the University of British Columbia. The CSP does not seek to mobilize a specific body of knowledge to a well-defined audience; rather, it provides a platform to access publications that are otherwise costly or difficult to access. In this case, we highlight the programming component of the CSP that enhances the sharing and use of scholarly materials by connecting people (to information, to other people) through human-centered design processes that facilitate information use.

### Brokering as Connection

Librarians occupy an interesting, liminal position between published knowledge bases, different groups of knowledge creators and consumers, and disciplines. Academic librarians may serve multiple academic departments that require them to develop subject expertise in other disciplines to curate a professional development agenda. As positional outsiders, academic librarians intuitively identify and bring together different pools of knowledge. These skills have served the CSP well.

The CSP coordinators across the five higher education institutions use formal and informal mechanisms to understand the needs, aspirations, and constraints of participants referred to as "community scholars." These activities include coffee visits, phone calls, and the convening of community advisors to provide feedback on the program. Networking activities connect program participants to share concerns or novel ideas, as well as on-campus partners (e.g., community-engaged research groups, public engagement office, knowledge mobilization units) and off-campus communities. Traditionally, academic librarians connect information users to publications in many formats, but to fully support uptake and use in the research cycle, expertise and knowledge acquisition must be recognized as local and dependent upon connecting people to one another. In the context of the CSP, academic librarians convene Journal Club reading groups on topics of interest to multiple community scholars. For example, participants from across multiple organizations come together to connect their own experiences and knowledge with academic publications related to service provision to

older adults, or to women and housing.

### Human-Centered Design Processes

Human-centered design is a generative way to conceptualize and add structure to relationships in knowledge exchange work. Human-centered design takes empathy as the first step in the design process, followed by problem definition, then iteration and evaluation of solutions (Dam & Siang, 2018; Thoring & Müller, 2011a, 2011b). This process applies equally to digital and non-digital user experiences, programs, and activities. The design process requires both investigative (research) and generative (brainstorming) skills to understand user contexts. Although librarians have traditionally excelled at the investigative side of things, the creative design components of the discipline have been less recognized and embraced (Clarke, 2019). Adopting human-centered design as a way of working evokes learner-centered literacy (i.e., practitioner inquiry) and codesign of knowledge products, such as the DTES RAP.

As a KE methodology, human-centered design provides opportunity for innovation. Relationships with community scholars help to target work where it is needed and to understand its impact. Community scholars also bring shape and reflection to what can be murky, emergent work. Embedded in human-centered design is an ethos of iteration and versioning—iteration loops that respond to user feedback (Thoring & Müller, 2011b). Performing versioning enables evaluation and modification, encouraging the CSP coordinators to eschew finality and certainty in favor of a developmental mindset. Indeed, using human-centered design as an approach in the CSP is itself an innovation, and was inspired by KE with community scholars at Options Community Services, a local charity. CSP librarians hosted and were among diverse participants (graduate students, community scholars from other organizations, librarians from other library systems) in a board game event created by Options. The event formed part of this community service organization's research and development around enhancing migrant well-being, and inspired process or methodological knowledge (design processes) to be exchanged alongside experiential and research knowledge (about immigrant well-being) in multiple directions.

### Facilitation

Centering relationships in our approach to information literacy instruction also serves to support knowledge exchange. Librarianship has been steadily moving away from the deposit model of instruction and toward a constructivist approach, in line with the Association of College and Research Libraries' *Framework for Information Literacy for Higher Education* (2015). Working in traditions of critical pedagogy and critical librarianship allows information professionals to focus on convening and facilitating, rather than demonstrating and telling. Using strategies such as arts-based practices, liberating structures (Kimball, 2012), and world cafés (Brown & Isaacs, 2005), librarians convene conversations that bring together evidence-based and experiential knowledge pools. These techniques can enable cocreation of new knowledge. We also see this side-by-side cocreative facilitation in skillful reference interviews, a common exchange between librarians and patrons to match people with information sources that meet their information needs (Nilsen et al., 2019). Here different domain knowledge, skills, comfort with uncertainty, and mutual questioning can lead in exciting and varied directions.

## Discussion

These unique cases reflect adult literacy educators and academic librarians adopting community-oriented, asset-based approaches in their work that reconfigure knowledge making, sharing, and use. Returning to the K* spectrum, the roles of intermediary, translator, broker, and innovator take on new depth through the community-based cases presented in this article and provide insights into why these projects have come about and continue to gain traction. In Table 1, we summarize the ways different roles manifested in each of the case studies, and the kinds of activities associated with these roles.

Each of the case studies demonstrates different informational, relational, and system activities, though they share some similarities. In Case Study 1, the *No Less Than Heroic and Invisible Heroes* projects worked within the local context, celebrated the expertise of community members, and drew upon alternative ways of knowing (in this case, harm reduction and lived experience) to cocreate knowledge with community constituents.

**Table 1. Summary of K* Spectrum Roles and Activities in the Case Studies**

| K* Spectrum Roles | Information Intermediary | Knowledge Translator | Knowledge Broker | Innovation Broker |
|---|---|---|---|---|
| *Case Study 1: Literacy educators and research-in-practice* | | | | |
| Informational activities | Help people locate and make sense of information. | Appreciate learners' context in selecting relevant and relatable texts. | Adopt strategies outside literacy education (e.g., harm reduction) to support learners holistically. | Support learners as knowledge creators (e.g., *Invisible Heroes*) to inspire literacy activities. |
| Relational activities | Acknowledge power structures and differentials in people's experiences. | Understand learners' positionality to understand how they might view information and its sources, e.g., issues of trust, self-confidence, and expertise. | View lived experience and community-based knowledge as assets.<br>Recognize that information can trigger trauma. | Identify community-based stories and story-tellers.<br>Consider how constituents want to share and preserve their stories (and with whom). |
| System activities | Access to information. | Local perceptions of credibility and inclusivity. | Involve constituents. | Build capacity, focus on sustainability. |
| *Case Study 2: The DTES Research Access Portal* | | | | |
| Informational activities | Procure research articles and related materials; help authors interpret copyright agreements for self-archiving. | Investigate usability needs of diverse audiences (e.g., academic, nonacademic) and how these differed from institutional repository users. | Critically examine legacy classification systems for their potential to reinforce stigma and bias and create topics based on community-preferred terms. | Engage with community constituents and various stakeholders to evaluate the RAP interface design and list of descriptive topics. |
| Relational activities | Listen to DTES constituents' perspectives on issues regarding academic research. | Appreciate the needs of diverse audiences (e.g., community service providers, residents) in accessing and sharing research digitally. | Understand systemic biases faced by underrepresented groups and how information systems contribute to and perpetuate them. | Ask for input at key junctures of the process.<br>Move slowly and with intention. |
| System activities | Support open access publishing and self-archiving. | Improve physical access to and discovery of research materials. | Create iterative and alternative metadata schemes to organize information. | Advocate for slower, more meaningful sharing of research.<br>Focus on sustainable, open access solutions. |

*Table continues on next page.*

**Table 1 Continued**

| K* Spectrum Roles | Information Intermediary | Knowledge Translator | Knowledge Broker | Innovation Broker |
|---|---|---|---|---|
| *Case Study 3: The Community Scholars Project* | | | | |
| Informational activities | Work with publishers to provide access to published materials (behind paywalls). | Organize activities, such as Journal Clubs, to help community scholars (CS) make more meaningful use of published works. | Facilitate networking events to connect community scholars with similar interests. | Participate in events led by community organizations, e.g., Options board game. |
| Relational activities | Acknowledge gap in community organizers' access to information. | Appreciate that physical access to information may not be sufficient; tailor activities to promote sense making. | Draw upon the expertise and experience of community scholars to allow them to support each other. | Utilize human-centered design processes to assist community scholars in designing programs, activities, etc. to meet client and organizational needs. |
| System activities | Support open access. | Improve physical access to and discovery of research materials. | Involve constituents. | Build capacity, focus on sustainability. |

These projects emphasize that information is more likely to become knowledge when it is shaped and channeled by trusted sources within the community. During the development of the DTES RAP, a mismatch was recognized between the technical requirements for an institutional repository and a community access portal, leading to a consultative, deliberate process of reimagining access to research materials. In addition, librarians sought ways to work with copyright law and scholarly publishing agreements while generating alternative topic vocabulary to legacy classification systems to avoid perpetuating stigma around social issues such as substance use and homelessness. The CSP reflects iterative, creative strategies to foster connections between information professionals, community scholars and their organizations, and academic units beyond the library. These connections enable a deeper, more porous system of knowledge exchange that connects people with resources, including each other.

These three cases highlight how adult literacy educators and librarians played central roles in tangible processes and products of knowledge exchange work: publications produced with and by DTES community members and organizations; the DTES RAP and the partnerships and consultations that informed it; and the Community Scholars Program, with its formal and informal programming and services. These products resulted from long-term efforts, largely in building and maintaining relationships, that allowed the professionals involved to iteratively experiment, problem solve, and evaluate their work. Such process-based initiatives require a commitment not only from the professionals involved, but also from their workplaces to forgo short-term, tangible outputs for longitudinal outcomes and impact. This focus on the long term relates to the system activities highlighted in Table 1. Each of the case studies highlights that access to information is an important component of facilitating knowledge creation, but that this must be viewed as a "two-way proposition": External knowledge is brought to the community, and community-based knowledge is shared within and beyond the community (Lankes, 2015, p. 45). Information and literacy profession-

als drew upon their relational activities to better appreciate constituents' local and personal contexts and how these influenced their perceptions and use of research. Doing so enabled them to make their respective initiatives inclusive, participant-driven, and sustainable.

Librarians and adult literacy educators spanned the roles of intermediary, translator, broker, and innovator—often within the same project—adapting as required for the local context and the readiness of constituents. Guided by core values of access, lifelong learning, service, and social responsibility (American Library Association, 2010), librarians and adult literacy educators are uniquely poised to respond to both top-down and bottom-up forces for change. Working with contextual affordances and constraints, these professionals bring a user-centered orientation and humility to their work that enables the construction of positive, generative relationships, accepts and meets people where they are, and spotlights community needs, priorities, and strengths (Lankes, 2015).

**Future Directions**

It is useful to note that the formalization of knowledge brokering roles has largely occurred in the health and business sectors (Contandriopoulos et al., 2010; Mallidou et al., 2018). Librarians and literacy educators also work in these sectors, but the terminology associated with knowledge exchange (translation, transfer, mobilization) is not common in North American library and literacy education degree programs. Although knowledge brokers and librarians/literacy educators have significant overlap in requisite knowledge, skills, and attitudes (e.g., resourcefulness, integrity, and knowledge of local information ecosystems; Mallidou et al., 2018), librarians and literacy educators do not self-identify as brokers. This may not be problematic given their strong professional identity around service provision and inclusion. It may be detrimental, however, for achieving recognition and further developing skills for the essential roles that librarians and adult literacy educators play in knowledge exchange and the communication of research knowledge.

One direction for achieving this recognition would be to explore where and how knowledge making, sharing, and use occur in library and community education settings. For example, libraries provide maker spaces and labs equipped with production facilities (e.g., video and podcasting equipment). They facilitate access to print and digital information sources, teach people how to use software (e.g., for citation management or word processing) and hardware (e.g., e-readers), educate constituents about publishing processes (e.g., open access, copyright), and show them how to create data visualizations, social media posts, or summaries to share research with wider audiences. Literacy educators experiment with new technologies to create and publish knowledge with people whose life experiences are often overlooked. Community publishing of such stories is a longstanding practice in literacy education that is taking on new life through new technologies, as in digital storytelling (Boschman & Felton, 2020), to circumvent print literacy barriers. The convening of people, technologies, and digital literacy education opens possibilities for more inclusive spaces that build upon storytelling, local knowledge, and community voices. The coevolution of these new literacy and information practices has the potential to reach new audiences.

Another path to pursue is to explore librarian and literacy educator competencies and how these are being enacted in knowledge work, which would enhance formal education and professional development opportunities. Courses taught in library and information science and literacy education programs can be augmented to introduce knowledge exchange concepts and practices, as suggested by Booth (2011). For example, library and information science programs offer courses on scholarly communication that cover topics such as bibliometrics, copyright, intellectual property, and open access. Emerging librarians could examine the informational, relational, and system aspects of each topic, and envision how they can help create and shape local knowledge making, sharing, and use practices; these endeavors can be readily linked to design thinking, which is increasingly used in library information science programs to guide the development of services, programs, and information systems (Clarke, 2019). Professional development opportunities could range from formal (e.g., competencies and standards developed by professional associations) to informal communities of practice, email lists, reading groups, and events for networking, learning, and sharing. The professional development and training of literacy educators can more in-

tentionally include participatory pedagogies, inquiry-based practice, and the potential for new technologies to amplify and share local knowledge. It is also essential that these professionals develop relationships with key constituents within the university who engage in community-based research and knowledge exchange to facilitate university–community connections, as we have seen in the DTES RAP and CSP cases.

## Conclusion

The Association of College and Research Libraries defines information literacy as "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (2015, Introduction section, para. 5). In outlining their information literacy framework, the ACRL challenges us to remember that authority is constructed and created, and must be questioned in light of "diverse ideas and worldviews." Information has value, and calls upon us to question our "own information privilege" (Authority Is Constructed and Contextual section, para. 4); moreover, research is an inquiry process in which it is imperative to "demonstrate intellectual humility" (Research as Inquiry section, para. 4). Interestingly, dispositions of critical questioning, and recognition of privilege and humility are absent in the listed competencies of knowledge brokers (Mallidou et al., 2018). Librarians and adult literacy educators are uniquely positioned to bring these qualities to knowledge exchange initiatives.

The cases we have described in this article draw attention to the everyday, localized information literacy practices in which librarians and literacy educators engage. These practices open new spaces within scholarship and training to support the growth of knowledge exchange discourses for librarians and adult literacy educators, and enable them to contribute more visibly to understandings of knowledge mobilization within diverse communities, and to question who and what constitutes knowledge "brokering" and expertise. In this way, librarians and adult literacy educators can not only share information resources with a broad array of constituents within and beyond the university campus, but also transform the landscape of knowledge exchange to be more democratic, reciprocal, and meaningful for nonacademic communities.

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