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"We Learn by Doing": Teaching and Learning Knowledge Translation Skills at the Graduate Level

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Abstract

Knowledge Translation (KT) is increasingly a requirement for scholars and non-academics working in applied settings. However, few programs provide explicit training in KT. In this article we systematically explore our experiences as a multi-disciplinary group of course facilitators and students in a newly redeveloped graduate course in Evidence Based Practice and Knowledge Translation. The course was designed to emphasize hands-on learning, collaboration and community engagement. We reflect on the challenges we faced and the skills, knowledge and opportunities that students gained as they developed and implemented community-based KT strategies relating to refugee resettlement, young carers, and consumer attitudes, behaviour and values around food purchasing decisions. We conclude by providing recommendations for instructors and institutions for implementing learning experiences in KT that are designed for real-world impact.

L'application des connaissances (AC) est devenue une exigence de plus en plus fréquente pour les chercheurs et les personnes qui travaillent dans les milieux non universitaires. Toutefois, peu de programmes offrent une formation explicite en AC. Dans cet article, nous explorons systématiquement nos expériences en tant que groupe pluridisciplinaire formé de responsables de cours et d'étudiants dans un cours de cycle supérieur nouvellement remanié portant sur la pratique fondée sur les données probantes et l'application des connaissances. Le cours a été conçu pour mettre en valeur l'apprentissage pratique, la collaboration et l'engagement communautaire. Nous réfléchissons aux défis auxquels nous avons été confrontés ainsi qu'aux compétences, aux connaissances et aux opportunités que les étudiants ont acquis en développant et mettant en pratique des stratégies d'AC en milieu communautaire sur les thèmes de la réinstallation des réfugiés, des jeunes aidants et des attitudes, comportements et valeurs des consommateurs en matière d'achat de produits alimentaires. En conclusion, nous présentons des recommandations à l'intention des enseignants et des établissements pour la mise en pratique d'expériences en AC qui soient conçues pour avoir un effet dans le monde réel.

Over the past two decades, growing emphasis has been placed on knowledge translation (KT) activities in social and health sciences research. No longer are researchers expected to focus "only" on the production of new knowledge, but they are increasingly involved in implementing, or translating, this knowledge into policy and practice. The Canadian Institutes for Health Research (CIHR) defines KT as follows:

> Knowledge Translation is (…) a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the healthcare system. (…) This process takes place within a complex system of interactions between researchers and knowledge users which may vary in intensity, complexity, and level of engagement depending on the nature of the research and the findings as well as the needs of the particular knowledge user. (CIHR, 2016).

While KT is increasingly a requirement for academics and non-academics working in applied contexts, few graduate programs provide explicit education in KT (Nurius & Kemp, 2014; Mishra, Banerjee, MacLennan, Gorzynski, & Zinszer, 2011). As an important knowledge gap remains in the area of KT education, this paper aims to share key reflections and lessons learned from a unique investigation of KT teaching and learning in a hands-on, collaborative, community-based learning environment.

We are a group of eight graduate students from two programs, a course instructor in Family Relations and Human Development, and a leader from the Community Engaged Scholarship Institute, a centre designed to foster university-community partnerships. Graduate students brought different perspectives to the course that were reflective of their areas of focus in Family Relations and Human Development (MSc or Ph.D.) and Public Health (MPH). A common aspect of our programs of study is that they emphasize connections between research and practice and they provide training for graduate students who pursue a range of careers in the social and health sciences, including careers in clinical work, management and research. Given the growing recognition that KT skills are required by researchers as well as those in frontline and managerial positions in health and social science settings (Bennett, Whitehead, Eames, Fleming, Low, & Caldwell, 2016), it is important that we learn how best to equip students with KT skills.

This paper examines our experiences designing and conducting a graduate course in KT, and shares our insights and lessons learned to inform the practice of teaching and learning in this area. We begin by describing the course design and delivery. Next, we report on our exploratory qualitative investigation of students' learning in the course. The overarching question guiding our research into students' experiences was: How did students experience this course and what was learned? We conclude by discussing insights that we gleaned from examining students' experiences and highlight our recommendations for institutions and instructors who may be interested in teaching a similar course.

The Course

The course was originally designed to familiarize students with principles of Evidence-Based Practice (EBP) and KT. Course content introduced students to a range of topics including the levels of evidence, criteria for efficacy and effectiveness, the importance of EBP, limitations of EBP, and appraisal of the process of moving knowledge derived from high-quality evidence into practice. During the winter semester (January-April 2017), a new instructor shifted the course

focus from a traditional course-delivery approach based on readings and discussion to an active learning approach based on community collaboration and hands-on projects, emphasizing learning KT *by doing* KT. The vision of the course was to provide students with an opportunity to work on community-based projects, a "win-win" approach where student learning can lead to real impact outside of the institution.

Students were required to plan for, develop, and disseminate KT products over the course of the semester. Students selected KT projects from three topic options that were developed by the course instructor and our institution's Knowledge Mobilization Coordinator. These three topics were based on needs that had been identified through prior consultation with community groups with whom the Knowledge Mobilization Coordinator or course instructor had pre-existing relationships. We approached topic selection in this way to ensure that projects would be relevant to the community and would contribute to addressing demonstrated knowledge gaps. This also gave students the choice of working collaboratively with a community partner. Limiting the number of topics to three provided students with the option to work on individual projects that could be combined into a larger KT project to more fully address community-identified knowledge needs. The topics were (1) support and care for "young carers" (young people who provide care for one or more of their family members); (2) refugee resettlement and the long-term integration needs of Syrian refugees in the local community; and (3) consumer knowledge, attitudes, and behaviour around food purchasing decisions. As will be described, there were some adaptations to these topics as students' projects developed throughout the semester.

The class was structured as a collaborative learning and working environment, favouring an active, hands-on approach. Class activities included presentations by guest speakers; opportunities to workshop ideas; instructor-led discussions of readings; and a series of assignments designed to ensure that students gained knowledge of best practices, theories, and debates relating to EBP and KT as well as practical skills and experience that would be relevant to future careers. Table 1 provides an overview of the main subjects covered in the course. In addition to these content-focused classes, we also devoted several in-class sessions to "workshopping" projects by presenting ideas informally and eliciting feedback from the group.

Assignments

Assignments were designed to move students through the process of planning and implementing a full KT strategy — from the identification of key goals, messages, and audiences — to the design, dissemination, and evaluation of KT products. The first assignment was to produce a resource list of information sources on their chosen topic, including academic and grey literature as well as key contacts (organizations and individuals) who could provide knowledge or support throughout the KT process. Next, students completed a research brief, which reviewed the state of knowledge on their topic, outlined the key messages that needed to be shared, and identified key knowledge users. The first half of the course culminated in the submission of a full KT plan. Students were introduced to a number of KT templates (Barwick 2008, 2013; Ontario Centre of Excellence for Child and Youth Mental Health, n.d.; Reardon, Lavis, & Gibson, 2006), which were used to develop their own KT plans. These plans were presented in class so that students could elicit feedback and learn from each other. The second half of the course focused on the design, development, and dissemination of KT products, which were evaluated through two assignments: a KT dossier and a PechaKucha presentation, which we describe in further detail below.

Table 1
Content Covered in Class

Topics
• Introduction to Course & Presentation of KT Topics
• Core Definitions and Concepts: What are EBP & KT?
• Persuasive Writing Guest Speaker: *Owen Roberts, Director of Research Communications, University of Guelph*
• Developing a KT Plan Guest Speaker: *Caroline Duvieusart-Déry, Knowledge Mobilization Coordinator, University of Guelph*
• Appraising Research Evidence
• Data Visualization
• Plain Language Communication Guest Speaker: *Kim Garwood, Manager, Writing Services (Library), University of Guelph*
• Working with Traditional Media Guest Speaker: *Lori Bona-Hunt, Director, News Service, University of Guelph*
• Using Social Media for KT Guest Speaker: *Melanie Parlette-Stewart, Blended Learning Librarian, University of Guelph*
• EBP & KT Experiences Guest Speakers: *Dr. M-J Milloy, Research Scientist, BC Centre on Substance Abuse, Assistant Professor, Division of AIDS, Department of Medicine, University of British Columbia.* *Mark Brender, Executive Director, Partners in Health Canada.* *Dr. Melanie Barwick, Psychologist and Health Systems Research Scientist, Child and Youth Mental Health Research Unit; Scientific Director, Knowledge Translation, Child Health Evaluative Services, Hospital for Sick Children; Associate Professor, Department of Psychiatry; Associate Professor, Dalla Lana School of Public Health, University of Toronto*

When the course was designed, students were expected to complete four KT products: an infographic, a taped media interview or a newspaper posting, a blog post along with a Tweet to promote the post, and at least one other verbal or visual material to be determined by the student. As projects evolved, it became evident that the delivery of four products was overly ambitious within the time frame of a 12-week course. We also determined that the blog post and newspaper article products overlapped too closely. As a group, we unanimously agreed to reduce the assignments to three KT products and to include a plan for evaluating KT activities.

The content of the KT projects also evolved throughout the course as students specified or shifted their focus to meet the needs of particular KT gaps. Four students chose to focus on young carers, three on refugee resettlement and one on consumer knowledge and food purchasing decisions. Two of the students who focused on young carers elected to concentrate on carers in postsecondary settings, and two decided to focus on carers under the age of 18. Two of the students working on refugee resettlement decided to shift their foci to knowledge gaps within their own workplaces, and they looked at health care workers' effective practice with culturally diverse communities. One of the students, an Occupational Therapist (OT) by training, decided to introduce the concept of *Cultural Humility* (Tervalon & Murray-Garcia, 1998) to inter-professional staff, while the other student, a mental health therapist, decided to focus on raising awareness and improving access to cultural brokers.

Most students' projects were developed with community partners. However, there was considerable variation in partners' roles and the extent to which they were involved with project planning and dissemination. Table 2 provides a summary of each student's KT topic, goals, target audiences, and a description of the role of community partners (if applicable) in the project.

Method

As the semester drew to a close and we began to reflect back on our learning, we decided as a group to systematically explore our experiences and lessons learned. We were especially interested in exploring students' experiences in the course. Following the advice of the Director of Research Ethics at our institution, our research was not submitted to our Research Ethics Board (REB) for review. This research was considered by our Director of Research Ethics to be a form of autoethnography (Adams, Jones, & Ellis, 2014); the participants were also the researchers and were responding to questions that we ourselves raised and hence REB approval was deemed unnecessary. We took steps to ensure that participation was entirely voluntary for all students. The writing of the manuscript was finalized after grades were submitted, and all researchers provided their express permission to be identified.

Table 2
Description of Projects

Topic	Goals	Knowledge Users	Role of Partners	Products
Cultural barriers in mental health and the use of cultural brokers	Educate mental health professionals about access to cultural brokers for support in working with culturally diverse families	Mental health clinicians and clinical supervisors	Partner: Children's Mental Health agency in Ontario Role: Collaborator in development and implementation	• Infographic • Internal agency blog post • Clinical rounds presentation to clinicians
Young Carers	Raise awareness about young carers and encourage Young Carers to access existing supports	Youth ages 12-17 in Waterloo	Partners: Multiple partners including Young Carers groups and a municipality. Role: Collaborators in development and implementation	• Infographic • Pamphlet • Feature Article
Young Carers on Campus	Improve on-campus supports for Young Carers	On-campus student support services & students	Partner: On-campus student support services Role: Dissemination of KT products	• Infographic • Infokit • Blog post

(continued)

Topic	Goals	Knowledge Users	Role of Partners	Products
Young Carers	Generate awareness among educators about Young Carers' experiences and needs for academic support	Educators	Partners: Mental Health Lead and an educator from two different school boards in Ontario. Role: Collaborator in development and dissemination of KT products/ Knowledge Users	• Infographic • Fact sheet • Blog post
Young Carers on Campus	Improve supports for young carers on campus	Knowledge Users: staff, faculty and students on University campuses	Partner: No active partner. Student worked with the course instructor who had expertise in this topic to develop KT products	• Infographic • News Article • Report
Cultural Humility	Raise awareness among healthcare professionals	Healthcare professionals in acute and long-term care	Partner: Inter-professional healthcare team members Role: Knowledge users who provided feedback on product development	• Fact sheet • Op-ed • Rehab meeting mini-workshop
Consumer knowledge, attitudes, and behaviour around agricultural practices	Generate knowledge of current agricultural practices	General public	Partner: Charity focused on farming and food Role: Collaborator in all stages of the process, from project design to dissemination and evaluation	• Infographic • Fact sheet • Blog post (continued)

Topic	Goals	Knowledge Users	Role of Partners	Products
Refugee Resettlement: Community Connection and Integration	Promote social connectedness with Syrian refugee families	General Public in local region	Partner: Community organization focusing on refugee sponsorship Role: Collaborator in developing KT strategy, reviewing products, assisting with dissemination plan	• Creative storytelling piece • Op-Ed • Blog Post

Our approach is inspired by collaborative autoethnography (Chang, Ngunjiri & Hernandez, 2013) in that we occupy dual roles of researchers and participants. The focus of this research is on students' experiences in the course, and the research process we undertook aimed to provide insight into our own learning. As in collaborative autoethnography, our approach has been to "pool" each of our individual stories in order to examine commonalities and differences and to draw overarching insights about a social phenomena (Chang et al., 2013), in this case the experience of a course in KT. As described in further detail below, the instructor's role in this process was different from the students', and this is an important limitation in the extent to which our methodology can be considered true collaborative autoethnography. The instructor's role throughout the data generation, analysis, and writing was to create opportunities for students to explore and share their own learning processes. She also led the writing by creating an initial outline of the manuscript, keeping track of timelines, and leading the process of editing the manuscript. This positioning as a facilitator was in keeping with the overall approach to the course, which was characterized by a non-hierarchical pedagogical approach through which the instructor was positioned as a facilitator and supporter of students' individual learning experiences in collaboration with the Knowledge Mobilization Coordinator, community agencies, guest speakers and, especially, the students themselves. Our adapted collaborative autoethnographic approach provided each student with the opportunity to contribute fully as a co-researcher and co-author while also being mentored through the writing and publication processes.

We analyzed and interpreted data collectively in order to develop an understanding of our individual and collective experiences in the course. Our specific approach to data analysis was adapted from Braun and Clarke's (2006) six-step approach to thematic analysis. We began generating data with students' individual PechaKucha presentations (www.pechakucha.org), which focused on "telling the story" of their experience in the course. The PechaKucha format, where 20 slides are presented in only 20 seconds each, results in concise presentations putting forward images rather than heavy text. This proved especially suited to self-reflection, as students would share their stories in creative but concise ways, focusing on key elements of their learning. These presentations allowed us to become familiar with each student's experience (Step 1). Following each presentation, we engaged in lengthy conversations in which we asked each other questions, noted similarities and differences in experiences, and learned more about each other's conceptions of their learning in the course. The instructor took on a facilitation role in these conversations and took detailed notes. These notes were shared with the group and together we discussed key ideas, explored areas of common experience and divergence, and developed rough initial codes (Step 2). In our last class together we again discussed the draft codes, revised them together, and developed a list of working themes (Step 3). Next we began to draft an outline of a manuscript using Google Docs software. Each student wrote written reflections on the themes that had been articulated in the PechaKucha presentations and related conversations, often extending and/or clarifying perceptions that had been previously expressed. As we worked to organize a collective document, we noted that some themes did not seem as relevant as others and we adjusted them accordingly (Steps 4 & 5). Themes that we arrived at during this stage included flexibility/adaptability, the learning curve, getting out of the comfort zone, learning through interaction, and recommendations (including project topics and timelines). In the final step (Step 6), we finalized writing of the results and worked together to draw conclusions. We also selected particular excerpts from the reflections of participants/authors to include in the reported results.

It is important to note from the outset that our method has some important limitations in its deviations from Braun and Clarke's (2006) approach. In particular, we were not working from

transcripts, and our understanding and interpretations shifted as we worked. On the other hand, the iterative nature of this process means that these interpretations were indeed free to shift, and learning about our experiences and impressions occurred beyond the course as we worked together to research and write about students' experiences. While our method limits the generalizability of our research, it is important to note that generalizability was not the aim. Rather, we strived to produce findings that would feel authentic and true to each of the participants/authors. Multiple conversations and shared authorship were important for establishing a sense of "trustworthiness" in our results (Lincoln & Guba, 1985). Writing was led by the course instructor (Andrea Breen), one student (Kate Twigger), and the Knowledge Mobilization Coordinator (Caroline Duvieusart-Déry), with substantive contributions from each of the students. The data that we draw on in the following section includes passages from students' individual written reflections as well as notes from our group conversations.

Results

Students' reflections on their experience throughout this course revealed some common themes and lessons learned, which provide insights into how the course model could be adapted and applied to other graduate courses in knowledge translation. In the following sections, we describe each of the themes that we developed as we generated and analyzed data together. We provide fairly lengthy excerpts from our reflective writing in order to provide insights into the students' individual experiences. In this way we allow each individual to communicate their experience in their own voice. Following the excerpts, we provide some brief comments on the overall insights we glean from our experiences. We return to elaborate further on each of the themes in the final Discussion section.

Flexibility and Adaptability

One of the key themes that emerged in our analyses was flexibility. As described by the students in their reflective presentations and writings, the instructor approached the course with an openness to evolving structure. The schedule and assignments were mapped out, but the instructor recognized that students' experiences with this newly redesigned course would likely necessitate making changes along the way. The small group format facilitated a culture of collaboration that extended to co-designing aspects of the course in an emergent process. Student feedback, recognition of time constraints, and the overarching goal of producing quality content led to shifts in students' topics and the types of products that were created. In the following excerpts, students describe their experiences relating to the theme of flexibility:

> Initially entering this course, I held a preconceived notion that we would be learning about Evidence-Based Practice and KT in a very structured format. That is, learning about key concepts and real-life examples via assigned readings and formalized class discussion. This structure of learning is something I am accustomed to reflecting upon all of my previous academic experiences; however, what I soon came to realize is that this class was the complete opposite. I quickly learned that we would be actually creating KT products with the goal to successfully disseminate our knowledge products by the end of the semester. I was initially nervous, as I had never participated in KT prior. Moreover, I was apprehensive to create products while trying to adhere to the expectations outlined in the syllabus. This apprehension went away quickly when it

was discussed that the expectations outlined on the syllabus could be adapted to what best serves the needs of students and aids in their success. –Sarah Ranby

As this was my first experience in the realm of KT, I was open to the flexibility needed for the success of the course. The trajectory of the course closely mirrored how I imagine KT activities play out in real world settings, often with unexpected challenges and the development of new and exciting ideas. As I became more and more immersed in the process, class assignments began to feel more like collaborative, goal-oriented tasks with aims to share knowledge and affect positive change in our community. While it was somewhat nerve racking to let go of some of the structural expectation from previous courses, the constant feedback, and support from our course instructor helped foster an engaged course environment. –Emma Whitehouse

One of the biggest learning curves I experienced throughout this journey was the ability to adapt and allow change to occur. This course truly did reflect reality and showed a group of graduate students what it means to work on a project with a KT focus. Through our course readings, group reflections, and personal reflections it became apparent that KT is not a linear process; it is dynamic, iterative, and ambiguous. In order for our products to be disseminated and/or implemented into the real world, the course schedule and timelines needed to be flexible. For example, establishing a partnership and understanding one another's goals requires a significant amount of time. For my project this process took a lot longer than I anticipated; however, due to the flexibility of the course timelines and requirements, I was able to adapt and produce products that were meaningful to the organization I was working with as well as relevant to the target audience. Having the freedom to create products in a timeline that was appropriate for both myself, and the project partner, added to the success of this course. –Alessia Borgo

As these excerpts suggest, the flexibility embedded in the course was initially challenging for some students. However, we also see this feature as an advantage; flexibility with assignments allowed for projects to develop according to partners' needs and provided opportunities to maximize the effectiveness of KT products. As Christine Scott stated, "The instructor's openness to change allowed me to develop products I could have confidence in." While this flexibility posed challenges for the instructor in that it required significant time commitment to support each individual student in developing a series of assignments that would work best for her particular project, this was an important component of the course that we feel was important for students' learning. We return to this point in the discussion.

The Learning Curve

KT work involves a range of skills that were new to many students. Several of us highlighted the experience of being on a "steep learning curve" in our reflections. In the following excerpts students describe some of the challenges they faced in developing their products and some of the learning that occurred in the process:

Another learning curve encountered was the creation of deliverables beyond the comfort and skill set of academic writing. With great dissonance, I had to accept that word count was incongruent with what I considered an appropriate amount of text and

did not reflect the actual time or effort spent in product development. The visual element substantially increased workload, as I had to balance the aesthetics of appropriate images and text – an exercise in extreme wordsmithing. –Mercerina Lychek

Prior to this course, I could not define the meaning of KT, let alone create a tool. So this idea of choosing a topic, connecting with the community, and developing partnerships with organizations, while also learning new skills, producing tools, and disseminating knowledge all within a 12-week span, left me feeling overwhelmed. I can honestly remember thinking that learning to write a 'successful' news article and blog could be a course in its own right, as it required a larger skillset than just the ability to tell a 'good' story (e.g., plain language, active voice, less is more, the ability to tell again without becoming repetitive, to maintain an objective stance until the last paragraph, etc.). As such, I realized that KT requires far more time to produce and rework than what might be anticipated. –Jess Boulé

Since course lectures only provided a snapshot on how to perform a KT skill, and only addressed some KT tools, much of my own learning occurred outside of the classroom. With a background in gerontology, sexuality/gender identity and a strong focus on policy, I was mainly interested in creating a report for service providers on a university campus. Although report writing more specifically was not included as a guest lecture, other presentations aided with the production and reworking of this tool, such as: writing in plain language and the use of an active voice, as well as a lecture regarding KT more broadly and having an understanding of your target audience. To understand my target audience, I turned to other reports and policy briefs written in Ontario as examples and followed similar themes regarding: images and photos, colours, font and font size, written format (including the social problem from multiple perspectives, local need, and possible solutions), as well as referencing and citations. –Jess Boulé

These excerpts highlight some of the key challenges several students faced in this course. Assignments required a range of skills that were beyond the scope of the explicit taught curriculum, including skills in visual communications, graphic design, and the creation of products for various audiences. While presentations and readings were designed to provide essential skills to support students' KT work, developing effective products required students to be resourceful and take initiative to expand their own learning.

Getting out of the Comfort Zone

Students in the course experienced various levels of insecurity in relation to the assignments, and particularly when it came to putting products "out in the world." As a result, much of our reflective writing and conversations focused on the theme of moving outside of our individual comfort zones. Graduate student training tends to emphasize a mentoring and supervision approach, whereby products are not disseminated until they have passed multiple stages of review and approval. This was not the case here, and there was considerable anxiety for students around releasing KT materials into the public realm. While our course format included regular opportunities to workshop and review products together and with partners prior to dissemination, students questioned when, and in some cases whether, products were ready for dissemination. As Emma Whitehouse pointed out in relation to her assignment on young carers,

"This isn't peer reviewed, my advisor hasn't looked it over!" Similarly, students expressed concern about the ability to produce the right information, or whether or not we made the right choices in what should be shared and how. As suggested in the following excerpt from Emma's contributions to a group conversation, questions arose about the validity of knowledge as well as the expertise of the knowledge producer:

> How am I to do this? Do I have the right expertise? Am I allowed to do this? And how do I share that feeling in the infographic? Do I need a caveat? Or am I the best person because I'm in the right place in the right moment and that I'm the most effective mechanism? There's a tension there. –Emma Whitehouse

Later in this conversation Emma reflected on the anxiety of "putting something out in the world that you've created, for the world to critique" and wondered, "When is it ready? How do you know? Who am I?" As will be described in further detail, the short course time frame contributed to these concerns. By the end of the semester, all students had disseminated one or more of their KT products with plans to revise the others and disseminate them at a later date. We suspect that some of the anxiety around the "letting go" of products may have been alleviated if more time were available for dissemination, evaluation, and possible revision.

Despite these challenges, the dissemination of products into "the real world" was an important part of the course. Jess Boulé reflected on this:

> Research, in my mind, demonstrates the potential to be more than the systematic collection of data, development of theory, and discovery of empirical evidence. Research can offer empowerment, social change, and liberation to those who have been pushed towards the margins. It is for this reason that I appreciate the practical relevance of this course, as it has not only provided me with lessons regarding KT strategies, rather it has also given me a stage in which to transfer knowledge into action. By raising awareness of young carers, this course gave me the opportunity to inform policy and ultimately influence solutions to current real-world problems, but also provided me with an understanding of KT skills that will help in the achievement of future work related goals.

The opportunity to do "real work" with "real impact" was an essential component of the course. While this certainly added complexity to the course, our experience was that significant learning occurred through the process of working on projects that were intended to be useful and meaningful to the community. As Mercerina Lychek reflected, "We learn from trying, doing, and making mistakes - exploring theory in class is one thing, but actually 'doing' in the real world provides such novel learning, interactions and unanticipated lessons that cannot be replicated."

Learning through Interaction

Community partners. As suggested above in the excerpts relating to flexibility, one of the overarching themes in students' reflections related to their experience of working with community partners. The course was designed with the expectation that projects would be "community-informed" and that community partners would be available to provide advice and consultation around project development, dissemination, and implementation. However, there was a range of experiences in collaborating with community partners and in some cases we

collaborated closely with partners who were actively involved in designing, developing, disseminating, and implementing KT products. In the following excerpts, students describe the challenges and learning that occurred when working with community partners:

> In the initial stages of developing our KT plan, inquiries were made in regards to who our partners would be that would assist in the mobilization of knowledge. Although it was not necessarily a requirement to reach out to community partners, it soon became apparent that in doing so the connections made would serve as a key learning opportunity about KT. My intended target audience were educators; and thus what made most sense (to me) was to collaborate with educators that would have those necessary connections to provide a platform for effective knowledge dissemination. I was able to make connections with two educators on two different school boards, and I soon realized the value and importance of having them as partners throughout the entire process. Although there was this overlap in having key users also as partners, which arguably blurs the line between audience and partnership, it is important and advantageous to have partners that know and have similar experiences to the intended key users. Their input and insight is what contributed to the development of an informative KT product for educators and to an extent by educators. –Sarah Ranby

> A component of the KT process was the development of relationships with community partners. For many of us this was a new experience and one that felt quite daunting. For me, the initiation of these relationships felt like the most difficult aspect of this process. As students in an academic environment, we can get quite comfortable in the academia bubble. This course posed a significant challenge for me when it was suggested that we work with community partners to develop and disseminate our products. I had initial worries that partnership- or relationship-building skills were not skills I possessed. Ultimately I came to understand this challenge as a necessary one. Although I may have felt that these skills were not fully developed prior to beginning this class, I am grateful for the push to begin my journey in becoming more confident in this area. –Kate Twigger

> I found my experience collaborating with community partners for my KT project to be an invaluable learning experience. I had the opportunity to work with individuals from 11 different organizations. My partnerships gave me a first-hand experience with some of the challenges professionals' experience when working on a KT project with multiple partners. Most of these challenges revolved around timelines and decision-making. I started to recognize that even though my assignment deadlines were urgent, the most important thing was that I create an effective KT product that would resonate with my target audience. This taught me to have patience while I waited for partners to send their feedback, even though it took longer to complete my final KT products. In the end, my final KT products were far more effective than anything I would have developed on my own. My partners were pleased with our final KT products and were very enthusiastic about implementing them through various platforms. Ultimately, the lessons I have learned from my first-hand experience working alongside community partners were more powerful than any other classroom education I have previously received on KT. –Reisha Fernandes

After initially reaching out to a community organization about my project, I was amazed by their willingness to collaborate. They provided invaluable advice and feedback to my KT plan, products, and helped with dissemination. From the outset, my partner invited me to events and introduced me to local refugee and sponsorship group members, and from there I went on to meet with several families individually. This allowed me to not only identify what knowledge needed to be mobilized but develop and disseminate products that were relevant to the community I was focusing on. After getting to know some of the refugee families during the course, they really became the heart of my products. In many ways, I think these partnerships helped us to respond to the initial questions some of us had when beginning our projects, questions like "What knowledge matters?" or "Who am I to share it?" Beyond bountiful sources of knowledge and supports, they helped to provide an opportunity to look beyond the academic research, anchor KT plans, and justify our own KT efforts in real world application. It wasn't until meeting with community partners that my KT plan really started to take on a life of its own. –Christine Scott

The component of this course that I learned the most from was establishing a partnership with a community partner and working with the organization collaboratively from the start of this journey through to the end. The opportunity to work one-on-one with communication experts who bring certain expertise to the table allowed me to approach each product from multiple perspectives. I believe the relationship between myself and my community partner created mutual benefits for both partners. At the start of the course, we discussed what roles each partner would have, as well as how we would plan to disseminate and evaluate the final products. This allowed us to work together in a cohesive manner so that all of our efforts were focused on the end products and how we were going to reach our KT goals. –Alessia Borgo

Like many other aspects of this course, creating partnerships with members of the community was a new and often challenging experience for students. However, and despite the amount of work involved in building and negotiating these partnerships, these partnerships resulted in highly positive experiences. For some students, connecting with and working alongside their community partners comprised their most important learning in the course. We return to this point in the discussion.

In-class collaboration. As evidenced in some of the excerpts, collaboration within the group was also a strong feature of students' KT experience. In their reflections, students emphasized the importance of the collaborative learning environment for their progress in this course:

I realized that the collaborative skills that we were utilizing as participants in the course development mirrored those needed for collaboration with partner agencies. Within our role of a student in this course, we were collaborative partners. We worked together to discuss and inform directions for our learning with the course instructor throughout the semester. Without even realizing it, I had been developing these skills all along. It was the collaborative nature of this course that allowed us to practice skills related to collaborative partner relationships within the context of a safe learning environment. – Kate Twigger

> The flexibility of this course provided me with a new perspective on my academic work and was personally a learning curve. I began to recognize and value the opportunity we had to collaborate, challenge and engage with one another, as well as with community partners, when creating our knowledge products. Although I have always perceived an academic setting as structured and formal, the flexible approach applied to this course is ultimately what fostered a more experiential, practical learning environment that enhanced the overall process of KT. –Emma Whitehouse

> Having the opportunity to sit in a circle and discuss our project topics together made a difference in my KT journey. I appreciated hearing what each person had to say, and this helped me look at my project from different angles. –Alessia Borgo

As suggested by these reflections, collaboration skills were developed through working with each other, and helped prepare students for their partnered work with various community organizations. While there was no explicit instruction on collaboration and relationship-building, the supportive context of the course and ongoing opportunities for feedback from the instructor and other students provided the scaffolding for students to take risks and develop new skills.

Guest speakers. In addition to learning from one another and from community partners, students also benefited from the insights of a number of guest speakers who presented on a range of topics. Several in-class presentations focused on developing communication skills (e.g., persuasive writing, plain language communication, working with traditional media, using social media for KT). We also heard from experts representing a range of disciplines who are using KT in local, national, and international contexts. In the following excerpts, we reflect on the importance of these presentations for our learning:

> The addition of guest presentations on topics such as writing in plain language, working with traditional media, and working with social media, created a space for students to develop new skills allowing them to bridge their academic and work experiences with new ways of communicating information. –Kate Twigger

> Guest speakers shared a wide variety of techniques, knowledge, and experiences throughout the course. While technical advice was invaluable, I found it especially inspiring to hear about real world KT products and evaluation efforts, both locally and globally. –Christine Scott

> One of my favourite components of this course was having guest speakers talk to us about KT in their own context. Since KT is a new and ever-growing field, it was interesting to hear personal stories about how KT has added to the success of their organization or academic work. These seminars definitely made me feel empowered, as if I can impact society by incorporating KT practice into my future professional roles. –Alessia Borgo

As suggested above, guest speakers shared their knowledge and experience on a range of topics. Some of the presentations focused on the development of specific skills (e.g., writing in plain language), while others focused on experiences developing and implementing KT initiatives in a range of contexts. As suggested in the excerpts above, guest speakers' contributions to the course included assisting in students' skills development, and telling stories that made us feel

"empowered," "inspired," and helped us to understand the possibilities for KT practice in a variety of professional roles.

Areas for Improvement

So far, we have highlighted aspects of the course that worked well. While the KT learning curve was steep, students found tremendous value in their experiences developing and disseminating real KT products in collaboration with community partners. That said, there were aspects of the course that could be improved for future delivery, including offering greater freedom in choosing topics, and re-evaluating the timelines for doing this work.

Course topics. The particular topics that were covered in our course were another important theme in our reflections. This course required students to choose from three predetermined topics. For some students, these were entirely new content areas in which they had no prior knowledge or expertise. This made for an even steeper learning curve, as students had to build their knowledge not only of techniques and skills involved in the KT process, but also of their subject matter. At the end of the semester, some reflected that they would have liked to have more freedom to choose their own topic:

> Although it was interesting to focus on another topic or field of study (i.e., young carers) that I had very little understanding of, I remember feeling at the beginning of the semester that I would have liked to pick my own topic. I understand that the purpose was to ensure the topics had an expert or lead, however, I think I would have created more powerful and effective KT products if I was able to connect with the topic. – Reisha Fernandes

> Had I been able to incorporate my own research interests, I feel as though I would have also come to the knowledge tool production with a clearer idea as to which areas required awareness, individuals in which I would have targeted the tools towards, and more opportunities for partnerships/collaboration. –Jess Boulé

> While there were significant variation and flexibility in the topics available, I am curious as to what the projects would have looked like if we were to choose our own topic; whether or not our existing knowledge, interests, or community connections would have allowed for more confidence in the original development of KT plans or more time in developing and disseminating products during the 12-week period. – Christine Scott

As suggested in these excerpts, some students felt that freedom to choose one's own topic might have led to better, "more powerful" KT products. We return to this theme and discuss our perceptions of the relative pros and cons of allowing students to choose their own topics in the discussion section.

Timelines. The duration of the course and the time available for development and implementation of the KT projects was also identified as an important theme. Timelines were a significant challenge and this is a possible area for improvement to the course. Given that the course was situated within a regular university semester, all learning activities and assignments had to be completed within a 12-week timeline. As the following excerpt suggests, students found this particularly restrictive:

Having this course in one semester was one of the biggest barriers for me. Establishing a partnership and creating products required a tremendous amount of time, and unfortunately, KT is not only about making products, it is about transferring knowledge in a meaningful way to your target audience. Although by the end of the course I created the final products for the partner, I did not have the opportunity to assist in the dissemination and evaluation phases of the project. In order to observe or measure the impact of your project, time is needed. In the future, I believe this course should be a full-year course. Another option would be to set realistic timelines from the start with the partner in a half-semester course. Perhaps this means only one product can be developed, and the rest of the time should be allocated to dissemination/implementation and evaluation. –Reisha Fernandes

As suggested by the above excerpt, the issue of timelines was an important theme in our reflections. The 12-week semester is a short amount of time to develop and implement KT strategies and all of us experienced significant time pressures in this course. In the following section we return to this topic and provide some strategies for managing time constraints in this course.

Discussion

While it is widely acknowledged that KT skills are important for researchers as well as those working in clinical and managerial roles in health and/or social service settings, there exist few graduate programs that target knowledge translation skills explicitly (Mishra et al., 2011; Nurius & Kemp, 2014) and little research on how to effectively build KT skills in students (Bennett et al., 2016). In this article, we have explored our experiences learning about KT by engaging in real-world KT projects through collaborations with community partners. As with any new experience, the remodeling of a traditional, lecture-based KT course into a community-engaged, applied learning process came with its share of challenges—and its balance of rewards. Although many aspects of the course brought about difficulties, occasional frustrations, and an ongoing need to adjust our approach, our reflections demonstrate the value of this experiment for students' learning. The inclusion of guest speaker presentations throughout the semester allowed students to acquire skills in new areas while being exposed to a range of KT realities. The collaborative and flexible nature of the course was key in supporting students in their individual learning journey, and empowering them to develop new skills.

Flexibility worked well in this course for a number of reasons: this KT course involved a small group of students, and the community-based nature of the course and contributions of guest speakers meant that the instructor did not have to spend significant time preparing for each class and could focus on providing students with individual attention. The instructor is also experienced in teaching practicum and community-based courses and is comfortable with adaptable and collaborative approaches to teaching. We acknowledge that this approach would not likely be possible in large classes and may not be an appropriate fit for every instructor. While flexibility was helpful for students' learning and was especially important given that this was the first iteration in the course, we would also caution against going too far with flexibility. Students need to know what is expected of them and be assured that they can perform within these parameters.

Students noted that although worrisome at first, the real-world impact of our projects and the opportunity to partner with community audiences who would directly benefit from our efforts contributed significantly to their positive experiences in the course. There was some uncertainty

and, indeed, stress for students in engaging in "real world" projects with community partners. To a degree, this is to be expected - learning experiences that require students to engage and perform in the community are often especially stressful for students (Ingram, Breen & van Rhijn, 2017). While feelings of uncertainty and some minor stress may be expected as students transition to doing "real work for the real world," it is important to ensure that these experiences are not overly stressful for students. In our view, it is critical that instructors who teach community-engaged courses are especially sensitive to the potential such experiences may bring for additional stress on students and that they are available to provide additional support and/or referrals to other sources of support as needed.

A number of changes could be made to our model in order to improve the course. Instructors could give students the flexibility to choose their own project topics. In our case, the intention behind offering a limited set of topic options was to ensure that projects would be community-informed, and each topic was chosen based on an identified community need for knowledge translation. However, student interests and partner circumstances led projects to evolve in directions we could not have anticipated, addressing other relevant needs in the process. In this context, there could be significant benefits to allowing students to choose for themselves the knowledge needs they want to inform. For example, this may help students feel better connected to their topics and more confident in developing KT products. Given the diversity in students' backgrounds and areas of research focus, freedom to choose one's own topic may also nurture new ideas, provide a more diverse learning experience, and offer students an opportunity to make connections with community members whose work is closely aligned with their own interests. Our recommendation would be to incorporate a combined approach by providing students with a few predetermined topic options as well as the opportunity to develop their own topics. This may allow students to benefit from the advantages that each approach brings. On the one hand, offering predetermined topic options provides an important opportunity to nurture existing relationships with the community and work on mobilizing knowledge in areas in which the community has identified a need—an important consideration for us, since our institution has strong connections to the local community. It also allows for the possibility of group projects, which create opportunities to pool expertise and effort and make more meaningful contributions. On the other hand, providing students the opportunity to develop their own projects may be important for students' knowledge and skills development in relation to their chosen careers.

We also recommend having students sign-up for topics and connect with potential partners prior to the commencement of the course. Ideally, students would select topics at least a few weeks in advance so that they can be prepared to begin their projects at the beginning of the course. In our case, the one-semester course structure posed a significant challenge to students, who at times struggled to meet the course expectations while striving to create meaningful KT products. We note that one important factor that influenced timelines was community partnerships. There was a wide range in students' experiences collaborating with community partners: while some projects might be described as "community-informed" but not necessarily developed *with* the community, other projects were developed in close collaboration with a community partner. While collaborative relationships are an essential component of effective KT practice, it takes time to develop effective collaborations. This tension reflects the reality that practitioners and researchers have identified in doing KT work: collaborations are essential, but the time it takes to develop effective working relationships can be prohibitive (Cramm, Short, & Donnelly, 2016). Developing effective collaborative partnerships within the timeframe of a semester is a challenge and, while students were successful in this regard and they highlighted collaborations as important

for their learning, we caution that this may not always be feasible. Connecting with partners in advance of the course start date would help to loosen the time constraints of a semester-long course.

It is important to note that there are a number of limitations to this research. As described above, our analytic approach was adapted from Braun and Clarke's (2006) approach to thematic analyses, but we deviated from it by not transcribing our data, with the result that our insights, impressions, and experiences of the course likely changed in the process of analyzing and reporting on our experience. We also inhabited the dual roles of researchers and participants. While there are obvious drawbacks to this in terms of generalizability, we note that this was not the aim of our exploratory qualitative research. Rather, we aimed to explore and communicate student experiences in a way that felt true and authentic to each of our experiences, and the approach we took of each contributing as author/participant has allowed for this.

Finally, we would like to note that we do not have objective measures of the success of students' KT projects beyond informal feedback from partners. While each student designed an evaluation plan for their project, due to time constraints we were not able to enact these plans. We would recommend developing a strategy for eliciting more formal feedback from partners in future iterations of this course. We also encourage readers to access examples of the KT products that we produced during this course by connecting to the University of Guelph online repository at https://atrium.lib.uoguelph.ca/xmlui/handle/10214/10283. Viewing final versions of student products will allow readers to get a sense of the quality and potential effectiveness of the work that was produced.

Overall, this experience in applied KT was overwhelmingly positive. While there has been some limited prior research examining the use of case studies and problem-based learning to learn about KT (Bhogal et al., 2011), our research is the first that we know of to explore graduate student learning about KT through engaging in real-world KT projects in collaboration with community partners. Our findings are encouraging. Student learning in this course extended far beyond the theory of EBP and KT and helped them build new skills in communication, collaboration, and partnership-building. These skills will serve students well in their careers in academia and beyond. Indeed, a few students have already gained new professional opportunities because of their work in this course. For example, products created by one student who focused on the role of cultural brokers in clinical practice have been used in her own workplace to advance initiatives to support newcomer populations in accessing regional mental health services. In another example, one student's KT experience in this course was seen as a key asset in her workplace: she was asked to put together an infographic for operating room surgeons to use in order to prevent surgical site infection in patients, and she was invited to be on her hospital's steering committee to create infographics and posters to improve the implementation of several initiatives. Another student was appointed as a co-topic editor for a KT column in a professional practice magazine. Finally, another student has recently obtained a position as a health policy analyst with the government, where it is essential that evidence is transferred into an appropriate format for policy- and decision-makers. Moving forward, we are keen to see how our shared learning experience building and participating in this course will continue to impact each of us. Although the course has ended, the connections and collaborations that students have built with their community partners are ongoing and will continue to give them opportunities to engage and participate in community-based KT projects.

We are tremendously proud of the projects that were created and implemented in this course and look forward to seeing their ongoing impact as products continue to be used by

community partners. We hope our experiences will provide insight and inspiration for other instructors and institutions to be active and provide students with opportunities and explicit instruction in KT.

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