

RUNNING HEAD: Sexual and Gender Diverse International Research Trainee Network

**Promoting community and competence: The development and evaluation of an international research training network of sexual and gender diverse (SGD) emerging scholars.**

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## **Promoting community and competence: The development and evaluation of an international research training network of sexual and gender diverse (SGD) emerging scholars.**

### **Abstract**

Specialized research training is a key component of graduate education, yet sexual and gender diverse (SGD) emerging scholars may not receive quality training and networking opportunities at their home institutions. International and interdisciplinary trainings by SGD scholars may develop research competence and academic networks, but few such extracurricular research training programs exist. This article presents the curriculum and mixed-method evaluation of the International Student Training Network (ISTN), a two-year bilingual training program designed to train SGD emerging scholars in Canada, the USA, Mexico, and the UK to conduct research with SGD youth. The racially diverse and interdisciplinary trainees ( $N=38$ ) completed a competence self-assessment at pre-test, midpoint, and post-test. Significant improvements in knowledge and skill were found, while importance of the concepts remained consistently high. Twelve trainees participated in interviews to reflect on their experience. Thematic analysis produced three themes, describing benefits of the ISTN: (1) “You do stick out a lot”: Fostering SGD scholarly community in academia; (2) “We were all working together”: Bridging the disciplinary and geographic gaps; and (3) “A transformative experience”: Developing scholarly self-concept and academic self-efficacy. The findings highlight the utility of specialized research training for emerging SGD scholars limited by geographical and disciplinary siloes.

### **Keywords**

International student training network, sexual and gender diverse youth, research training, LGBTQ+ students, research competence, emerging scholars

## **Introduction**

Graduate training develops vital research and professional skills, including critical thinking, project management, and research methodologies (Alves et al., 2021). This is typically achieved through classroom-based learning, experiential learning, the application of concepts and skills to research problems, and support from supervisors and mentors who provide subject matter and technical expertise and consultation. In a recent review of 163 articles, effective supervision, student wellbeing, institutional support, motivation, skill, and academic identity emerged as highly influential factors supporting graduate student success (Sverdlik et al., 2018). However, while graduate programs are generally an enriching experience, they may not adequately equip emerging scholars (i.e., graduate students developing research competence) with the knowledge and skills they need for a scholarly career (McCormick & Willcox, 2020). The graduate student journey can also be fraught with challenges including poor relationships with supervisors, personal issues, and social isolation (Ryan et al., 2021) and research suggests that these challenges may be particularly pronounced among graduate students with marginalized social identities (Weng & Gray, 2017).

### ***Challenges for Sexual- and Gender-Diverse (SGD) Emerging Scholars***

Sexual- and gender-diverse (SGD) emerging scholars may encounter unique challenges during graduate studies, including non-affirming interactions with research supervisors (Hagler, 2020) and instructors (Dentato et al., 2016); a lack of SGD curricular content and stigmatizing campuses (Craig et al., 2016); discrimination (Conron et al., 2022); isolation (Beagan et al., 2021); increased workload through providing peer support (Tillapaugh & Catalano, 2018); and few campus-based affirmative mental healthcare resources (Knutson et al., 2021). Furthermore, students report a lack of SGD role models, who contribute positively to SGD student mental health and academic outcomes (Dentato et al., 2016). Graduate programs may also not provide quality equity training that prepares students for ethical and affirmative work with SGD and other marginalized communities (Craig et al., 2021a).

Among SGD graduate students, these stressors can increase drop-out rates (Crane et al., 2020), frustrate completion timelines (Liechty et al., 2009), impact productivity (Cunningham-Williams et al., 2018), and limit professional opportunities (Golovushkina & Milligan, 2012). Given that SGD research is commonly conducted by SGD researchers (LaSala et al., 2008) and SGD communities continue to face pervasive risk, including poorer mental health, homelessness, and suicidality (McNamara and Ng, 2016; Taylor et al., 2011; Veale et al., 2018) it is critical to strengthen their ability to advocate for SGD communities through research.

### ***Geographic and Disciplinary Siloes in SGD Scholarship***

Research into SGD social issues is challenged by disciplinary and geographic divides and often has privileged perspectives and understandings from the Global North (Craig et al., 2022), indicating the need for globally engaged international collaborations to support SGD equity. Similarly, SGD scholarship struggles to gain buy-in from disciplines outside of the social sciences (Antell, 2012), which can be underfunded in the Global South (Craig et al., 2022). If research training does not mitigate against these siloes, SGD populations will continue to see unequal advances across different sectors and between countries. The global proliferation of digital technologies may facilitate connection across these siloes, however, graduate training may not prepare emerging scholars for digitally engaged research (Soltovets et al., 2020). Accordingly, recent findings suggest that there is a high demand for courses that develop digital competencies (Spada et al., 2022).

These findings point towards two related needs within higher education that may be facilitated by digital technologies (e.g., teleconferencing software): (a) improved academic and sociocultural support for SGD emerging scholars; and (b) improved interdisciplinary and international training for SGD emerging scholars (Fish, 2020). While some successful training programs of this kind exist (Curtin et al., 2012; Ibáñez-Carrasco et al., 2020), their impacts may be limited by their disciplinary, linguistic, and geographical homogeneity (Blair & Hoskin, 2020), in-person training delivery, and lack of evaluation of outcomes. As such, there are opportunities to create SGD research training programs by utilizing digital technologies to equitably build research capacity and competency internationally, and by developing interdisciplinary scholarly networks that motivate innovative approaches to solving complex social problems (Hains-Wesson & Ji, 2020).

### ***The International Partnership for Queer Youth Resilience (INQYR)***

To address these concerns, the International Partnership for Queer Youth Resilience (INQYR), a research consortium comprising over 40 academic and community representatives investigating and addressing issues faced by SGD youth (SGDY) in Canada, the USA, Mexico, and the UK (Craig et al., 2022) developed the International Student Training Network (ISTN). This innovative two-year bilingual blended learning program delivered internationally to SGD social sciences graduate students was designed to build research competence with SGDY. The ISTN draws on extensive experience in graduate curriculum development—and specifically SGD-affirming learning environments for research training and mentorship in the social sciences (Austin et al., 2016; Craig, Gardiner et al., 2021; Craig, McInroy et al., 2021).

The ISTN objectives (Figure 1) are to: (a) mobilize an interdisciplinary training partnership of SGD scholars and educators; (b) develop a responsive curriculum; (c) train internationally to integrate cultural context and promote equitable collaborations; (d) provide applied research training; (e) utilize digital technologies to facilitate knowledge exchange; and (f) offer networking and academic community building to SGD emerging scholars. Based on training gaps identified in the literature, the ISTN curriculum focused on five core competencies: (a) culturally competent research with SGDY; (b) technology-enabled methodologies; (c) mixed-methods data management and analyses; (d) interdisciplinary research; and (e) knowledge mobilization. This article presents the curriculum, implementation, and mixed methods evaluation of the first two ISTN cohorts and is guided by the following research question: How did participation in the ISTN impact trainee competence and professional development in the specialized knowledge and skills needed for research with SGD populations?

## **Methods**

### ***Participants***

Purposive and snowball sampling were employed to recruit trainees. Bilingual Spanish and English recruitment flyers were distributed to faculty members at INQYR-affiliated institutions, who shared it within their universities. Four inclusion criteria guided recruitment: (a) incoming or current masters or doctoral students; (b) registered at an INQYR-affiliated institution; (c) interested in SGDY research; and (d) fluent in English or Spanish. The recruitment flyer directed potential participants to INQYR's website to complete the application via Qualtrics that included information about their identities, education, and interest in research with SGDY as well as a cover letter and CV. The recruitment strategy for the second cohort was identical except the requirement

to attend an INQYR-affiliated institution was removed, broadening participation and interdisciplinarity.

INQYR leadership reviewed 85 applications across the two cohorts and made offers to 40 trainees (14 in cohort 1 and 26 in cohort 2). 13 trainees graduated from the first cohort and 25 graduated from the second (see Table 1). Most (92.50%) trainees identified as SGD with the remainder identifying as allies. Almost half (40%) identified as racial and ethnic minorities. Ethics approval was obtained from the University of Toronto Health Sciences Research Ethics Board (Protocol ID# 36060).



**Figure 1:** Schedule of ISTN activities and corresponding competency development. Key: (a) culturally competent research with SGD youth; (b) technology-enabled methodologies; (c) mixed-methods data management and analyses; (d) interdisciplinary research; and (e) knowledge mobilization

### **Participatory Action Research (PAR)**

This study adopts a participatory action research (PAR) approach, a broad tradition of research practices focused on research *with* participants rather than on them, outcomes that disrupt the status quo, and an iterative process of reflecting on the research to inform research action (Baum et al., 2006). PAR strives to produce research that is mutually beneficial for participants and researchers and has previously been employed in the implementation and refinement of education and mentorship programs focused on equity-seeking groups (López et al., 2020), making it a suitable approach for the present study.

ISTN trainees and graduates took active roles in the research process, for example, by designing competency measurement tools, planning in-person symposia, mentoring cohorts, leading independent research projects, and analyzing the present study's qualitative data. Trainees also provided feedback on every training activity, allowing for refinement of the ISTN.

<b>Variable</b>	<b>Categories</b>	<b>Count (N = 38)</b>	<b>%</b>
Country	United States	17	44.74%
	Canada	9	23.68%
	Mexico	6	15.79%
	United Kingdom	6	15.79%
Program	Doctoral	23	60.53%
	Masters	15	39.47%
Discipline	Social work	18	47.38%
	Psychology	8	21.06%
	Public health	4	10.52%
	Education	3	7.89%
	Sociology	2	5.26%
	Marriage & family therapy	1	2.63%
	Neuropsychiatry	1	2.63%
	Science & technology studies	1	2.63%
Sexuality	Gay	13	34.22%
	Queer	8	21.06%
	Bisexual	7	18.42%
	Heterosexual	3	7.89%
	Pansexual	3	7.89%
	Lesbian	2	5.26%
	Asexual	1	2.63%
	Questioning	1	2.63%
Gender	Cis man	13	34.22%
	Cis woman	12	31.58%
	Queer	5	13.16%
	Non-binary	3	7.89%
	Trans man	3	7.89%
	Agender	1	2.63%
	Trans woman	1	2.63%
Ethnicity	White	24	63.17%
	Latino	6	15.79%
	East Asian	4	10.52%
	Black	2	5.26%
	South Asian	2	5.26%

**Table 1:** *Participant demographic information.****Virtual Curriculum***

The ISTN curriculum was implemented on Zoom through eight bilingual English and Spanish live translated webinars. Guest faculty were carefully selected by the ISTN curricula team based on their subject matter expertise, relevance to the ISTN curriculum, and allyship with or identification as LGBTQ+ people. Speakers selected readings for the trainees and delivered an interactive presentation for 60-75 minutes followed by 30 minutes of large group discussion.

Webinar one shared theoretical insights into risks experienced by SGD youth and background research on SGD youth's usage of digital technologies to support their mental health. Webinar two covered ICT-enabled recruitment and data collection with SGD youth, covering issues including data security, mitigating against bots, and social media. Webinar three provided insight into community-based research methodologies and discussed researcher positionality and ethics. Webinar four shared how intersectional identities can be represented, measured, and analyzed to ensure that demographic information is captured in sensitive and accurate ways, which was considered in the context of a study on LGBTQ+ Black youths' transition into adulthood. Webinar five covered ways of incorporating various axes of political analysis (e.g., laws and policies, institutional structures) into research, which provided insight into cultural and sociopolitical differences between SGD youth and how factors such as the COVID-19 pandemic impacted them. Webinar six demonstrated ways to conduct research with SGD refugees and newcomers and in different cultural contexts (e.g., ethnography). Finally, webinar eight described diverse knowledge mobilization tools and how to measure research impact, including developing interventions, collaborating with community organizations, and publishing in academic journal articles.

To deepen the ISTN trainees' network and further develop research competencies, trainees attended a four-day in-person training, knowledge mobilization, and networking event at an institution affiliated with INQYR. Designed to develop the core competencies, the events included four public livestreamed keynote presentations, trainee-led presentations on INQYR research projects to a virtual and live audience of approximately 400 people, and interactive trainings on SGD research best practices and knowledge mobilization. Trainees were further invited to submit applications for the student grant initiative (SGI), which offered grants of \$3,000 CAD to fund small-scale research projects supported by INQYR faculty. The competition was launched to enable trainees to lead collaborative studies, apply their training competencies, and develop grant-writing skills. Trainees submitted a proposal that included objectives, methods, anticipated results, potential impact, budget, and timeline. Each application was reviewed by two INQYR faculty members who provided written feedback and three grants were funded. To provide additional collaborative opportunities, the ISTN curriculum was enhanced for the second cohort through the inclusion of quarterly virtual "Tea Chats" focusing on peer feedback on research projects.

***Measures***

The ISTN was evaluated using a mixed-methods sequential explanatory design whereby quantitative data is collected first, followed by qualitative data to gain a richer understanding (Ivankova et al., 2006).

***Quantitative***

Assessments of research competence should encompass a model of student learning and be based on a set of beliefs deemed important to research. A research competence measure was developed according to the process outlined by Zlatkin-Troitschanskaia et al. (2015): (1) defining the constructs to be assessed; (2) developing suitable measurement items to elicit competencies; and (3) drawing valid inferences from the data. The first author consulted with the ISTN curriculum oversight committee and four doctoral students to design three subscales through a review of the literature (Davidson & Palermo, 2015; Miller et al., 2021). Items were tailored to measure research skills (e.g., communication, information gathering, teamwork, project management skills, problem-solving, methodology). The resulting 24-item measure (Table 2) required trainees to rate their competence on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) according to three evaluative domains: (a) importance to my work; (b) my current knowledge level; and (c) my current skill level, at pre-test, midterm, and post-test. These domains were adopted because trainees may score high in knowledge acquisition, but still exhibit biases and behaviors that harm SGDY (i.e., indicating a deficit in skill; Weeks et al., 2018), or may rate competencies as less important over time (i.e., indicating complacency; Flores, 2012). Of the 38 graduates across both cohorts, 24 (63.16%) completed the measure at all three timepoints.

### *Qualitative*

After graduating from the ISTN, 12 trainees participated in brief semi-structured qualitative interviews. Participants were asked for feedback on the curriculum and its delivery, impacts on their graduate studies, and key takeaways. Interviews were conducted by the research coordinator, ranged from 9.47 to 31.02 minutes, and averaged 18.44 minutes in length. Interviews were recorded via Zoom, AI transcribed, and then manually checked for accuracy by a trained research assistant.

The qualitative data were analyzed using thematic analysis (Braun & Clarke, 2006), which aims to find consistent patterns of meaning among the participants. Interview transcripts were read and coded in Nvivo 12 (QSR International, 2018) by six trained graduate student coders. The coders discussed the coding and corroborated emerging themes in two one-hour meetings.

<b>Research Competence Indicators</b>	<b>Competencies</b>
Research on SGMY identity development, risks, and resilience	a, d
Cross-cultural issues impacting SGMY	a
Theories and approaches relevant to research with SGMY	a, d
Ethical and design issues specific to research with SGMY	a, d
Conducting community-based research with SGMY (e.g., advisory boards, etc.)	a, c
Implementing intervention research with SGMY	a, c
Utilizing photo elicitation research methods with SGMY	a, b, c
Research with trans and gender diverse youth	a
Knowledge mobilization strategies with SGMY	e
Utilizing digital technologies for research	b
Recruiting and survey design with digital technologies	b
Data collection and management with digital technologies	b, c
Data analysis (including mixed methods) approaches with SGMY	c
Knowledge mobilization with/for SGM	e
Sensitivity to diversity in all its forms	a
Balancing community engagement with rigor	d
Commitment to knowing one's own limitations and the lifelong learning required for this field of study	d
Commitment to scientific thinking and the translation of scientific findings to practice that impacts SGMY	d, e

Importance of collaborative work with a range of stakeholders	d
Communicate effectively with non-technical audiences	e
Develop a network of supportive researchers	d
Set boundaries and differentiate between own experiences and those of research participants	a
Perform and balance multiple roles as a researcher (e.g., interviewer, analyst, etc.)	c
Integrate feedback and different points of view into research	d

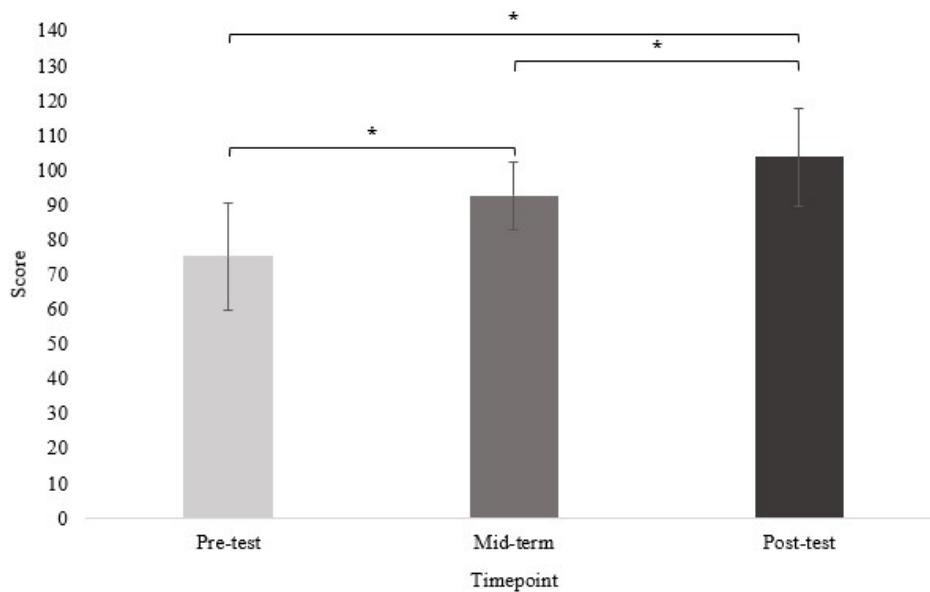
**Table 2:** *ISTN competency measure and curriculum competencies. Key: (a) culturally competent research with SGMY; (b) technology-enabled methodologies; (c) mixed-methods data management and analyses; (d) interdisciplinary research; and (e) knowledge mobilization.*

## Findings

### Quantitative Evaluation

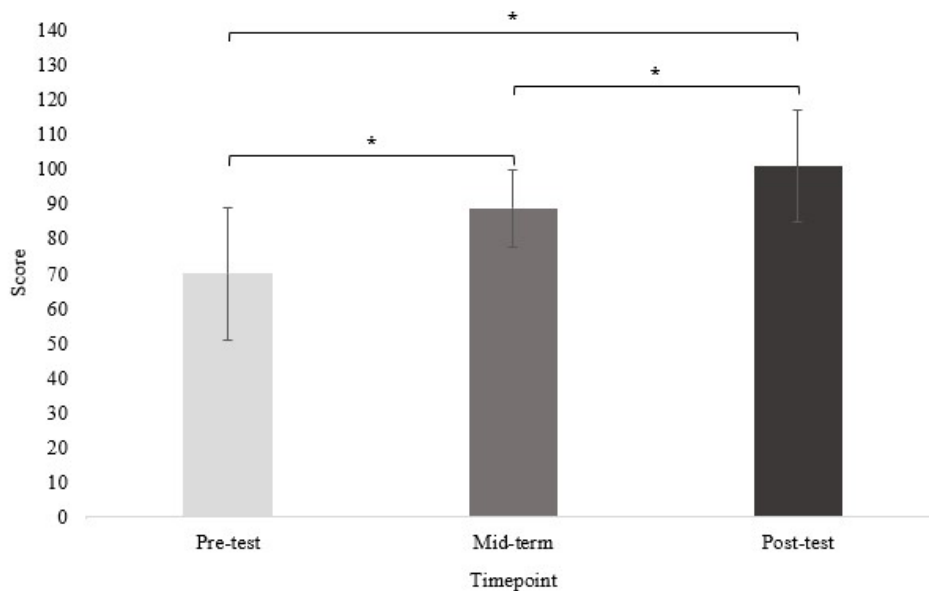
Ratings on each respective measure for both cohorts ( $n = 24$ ) were summed. A Little's Missing Completely at Random test confirmed the data to be missing completely at random,  $\chi^2(426) = .00$ ,  $p = \text{n.s.}$  so missing data (comprising 2.78% of the data) were imputed using multiple imputations. Friedman tests were used to analyze differences in the students' self-ratings on the three competence measures (importance to my work, current knowledge level, and current skill level) at pre-test, mid-term, and post-test. There was no significant difference between the timepoints on the 'importance to my work' measure, which had summed score medians of 113, 113, and 112.5 at each respective time point, close to the maximum score of 120,  $\chi^2(2) = 1.64$ ,  $p = \text{n.s.}$

There was a statistically significant difference between the timepoints on the 'current knowledge level' measure,  $\chi^2(2) = 27.89$ ,  $p < .001$ , 99% CI [.00, .0004]. Post hoc analysis using Bonferroni-corrected within-subjects Wilcoxon signed-rank tests were conducted (Figure 2). Participants scored significantly higher on knowledge level at the mid-term ( $Mdn = 92.5$ ) compared to pre-test ( $Mdn = 74$ ),  $Z = -3.99$ ,  $p < .001$ , 99% CI [.00, .0004],  $r = .81$ . Participants also scored significantly higher on knowledge level at post-test ( $Mdn = 106.5$ ) compared to mid-term,  $Z = -3.09$ ,  $p = .002$ , 99% CI [.00, .001],  $r = .63$ . Accordingly, participants scored significantly higher on self-reported knowledge at post-test than at pre-test,  $Z = -4.11$ ,  $p < .001$ , 99% CI [.00, .0004],  $r = .84$ .



**Figure 2:** *Difference between self-reported current knowledge at pre-test, mid-term, and post-test. Error bars denote standard deviation, \* =  $p < .01$*

There was a statistically significant difference between the timepoints on the ‘current skill level’ measure,  $\chi^2(2) = 32.43, p < .001, 95\% \text{ CI } [.00, .0004]$ . Post hoc analysis using Bonferroni-corrected within-subjects Wilcoxon signed-rank tests were conducted (Figure 3). Participants scored significantly higher on skill level at the mid-term ( $Mdn = 88.5$ ) compared to pre-test ( $Mdn = 65.5$ ),  $Z = -3.76, p < .001, 99\% \text{ CI } [.00, .0004], r = .77$ . Participants also scored significantly higher on skill level at post-test ( $Mdn = 103.5$ ) compared to the mid-term,  $Z = -4.24, p < .001, 99\% \text{ CI } [.0001, .001], r = .87$ . Accordingly, participants scored significantly higher on skill at post-test than at pre-test,  $Z = -4.24, p < .001, 99\% \text{ CI } [.00, .0004], r = .87$ , and all effect sizes were large (Cohen, 1988).



**Figure 3:** *Difference between self-reported current skill at pre-test, mid-term, and post-test. Error bars denote standard deviation, \* =  $p < .01$*

### ***Qualitative Evaluation***

Three themes captured the participants’ experiences with the ISTN: (i) “You do stick out a lot”: Fostering SGD belonging in academia, (ii) “We were all working together”: Bridging the disciplinary and geographic gap; and (iii) “A transformative experience”: Developing scholarly self-concept and self-efficacy.

#### ***Theme 1: “You do stick out a lot”: Fostering SGD Scholarly Community in Academia***

This theme contrasted the trainees’ feelings of isolation in academia with their feelings of belonging in the ISTN. Participants described their isolation as graduate students, compounded with being an SGD researcher. Rowan described themselves as “stick[ing] out”, elaborating that, “When I was doing my PhD, I was kind of the only trans person”. The invisibility of SGD topics within academia also presented itself in course content, as Aaden explained, “There is no coursework at all at the grad schools that is absolutely [SGD] or [SGD] research”.

SGD invisibility in academia was an isolating experience that negatively impacted the trainees, yet the ISTN appeared to attenuate this by providing supportive SGD mentors, peers, and spaces. As Helen summarized, “I was feeling a bit lost overall before I was connected to [the] ISTN... The relationships I developed... gave me confidence in these spaces because I could see folks that were doing this work that looked like me”.

Upon graduation from the ISTN, many trainees adopted new roles to stay connected to their new network and mitigate against falling into research siloes. Logan discussed his hope to collaborate with ISTN graduates, noting that, “It might be that I wind up working at something they’re interested in”. Similarly, trainees expressed interest in mentoring future ISTN trainees, which James was motivated to do to “help keep people involved in the network”. Maintaining involvement with the ISTN appeared to mitigate isolating trainee experiences by providing them with information and opportunities. Overall, Julia spoke passionately about their ISTN experience, “It’s no longer just like professional connections. It’s now emotional. It would feel like really sad to end it... I think it would be great to have some sort of ongoing opportunities for connection”.

*Theme 2: “We were all working together”: Bridging the disciplinary and geographic gaps*

This theme describes the interdisciplinary, international, and cross-cultural knowledge that the ISTN provided. The ISTN exposed trainees to diverse and innovative methodologies that they could apply to their research. As Yash explained, “photo elicitation, I had heard about it, but I’ve never seen it be applied”. Similarly, Logan recalled, “One that really stuck out with me was [the] community-based research and the ethnography [webinar]... I didn’t know any of that existed”. Accordingly, Julia described the ISTN as a “leg up compared to what my peers didn’t have”.

The utility of an interdisciplinary curriculum and cohort in exposing trainees to new ideas and collaborations were key strengths articulated by Lucas, “all these different researchers... coming from very different perspectives and personalities and different ways of approaching their work. It definitely will help me”. Magda suggested that open-mindedness was a key factor in successful interdisciplinary training, “A lot of people from the ISTN have social work backgrounds... I’m in the field of neuropsychology... so it was very, very helpful to expand myself and have a bit of an open mind”.

The mutual benefits of bridging geographic boundaries was prominent for Sebastián, “In Mexico—maybe in a developing country—research can... allow our countries and our society to advance at the same time”. Likewise, Rowan reflected, “these were issues that are affecting LGBT people in Mexico, in Canada, the U.S., Europe, and we were all working together”. Helen similarly recalled the enthusiasm for international collaboration at TISS when the SGI was announced, “It wasn’t so much about the competition, it was about supporting these really innovative ideas”.

*Theme 3: “A transformative experience”: Developing scholarly self-concept and academic self-efficacy*

This theme describes the trainees’ experiences of being socialized into academia through the ISTN, and its transformative impacts on their self-concept and -efficacy. Self-concept refers to the way that a person perceives of themselves in a certain domain, whereas self-efficacy references individuals’ expectations of what they can accomplish and are reinforced through affirming relationships (Bong & Skaalivk, 2003). Logan recalled that interviewing trans and nonbinary youth as a research assistant was “a transformative experience”, elaborating that “learning how incredibly bright and insightful and resilient each person that I interviewed is... I would like to continue working with trans and nonbinary youth”.

Participants also noted their increasing confidence in their research abilities. Sebastián, who won a grant, stated “winning the scholarship gave me confidence in my abilities in the work that I do... I’m excited to be able to carry out [the project]”. Aaden suggested that part of their growing confidence stemmed from the academic trainers and other members of the cohort feeling relatable, “Demystifying this idea of research being something that academic elites can only engage in... That maybe helped to... make it less intimidating to talk to people”. This may speak to the empowering benefits of the study’s PAR approach.

Affirming prior knowledge of and passion for SGDY research also supported trainee confidence. Rowan recalled that “there’s just so much that I did learn from the whole thing, but then there’s also stuff I already knew, so it was very validating” and later elaborated that the ISTN “solidified [their] passion for working with the [SGD] community”. Altogether, ISTN students expressed gratitude for the program, with Leo additionally voicing their aspirations to conduct research like their ISTN instructors, “Thank you, all of them, because their work, it’s amazing. I wish I could do research like they do... I can only say thank you to all the teachers”.

## **Discussion**

This study advances our understanding of the importance of specializing research training to the academic development of SGD emerging scholars. Specifically, this investigation describes an innovative curriculum designed for an international, interdisciplinary, technology-driven, bilingual graduate training initiative and identifies the impact on participants through increased research competence and the development of a scholarly community. The promising results suggest the ISTN curriculum may be an effective training model for graduate social sciences education that is directed toward minoritized—and especially SGD—students.

### ***Building Research Competence Through Transformative Education***

Enhanced research competence was a key outcome of the ISTN. From pre- to post-test, the trainees consistently identified that all the topics were important to their work while their knowledge of and skills in research significantly increased during their participation in the ISTN. This study also piloted a measure of research competence that foregrounds critical research skills required to work effectively with and for SGD youth, digital methodologies, and impactful knowledge mobilization. Educational initiatives are increasingly identifying and measuring key competencies as outcomes for certain courses (Bogo et al, 2014) although for SGD populations the focus has been primarily on clinical competence (Craig et al., 2021b; Craig et al., 2022). **Simultaneously, the ISTN graduates described the program as transformative insofar as it profoundly impacted their worldview; influenced their research goals and priorities; and altered their self-concept.**

**While transformative learning theory is a highly influential pedagogical approach to adult education that can evoke profound shifts in thinking and worldview (Kitchenham, 2008), it did not initially inform the development of the ISTN curriculum. Nonetheless, the trainees identified that experiential aspects of the program were key motivators for these transformative experiences, echoing other participatory research findings (Percy, 2005).** The ISTN’s focus on SGD populations is especially transformative because many training initiatives for improving competence in working with SGDY focus on enhancing the efficacy of *non-SGD allies* (Pryor, 2018). Therefore, the ISTN’s primarily SGD membership represents a significant international effort to equip these communities with skills critical for research-based self-advocacy.

In addition to **enhancing core research competence**, the ISTN exposed the trainees to a juried granting process—a core research activity for which training is in high demand (Fong, et al., 2016)—which allowed them to design a study, shape their own research agendas, and apply their growing methodological skills. Relatedly, the symposia allowed trainees to present their research findings to international audiences virtually and in-person, enhancing their ownership of their research agendas and demonstrating their subject expertise and knowledge mobilization skills. **These findings suggest that graduate programs could enhance research competence and engender a deeper commitment to research among marginalized students by providing inclusive extracurricular experiential learning and research opportunities** that bridge disciplinary differences, mitigate against institutional isolation, and facilitate shared understanding of SGDY across cultures and nations. Indeed, similarly sized training initiatives have left legacies such as career-lasting professional relationships (Blair & Hoskin, 2020) and future reflective work by ISTN graduates could re-examine the impacts that the program had on them. Finally, the qualitative findings pointed towards the participants' feelings of empowerment, positive regard for their ISTN experience, and feelings of connectedness, which may be linked to the ISTN's core focus on SGD issues and affirming SGD experiences (Koch et al., 2022).

### *Implementation Considerations*

Minimal research on the experiences of LGBTQ+ graduate students exists (Nadal, 2019). As such, the implementation of the ISTN may offer some instruction to future educators on what challenges to expect and what worked well. As is the case in INQYR broadly (Craig et al., 2022), accounting for different time zones and workloads presented significant scheduling challenges. While these were mitigated by publishing an anticipated schedule while applications were open so that applicants could make an informed assessment about their ability to participate, availability and workload often changed over the course of the two-year program. Therefore, all ISTN webinars were recorded and hosted in a dedicated trainee portal on the INQYR website, which may be effective for future extracurricular training programs attempting to embed inclusive educational practices (Nordmann et al., 2022). The COVID-19 pandemic also represented a significant challenge as it suppressed attendance at one of the in-person symposia, INQYRIES. Future development of virtual conferences may mitigate against this and further facilitate participation by under-represented groups (Skiles et al., 2021).

The successful implementation of the ISTN was enabled by longstanding relationships between INQYR's partners because sourcing webinar trainers relied heavily on the goodwill of researchers with high workloads. Due to this approach, the core ISTN activities required only a modest budget for project management, though supplementary activities such as the SGI and in-person symposia required dedicated funding. **However, sourcing trainers in this way made it difficult to specifically address participants' immediate training needs in topics and methodologies relevant to their graduate studies. Although the responsibility of developing these specific skills lies with the individual trainees and their respective supervisory teams, the ISTN's broader research competency development approach may result in attrition over time if trainees perceive the course content to not be relevant. Therefore, future implementations of graduate research training initiatives should consider the target audiences and curriculum scope and clearly communicate these to applicants.**

### *Limitations*

This study has several limitations. Due to the size and self-selecting nature of the cohorts, the findings are not readily generalizable. Further, certain perspectives may have been underrepresented (e.g., experiences emanating from specific intersections of racialization, class, (dis)ability, and gender), which may be compounded by patterns of underrepresentation in graduate education. Response bias is also a risk as participants may have overexaggerated the ISTN's benefits, since post-graduation interviews were conducted by INQYR's project manager. **Finally, the ISTN cohorts comprised both master's and PhD students. While this widened participation, it also made it difficult to pitch the course content in terms of difficulty and career progression and, due to the small sample size, it is challenging to confidently interpret potential differences in competency development between different levels of study.**

### **Conclusion**

The ISTN was carefully designed to meet several related needs to develop core research competencies; advance technology-engaged research approaches; disrupt disciplinary and geographic siloes that hinder research impact; and create graduate student communities that are safe and affirming for SGD people. The ISTN significantly improved research competency and **its experiential components may have produced transformative learning. This training model** offers a promising template for future specialized international and interdisciplinary research training aimed at minoritized emerging scholars, which may contribute to research innovation in an increasingly collaborative and global academic landscape.

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