

Michael Wong, MCMaster UNIVERSITY, wongm8@mcmaster.ca
Nergiz Turgut, UNIVERSIDAD SAN FRANCISCO DE QUITO, nturgut@usfq.edu.ec
Catherine Anabel Hidalgo Rios, MCGILL UNIVERSITY, catherine.hidalgorios@mail.mcgill.ca
Rose Yakubov, UNIVERSITY OF TORONTO, rose.yakubov@mail.utoronto.ca
Emma Marsden, MCMaster UNIVERSITY, emmamarsden@live.com
María Sol Garcés, UNIVERSIDAD SAN FRANCISCO DE QUITO, sgarcés@usfq.edu.ec
Paul Leegsma, MCMaster UNIVERSITY, leegsmp@mcmaster.ca

Ecuadorian and Canadian Student Perception of a Neuroscience Course-Based Virtual Exchange Project

ABSTRACT

Although study abroad programs have been shown to increase intercultural awareness, these programs are not accessible to many students due to factors such as finance and fear of culture shock. According to various reports, Canada and especially countries in Latin America have among the lowest proportion of student participation in these programs in the world. Given these barriers, we conducted a 12-week virtual exchange in two neuroscience-related courses, pairing students in Canada (N=20) with students in Ecuador (N=22). Students in this virtual exchange worked together in small inter-institution groups to develop an intervention for a neuroscience-related problem, culminating in a written report and a pitch to external judges. To better understand Canadian and Ecuadorian student experiences and takeaways from this virtual exchange, we conducted qualitative analyses on written reflections and feedback from students. Several key themes emerged from our analyses, including navigating differences, language expansion, intercultural collaboration, and inclusive atmosphere. These themes suggest our virtual exchange project successfully increased student awareness of and openness to other cultures. Although generally positive, our findings also suggest areas of improvement, particularly related to technology and time. We discuss these findings in light of current literature on the topic and provide considerations for the improvement of future virtual exchanges. Importantly, as the majority of virtual exchange literature involves partnerships with the United States, our findings add to the scholarship by highlighting the perspectives of students who have not traditionally been represented.

KEYWORDS

virtual exchange, collaborative online international learning, cultural exchange, intercultural awareness, intercultural communication

INTRODUCTION

In an increasingly globalized and multicultural world, internationalization and learning to work with culturally diverse peers are becoming highly desirable traits (Gacel-Ávila, Bustos-Aguirre, and Freire Jr. 2017; Government of Canada 2024; Jenifer and Raman 2017; Palameta, Nguyen, Lee, Que, and Gyarmati 2021; Pazil and Razak 2019; Qiang 2003). Intercultural interactions can promote a variety of positive outcomes among students, including, for example, emotional resilience, cultural adjustment, and leadership skills (Antonio 2001; Earnest, Rosenbusch, Wallace-Williams, and Keim

[CC-BY-NC License 4.0](#) This is an Open Access article distributed under the terms of the Creative Commons – Attribution License 4.0 International which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly attributed.

2016). Thus, providing opportunities for intercultural interactions is an important educational objective.

One way to promote intercultural interactions among students is through study abroad programs (Chien 2020; de Diego-Lázaro, Winn, and Restrepo 2020; NAFSA n.d.). Despite the benefits of intercultural interactions, there are a variety of barriers (e.g., finance, fear of culture shock, familial and social obligations) that make it difficult for students to engage in these opportunities, especially those from traditionally marginalized backgrounds. Interestingly, these barriers appear to be similar across countries (e.g., Australia, Brazil, Canada, United States, France, China) (Amani and Kim 2018; Brux and Fry 2010; Foster 2013; Keystone Education Group 2022; Naffziger, Bott, and Mueller 2008; Sison and Brennan 2012). According to various reports, Canada ranks among the lowest in the proportion of undergraduate students who pursued a study abroad opportunity; for example, only 11% of students from Canada studied abroad compared to 16% from the United States, 19% from Australia, 29% from Germany, and 33% from France (European Commission/EACEA/Eurydice 2020; Global Affairs Canada 2019). Some barriers to Canadian student engagement in study abroad programs include financial factors and difficulty transferring credits from another institution. Furthermore, among Canadian students who did undergo a study abroad program, many went to countries with a similar linguacultural background to Canada, such as the United States, United Kingdom, Australia, and France (Global Affairs Canada 2019). The North American literature on student perception of study abroad programs suggests that fear of and issues related to culture shock is a common barrier (Tamas 2014; Trilokekar and Rasmi 2011). Latin American students face similar barriers to Canadian students; while many Latin American students are interested in study abroad opportunities, they cited finance and language as barriers to their participation (Keystone Education Group 2022). Moreover, the proportion of students studying abroad is reportedly even lower for countries in Latin America and the Caribbean (6.1%) than for Canada (Gacel-Ávila et al. 2017; Global Affairs Canada 2019).

How, then, do we encourage intercultural interactions among Canadian and Latin American students? One possible solution is to implement a virtual exchange in the classroom, such as Collaborative Online International Learning (COIL). The objective of COIL and other virtual exchanges is to connect students from diverse cultural backgrounds to complete an academic project (Rubin 2017, 2019). Research has shown that virtual exchanges can help students achieve their academic objectives as well as enhance their intercultural skills, which as defined by Deardorff (2009) are “the ability to engage effectively with individuals from different cultural backgrounds.” Students in these programs have shown improvements in their intercultural competence, intercultural sensitivity, and appreciation of and openness to other cultures (Commander, Schloer, and Cushing 2022; de Castro, Dyba, Cortez, and Pe Benito 2019; Hagley 2020; Naicker, Singh, and van Genugten 2022; Niitsu, Kondo, Abuliezi, and Dyba 2023; O’Dowd 2021; West, Goto, Borja, Trechter, and Klobodu 2024). Studies have also reported that in these programs, students often build collaborative learning skills and have a greater appreciation for technology (Asojo, Kartoshkina, Jaiyeoba, and Amole 2019; Niitsu et al. 2023). Hence, virtual exchanges offer an affordable, comfortable, and flexible option while providing a way for students to develop intercultural and collaboration skills without having to leave their home country (Rubin 2017, 2019). Virtual exchanges may be particularly effective in the post-pandemic era, as students have become increasingly accepting of remote learning (Horváth et al. 2022; Keystone Education Group 2022). Latin American students have additionally reported a preference for online learning as a method to circumvent the challenges associated with study abroad opportunities (Keystone Education Group 2022).

Given the considerations above, we formed a virtual exchange between an institution in Canada, McMaster University, and an institution in Ecuador, Universidad San Francisco de Quito (USFQ). Our virtual exchange addresses a key issue in the internationalization of education among our geographic regions. Not only do Canada and Latin America have low proportions of students who study abroad, Latin America is reported to have amongst the lowest proportion of international students in the world (Gacel-Ávila et al. 2017; Global Affairs Canada 2019; Keystone Education Group 2022). These statistics coupled with the finding that Canadian students who study abroad tend to prefer countries with similar linguacultural backgrounds further add to the significance of our virtual exchange, as we created an opportunity for students from two different regions to collaborate when they might not have otherwise interacted (Global Affairs Canada 2019). Importantly, to our knowledge, our article describes the first Canadian-Ecuadorian partnership in the virtual exchange literature. Much of this literature describes partnerships that involve institutions in the United States. For example, in a recent scoping review describing virtual exchanges in the post-pandemic era, Weaver, McDonald, Louie, and Woodman (2024) found that the United States was represented in the majority of the articles (10 out of the 16), while only one article featured Canada and none included Ecuador. Our virtual exchange was also unique because we used a student-directed, inquiry-based approach to learning within the context of the biological and behavioral sciences. By contrast, most instructors teach science, technology, engineering, and mathematics courses didactically, and virtual exchanges are more likely to be implemented in business and social science courses (Stains et al. 2018; Weaver et al. 2024).

Our goal in this quality improvement article is to evaluate student perception of our virtual exchange collaboration through the qualitative analysis of student reflections and feedback. The following research questions guided the current article:

1. What were students' perceptions of their intercultural and interdisciplinary skill development?
2. What was impactful about the virtual exchange experience?
3. What improvements would have made the experience more impactful?
4. What was the students' experience using the technology for the virtual exchange?

Our results establish strengths in the virtual exchange project, suggest possible areas of improvement, and highlight differences in experience between students from Ecuadorian and Canadian institutions. Some key themes that emerged are language expansion, intercultural collaboration, and creating inclusive atmospheres. The information and student perspectives provided here will hopefully assist other educators in the development of future virtual exchange projects.

METHOD

Context and data

We collected data through written reflections and feedback from students participating in a virtual exchange project from January to April 2022. Students were from McMaster University in Canada (n=19) and the Universidad San Francisco de Quito (USFQ) in Ecuador (n=22). Students from McMaster University were all students in the Honours Health Sciences (BHSc) Program and were enrolled in a third-year course focused on neuroplasticity at the time of the virtual exchange (McKinnell et al. 2005). Canadian students were all fluent in English, and none spoke Spanish. Students from USFQ were second and third-year psychology students enrolled in a neuroscience and behavior class. Ecuadorian students were all fluent in Spanish, and approximately 70% were fluent in English. All students participated in the virtual exchange project as a graded assessment with the aim

of working together to develop an intervention for a neuroscience-related problem, which they then produced a report and an oral pitch to a panel of judges. Students worked in a group with an average of five members total and approximately two to three students from each institution. This project took an inquiry-based approach where students had the freedom and flexibility to explore an area of neuroscience of their choosing. The instructional team from McMaster University and USFQ facilitated and provided support to students throughout this process. The students and instructors at both institutions met together formally on Zoom at three time points: (1) At the beginning of the virtual exchange to launch the project and for the students to meet each other; (2) midway through the virtual exchange for the instructional team to check in with each group and provide feedback on their progress; and (3) at the end of the virtual exchange for the pitch competition. Instructors encouraged students to meet regularly within their small groups to complete their projects using the learning management system (LMS), Microsoft Teams. Additionally, a Flipgrid (Microsoft Corporation) activity preceded the first meeting in which students filmed a video to introduce themselves, sharing their favorite location on campus or within their city. The virtual exchange lasted approximately 12 weeks. All course-related asynchronous communication with students occurred on Microsoft Teams.

In addition to the report and pitch, students also submitted written reflections. Students at McMaster University completed reflections at three points: prior to initiation of the virtual exchange, during the virtual exchange, and following the exchange's completion. The instructors at McMaster University graded these reflections. USFQ students completed reflections at two time points: prior to initiation of the virtual exchange and following the completion of the virtual exchange. These reflections were not graded and students completed them voluntarily. Although the number of reflections differed, all students received the same questions. For the first reflection, students reflected on what the value they feel interdisciplinary and intercultural skills have in work and academic settings. They also developed a plan for how they might improve their interdisciplinary and intercultural skills over the semester in that first reflection. For the second and final reflections, students reflected on the plan they developed in the first reflection and how they felt their interdisciplinary and intercultural skills had improved since the beginning of the virtual exchange project. McMaster University students also completed an additional feedback form about the virtual exchange project in which they commented on what they enjoyed and what improvements they feel would benefit a future virtual exchange project. The local research ethics board of both institutions provided ethics exemptions for this research.

Data analysis

We analyzed data from each institution independently using an identical process. Following the guidelines established by Braun and Clarke (2006), we conducted a comprehensive thematic analysis and then three members of the team (EM, RY, CAHS) analyzed the data. We completed the initial coding round independently with an inductive, semantic approach. Our analysis was data driven, allowing themes to emerge from student reflections. The entire team discussed any disagreements regarding codes to reach a consensus. We organized codes into preliminary themes and continually refined them until we felt they were finalized.

RESULTS

The number of students who completed each reflection varied. A total of 19 students at McMaster University completed the first and second reflections, and 18 students completed the final reflection and additional feedback form. At USFQ, completion of the initial reflection varied by

question and ranged from 19 to 23 students. Participation dropped for the second reflection, with seven students completing it. Six students from USFQ completed both reflections. As the reflections were graded at McMaster University, but not at USFQ, this perhaps explains the difference in response rates, especially given the final reflection was due toward the end of the semester when the volume of final assessments and exams are generally higher for students.

USFQ

Four major themes emerged: personal characteristics, intercultural collaboration, language expansion, and knowledge and skill acquisition (Table 1).

Table 1. Description of themes that emerged from the codes (USFQ)

Themes	Code	Criteria for selection	Example quote
Personal characteristics	Interpersonal skills	Students mentioned different interpersonal skills.	"... and above all with respect for each other."
	Intrapersonal skills	Students mentioned different intrapersonal skills.	"One value that is very important is to be responsible ..."
	Open-mindedness	Students used the word open-minded or phrases describing broadening their view or being outside of the comfort zone.	"It is important to open up to new thoughts and processes ..."
Intercultural collaboration	Culture	Students described learning about another culture and sharing their culture with others.	"Also we can share anecdotes, images, and much more about our culture."
	Collaboration	Students used words such as collaboration and teamwork, or otherwise described working with a group.	"... provide the greatest possible collaboration and support when working as a team."
	Interdisciplinary collaboration	Students described connecting different disciplines, areas, abilities, and perspectives.	"Interdisciplinary skills is the ability to connect different disciplines ... we learn how to work while interacting with different abilities."
	Trust	Students used the word trust or mentioned the process of building trust.	"... with the designation of roles we were able to do several icebreaker activities that strengthened communication and trust ..."
Language expansion	Communication	Students used the word communication or mentioned different aspects of communication.	"I think that a good plan would be to try to maintain good communication with the people of the intercultural group."
	Technology	Students mentioned the technological platforms used during collaboration.	"The application that was used to share the projects within our group was not very useful to us (Teams) ..."

	Intellectual skills	Students mentioned learning and different intellectual skills.	"I think it allows us to learn and understand other disciplines. That is, expand our knowledge using critical thinking."
Knowledge and skill acquisition	Productivity and efficiency	Students used the words productivity and efficiency, or alluded to the speed at which people work.	"... we can do a productive work meeting ..."
	Important for the future	Students mentioned the value of certain skills or experience for their academic and professional future.	"... this can help us in our future jobs and in our life ..."

Quotes in the table above represent individual student responses.

Personal characteristics

The qualitative analysis revealed that the development and utilization of students' personal characteristics contributed greatly to their virtual exchange experience. Students identified specific interpersonal and intrapersonal skills as key facilitators for a successful virtual exchange collaboration.

Interpersonal skills encompass the traits and attributes one uses or applies when interacting and communicating with others. Students discussed respect most frequently, emphasizing its importance in intercultural contexts. When asked about a goal or intention for enhancing intercultural skills, one student expressed, "everything with the utmost respect." Another student elaborated on the way in which intercultural collaboration fosters respect: "Intercultural collaboration has an important value for helping us build our worldview, integrating distinct perspectives from different parts of the world. By developing these skills, we can learn to love and respect other cultures and perspectives."

The salience of respect suggests that the virtual exchange granted students an opportunity to recognize the importance of fostering sensitive intercultural interactions. Goals to practice and further develop qualities such as empathy, kindness, honesty, trust, and reciprocity were also expressed by students, further reinforcing the perception that successful intercultural collaboration necessitates "soft skills" that promote positive team dynamics:

I consider that it was different to work with my group due to the fact that they were quite empathic and kind people. I liked that a lot and I consider that beyond their personality it is also part of their culture.

Open-mindedness, or the willingness to search actively for evidence against one's favored beliefs, plans, and/or goals, is an important trait that combines both inter- and intrapersonal skills. Students mentioned ideas, such as seeing through others' eyes, understanding others, and maintaining an open mind. For example, a student shared that in order to notice, develop, and enhance their intercultural skills, their plan is to "listen, be open to dialogue, be willing to learn and to expand [their] horizons." Students understood that although open-mindedness forces one outside of their comfort zone, it is essential to a successful collaboration.

Intercultural collaboration

Intercultural collaboration occurs when individuals with a diverse set of cultures work together to achieve a common goal. USFQ students recognized that such collaboration necessitates a unique combination of efforts that foster an effective working environment.

For example, students recognized that one's culture informs their skills and ideas. Thus, providing an opportunity for students to share cultural experiences, interests, and traditions was helpful in "breaking cultural parameters." Throughout the virtual exchange experience, students accomplished this formally through Flipgrid and informally through student-led conversations within Microsoft Teams. Moreover, students expressed the importance of fostering a "collective mindset," and prioritizing efforts to listen and learn from others when collaborating. Students also emphasized the importance of providing mutual support and connecting with others. Students acknowledged that different cultural upbringings contribute to diverse perspectives, demonstrating their self-awareness and intention to use the virtual exchange experience as a meaningful learning opportunity: "As I said, I think it is really important, the cultural collaboration. Being raised in different cultures and environments our thinking and skills could be different, and together could work awesome."

Notably, students expressed that building trust and rapport was critical in facilitating effective intercultural collaboration. They accomplished this by allocating intentional time for icebreaking and "getting to know each other." Another effort that strengthened communication and trust was collaborative role designation. Throughout the virtual exchange experience, the instructional team supported and encouraged students to build trust and rapport:

Trusting each other at the beginning was difficult since we did not know each other, and we did not know how to work. This was very conflicting but with the designation of roles we were able to do several icebreaker activities that strengthened communication and trust, and which helped us successfully achieve our goals.

This virtual exchange initiative was unique in that it combined learners from different cultures as well as disciplines. Thus, interdisciplinary and multidisciplinary collaboration were important elements of this experience. Many students noted the value of connecting different disciplines, abilities, fields, and perspectives. Students additionally expressed the importance of listening to and understanding others in order to integrate diverse perspectives. When discussing the value of intercultural and interdisciplinary skills in academic or work settings, one student expressed that:

The best part of interdisciplinary skills is that you can get the point of view of different areas and you expand your knowledge, which is good in academic or work because it helps you to open your mind and learn more from one another.

Language expansion

USFQ students valued the opportunity to improve their English skills, perhaps more so than the academic benefits from the project. It is possible that students identified this experience as an opportunity to interact with native English speakers and prioritized language acquisition by gaining comfort, fluency, and new vocabulary when communicating with others. This was reflected in student goals, such as, "improve my English and communication with other people during the [virtual exchange]," and "I would like to develop my English better."

The primary language spoken in Ecuador is Spanish; therefore, having the unique opportunity to converse with native English speakers may have been paramount. There are important academic and professional implications for Ecuadorians who are proficient in English. For example, USFQ requires students to gain a certain English level in order to graduate. Additionally, studies suggest that speaking fluent English may improve graduate employability rates in nations where English is not the first language (Noah and Aziz 2020; Zainuddin, Pillai, Dumanig, and Phillip 2019). Differences in priorities between students from Ecuador and Canada may speak to the range of benefits potentially derived from the project.

Given the exchange's intercultural nature, we wanted to learn about the students' experience with technology. Students made comments about communication and research platforms throughout their reflections. One student mentioned, "I think McMaster University students were more oriented in terms of research platforms," providing a possible opportunity for students from USFQ to learn from those at McMaster University.

Unfortunately, USFQ students' comments about the primary communication platform used, Microsoft Teams, were largely negative. One student reflected:

The application that was used to share the projects within our group was not very useful to us (Teams), but the dimensions were important since we had to have extra meetings to be able to get to know each other among all the members of the group.

Although it seems this student could use the platform, they ultimately did not find it useful for their group.

Knowledge and skill acquisition

Participating in the virtual exchange project allowed students to develop personal and professional skills. When asked about their goals, one student mentioned their desire to "Learn during this course, more tools for my career and achieve better results and grades through my responsibility." Another student thought that their goals should "bring useful knowledge in [their] field of study and could help [them] in the future," suggesting that some students wanted to use this opportunity to meet personal and career goals. On the other hand, students expressed that this opportunity could provide knowledge in disciplines and areas well-known to their McMaster University counterparts and expand their existing knowledge of neuroscience and psychology. One student expressed their plan to "learn not only other cultures but let another person share their knowledge with me and grow together," whereas another's goal was to "understand the function of the brain in this course to progress on my knowledge about psychology . . . In the end I hope to understand the brain's function more deeply." Ultimately, it appears students used the virtual exchange project as an opportunity to gain skills and knowledge that they felt would be beneficial in their future.

Additionally, students from USFQ noted a number of insights on work styles, particularly, the value of productivity and efficiency. Several students noted the benefit of collaborative learning skills in increasing productivity and efficiency. For example, one student stated, "It is important for a former professional to think in an integral and holistic way to solve problems more efficiently." While another student reflected, "It's important for coexistent groups, we can do productive work meeting and sharing with other people."

Students also emphasized the importance of productivity and efficiency while completing this project. When asked about cultural dimensions (using The Hofstede Model; Hofstede 2011) salient to their group process, students noted “dynamism,” “performance orientation,” and “long-term orientation because we needed to get things done a little faster.” It is important to consider the deadlines and time constraints involved in the project when interpreting these responses. It is possible that students’ tendency to progress quickly was driven by students from McMaster University. One student expressed a difference they noticed about McMaster University students was “how quick they work.” Students reflected on how work styles were related to intercultural and collaborative learning skills more generally and to their personal experience while completing the project, suggesting they are important factors in intercultural collaborations.

McMaster University

Among the McMaster University student reflections, four major themes emerged: navigating differences, inclusive atmosphere, intercultural communication, and learning process (Table 2).

Table 2. Description of the themes that emerged from the codes (McMaster University)

Themes	Code	Criteria for selection	Example quote
Navigating differences	Collaboration	Students used words such as collaboration and teamwork, or otherwise described working with a group.	“... and be an all-around good teammate. This is imperative, as being able to work in a group is beneficial for both problem solving and positive group dynamics.”
	Barriers	Students used the word barrier or challenge, or alluded to something impeding progress.	“... I have definitely ran into some challenges that have forced me to adapt and build upon my interdisciplinary capabilities.”
	Time management	Students mentioned scheduling, deadlines, time frames, and other items related to time management.	“During this term, we have had to reschedule a couple of meetings simply because some members chose not to show up.”
	Trust	Students used the word trust or mentioned the process of building trust.	“I feel like my culture values more task based trust, and I believe in our [virtual exchange] group we can foster this type of trust.”
	Productivity and efficiency	Students used the words productivity and efficiency or alluded to the speed at which people work.	“... I am very eager to develop clear-cut plans outlining specific deadlines with my group in order to ensure productivity and progress on our work.”
	Expectations	Students used the word expectation(s).	“... I have also learned the importance of group transparency and the necessity of consistent communication of expectations and guidelines in a group.”

	Communication	Students used the word communication or mentioned different aspects of communication.	"I can also initiate discussions about our group's expectations . . ."
	Intercultural / interdisciplinary skills	Students mentioned perspective-taking or hearing and accepting others' perspectives.	"First, it allows for one to learn and take into consideration a multitude of perspectives."
	Decision-making	Students used the word decision-making or decision, or described the decision-making process.	"Decision-making is an extremely common process in a group setting and I believe the group dynamics would be more positive if everyone agrees with the path/step we chose to take."
	Evaluation	Students mentioned giving, receiving, asking for, and implementing feedback.	". . . I would prefer to deliver feedback in an indirect manner and avoid confrontation."
Inclusive atmosphere	Environment	Students used words such as environment, space, or atmosphere, or otherwise described the setting where students worked.	"My third goal is to create a positive and conducive environment."
	Interpersonal skills	Students mentioned different interpersonal skills.	"This will display my respect and engagement when others are sharing their ideas."
	Open-mindedness	Students used the word open-minded or phrases describing broadening their view or being outside of the comfort zone.	". . . I will remain open-minded throughout the whole process."
	Communication	Students used the word communication or mentioned different aspects of communication.	"I think I can do this by actively listening to my peers, asking questions when appropriate and accepting that there may be errors in communication by me but it'll be important to recognize when they occur and try to resolve them and learn from them."
	Collaboration	Students used words such as collaboration and teamwork, or otherwise described working with a group.	"What is important is that a group of individuals work together to highlight the unique strengths within the team."

	Trust	Students used the word trust or mentioned the process of building trust.	"Personally, I feel like I am trusting person and I build a sense of trust with my peers by working with them in a business manner but also by having meaningful conversations and shared experiences together."
	Intrapersonal skills	Students mentioned different intrapersonal skills.	"It also allows for more self-reflection and awareness—asking questions such as "what do I take for granted," "what am I seeing with rose-tinted glasses," or "what do I perceive as fact is fiction?"
Intercultural communication	Communication	Students used the word communication or mentioned different aspects of communication.	"I would like to be mindful of the way I speak to my peers in USFQ by using inclusive language that is easy to understand."
	Technology	Students mentioned the technological platforms used during collaboration.	"After switching to utilizing non-synchronous modes of communication (such as WhatsApp, audio messages, and the commenting/suggesting feature on google documents) . . ."
	Culture	Students mentioned learning about another culture, sharing their culture with others, and skills related to culture, such as cultural competency and awareness.	"There is so much genuine beauty in understanding an individual's culture and traditions, as they are often the key to building cultural competency."
	Assumptions and biases	Students used the words assumption or bias.	"I will be able to acknowledge and recognize what I said in our meetings and analyze if this was harmful or had any assumptions towards their culture."
Learning process	Intellectual skills	Students mentioned learning, researching, and different intellectual skills.	"By learning from my group members, taking on secondary research roles, and pursuing a topic that interests me, I'll be able to put my research skills into practice."
	Intrapersonal skills	Students mentioned different intrapersonal skills.	"Working on this goal challenged me to become more observant, detail-oriented, and an active listener."
	Intercultural / interdisciplinary collaboration	Students described connecting different disciplines, areas, abilities, and perspectives.	"I think interdisciplinary skills entail the ability to combine knowledge and skills learned from two or more different areas, and to apply them when approaching problems."

Quotes in the table above represent individual student responses.

Navigating differences

An important part of the virtual exchange experience was the students' ability to navigate through individual and cultural differences. While working together, students identified differences in language, communication abilities, access to technology, work styles, and most notably, time management. In order to work together effectively and to create a successful end product, students had to overcome their differences as a team. This provided students with opportunities to utilize their communication and decision-making skills, among others.

Student reflections contained many mentions of struggles with time management including individual and cultural level differences in time zones, scheduling, deadlines, productivity, and efficiency, as well as general challenges related to having limited time. Due to the observance of daylight savings time in Canada, all students began the project in the same time zone but experienced an hour time difference about halfway through. This difference surprised most students, which is reflected in comments such as, "we only found out through our meetings that Ecuador doesn't participate in daylight savings because USFQ student #1 and USFQ student #2 were both confused when we met one hour earlier than our designated time."

Further, many students experienced challenges with scheduling group meetings. McMaster University students expressed that their counterparts from USFQ treated meeting times as flexible, did not always attend meetings, and did not always communicate if they were unable to attend:

Throughout the semester one frequent struggle was finding a time for everyone to attend meetings. At least three times, we had to reschedule a meeting because a majority of the USFQ students didn't attend the meetings / let us know last minute that they wouldn't be able to make it. This was a source of frustration for the other McMaster University students and me. In our academic culture, it's often considered rude to miss / not give advanced notice of changes to meetings.

Students noted similar issues regarding deadlines: "My USFQ group members, contrastingly, were not as keen on adhering to deadlines, which may be due to cultural differences wherein deadlines may be perceived as much more low-stakes and flexible."

Additionally, students found it challenging to balance flexibility with their peers while remaining productive and efficient: "I found it very challenging balancing productivity and consideration of my peers' scheduling approaches."

Finally, students wished they had more time to complete the project and build relationships: "Longer time period to make meaningful connection with the [virtual exchange] team, explore potential problems, explore potential solutions." These reflections suggest that the time period for the project was enough to complete the academic requirements but didn't leave additional time for the social aspect.

Students used a number of strategies to work through these challenges, the first being communication. Students found it helpful to communicate and discuss their expectations with their group members: "I have also learned the importance of group transparency and the necessity of consistent communication of expectations and guidelines in a group." Clear expectations allowed students to see one another's perspective, helped ensure all group members were on the same page, and avoided negative feelings arising when expectations that were unknown to others were not met. This was especially pertinent, since many students expressed that they built trust with others

primarily through task-based actions. If others in their group did not complete tasks, this impacted trust and group dynamics. One student said, “I noticed that we all had minimal trust in our Ecuadorian members, probably due to their pattern of not showing up to meetings and not completing their tasks by our internal deadlines.”

Once students communicated about their expectations, they had the opportunity to decide as a group what conditions all members felt they could meet. The majority of students endorsed this practice of consensual decision making. One student described this process as, “our group primarily relied on consensual decision making. We would often each go around and share our thoughts or confirm we were all in agreement before making a decision.”

In cases where students could not come to a consensus as a group, they often avoided confrontation in order to keep things enjoyable and to avoid hurting anyone. However, many students wanted to be more confrontational:

I struggled with confrontation especially when disagreeing with someone. Throughout the semester, I found myself especially struggling with this during my [virtual exchange] group meetings as I was worried that what I am saying might come out in the wrong way due to the cultural differences and the language barrier. However, after reflecting on this in the second [reflection], I tried my best to raise my concerns in a respectful way instead of ignoring them.

Ultimately, identifying and overcoming the unique differences impacting each group’s ability to work together became an important part of the virtual exchange experience.

Inclusive atmosphere

Student reflections contained many insights into both the desired and experienced atmosphere for the virtual exchange project. Students directly and indirectly referenced many characteristics of an ideal atmosphere, such as feeling safe, being open-minded and respectful, and communicating openly and honestly. Specific mentions included wanting to create a space that felt comfortable, welcoming, and friendly. When asked about their goals, one student wrote, “I hope to foster a friendly and supportive environment for the USFQ students,” while another wanted to “create a welcoming environment so that others feel comfortable asking questions.” It is clear that students valued having a positive working environment and wanted to share that experience with students from USFQ.

Interpersonal skills played an important role in creating an inclusive atmosphere. Key interpersonal skills expressed by students were respect, adaptability, flexibility, and support. When speaking about work styles, one student suggested that many styles can be valuable “as long as it remains respectful at all times.” When asked about interdisciplinary skills, one person stated, “Another skill is flexibility—working in an interdisciplinary group requires being able to adapt.” This was put into practice when working towards their goals, with students stating, “I learned to be flexible and adaptable” and “one part of using interdisciplinary skills I have been able to develop is being able to be adaptable, flexible, and open-minded.”

Open-mindedness, or a willingness to consider others’ ideas, was another important element. A large proportion of students considered open-mindedness an intercultural skill and expressed a desire to maintain this trait throughout the project. Students felt it was important to remain open to the ideas, perspectives, and experiences of others. Further, students believed that as they continued to develop their intercultural skills, they would become increasingly open-minded. One final

important individual-level element was personal awareness. Students' recognition of the need to be self-aware and to consider how their thoughts, biases, and behaviors contributed to the overall atmosphere. For example, one student mentioned, "I wish to develop my personal awareness of not just my own biases and perspectives."

An important component for building an inclusive atmosphere is communication. Expressions around the value of active listening and being open for potential discussions were prevalent in student reflections. One student mentioned, "This involves not only communication with your peers, but also making sure to be an active listener, observing both verbal and nonverbal cues." Another student responded, "Being open to expressing concerns when they come up and keeping that line of communication open is extremely crucial." It was clear from these and many other student responses that communication skills are necessary for avoiding conflict and misunderstanding, thus contributing positively towards the atmosphere.

Finally, students related collaboration to creating an inclusive atmosphere. Aspects such as teamwork, building relationships, trust, and group transparency were prominent. One student shared "Willing to listen to a variety of ideas, share your own thoughts and be an all-around good teammate," as being important skills to develop within the team environment. Another mentioned, "It's especially important to ensure everyone is on the same page." A positive social environment can increase feelings of support and willingness to ask for help when needed, likely strengthening the end product when working as a team.

Overall, reflections from students offer unique insight into the atmosphere they experienced throughout the virtual exchange project. Students put their best foot forward with goals aimed at creating an inclusive atmosphere, and they were rewarded for their efforts with remarks of success following completion of the project.

Intercultural communication

The intersection of culture and communication was prominent in student reflections. Students addressed cultural differences, such as the language barrier, implicit vs. explicit communication styles, and comfort with communication platforms by altering their communication in a number of ways. Initial strategies included using basic vocabulary and lay terms, avoiding slang terms, and keeping a slow pace when speaking. For example, one student said, "I plan to intentionally utilize more basic vocabulary and avoid slang terms that may be unfamiliar. I also plan to ensure that I speak slowly and clearly."

Moreover, students made efforts to ensure understanding. After speaking, McMaster University students would ask those from USFQ if they understood what had been said and if they required any clarification: "I will consistently ask my peers if they understand where I am coming from." Similarly, a common goal among McMaster University students was to ask for their own clarification when necessary. After having met with their groups a couple of times, several students noted that they wanted to become more comfortable with periods of silence. Although they may interpret silence as "uncomfortable or a waste of time," they believed they were important so that their USFQ peers had adequate time to process what was communicated and organize their thoughts.

Equally important to altering communication was heightening one's listening abilities. Students mentioned active listening as both an important interdisciplinary skill and an area students wanted to show improvement. Specifically, listening actively, more intently, with curiosity, and displaying an overall willingness to listen. One student mentioned: "This involves not only

communicating with your peers to ensure that they fully understand the topic that you are explaining but also making sure to be an active listener, observing both verbal and nonverbal cues.”

Reflections suggested that students felt active listening involved attention to not only the words spoken but also to non-verbal cues such as facial expressions. For example, one student shared, “when I shared an idea and my group members’ facial expressions seem confused . . . I will ask them if they want more clarification on what I just said.” Thus, it appears students felt facial expressions added an additional source of information when gauging peer understanding. The consistency of facial expressions across cultures may play an important role in intercultural communication.

Though we initially instructed students to connect with those from USFQ using Microsoft Teams, many shifted to more non-synchronous platforms such as WhatsApp. This switch avoided difficulties with internet connection, microphone and camera failure, and the need to schedule synchronous meetings. Additionally, students could take as much time as needed to read and respond to messages, increasing comfortability.

Students were also eager to learn more about the culture of their peers and to share information about their culture in return:

I hope to make a conscious effort to get to know each individual and express genuine interest in learning more about their culture. In addition, I hope to share my Canadian culture and Chinese culture with them and overall create a positive experience for them to explore new cultures.

Discussions of culture also stemmed from not wanting to make assumptions. Students recognized that although cultural norms exist, so does individual variability, and it was better to ask peers for their preferences directly instead of assuming based on culture:

I do not want to act based solely on the assumption that their cultures are similar to that of other South American countries. At the end of the day, my goal is to focus on the individual needs of my group members rather than the broader culture they may be a part of.

Also, learning about other cultures had benefits beyond the virtual exchange project, such as improving cultural awareness and cultural competence. This was important to a number of students who felt they were exposed to individuals from many cultures in their future careers:

I think about how I want to be a physician when I am older, and how it is of the utmost importance that I learn more about the cultures and lived experiences of others so I can support them better in the future.

Simply put, successful intercultural communication involved many skills that were adapted from one interaction to the next, taking into account cultural and individual variability.

Learning process

The virtual exchange project asked students to work together in order to develop a solution to a neuroscience-related problem. Although creating a suitable solution was the intended outcome, the learning process itself was an important part of the project. Students listed many elements of the

learning process as key interdisciplinary skills or personal goals for improvement; they also reported using them throughout the virtual exchange project. These elements include creative and critical thinking, problem identification, connecting disciplines, and problem solving, among others. Students highlighted a number of additional skills supplementing the learning process as well, such as being organized, detail-oriented, observant, and creative.

When asked what interdisciplinary skills entailed, one student wrote, “This may require thinking out of the box and being open to hear new perspectives and ideas and hence problem solving, and critical thinking would also be key.” Students also made connections between many elements of the learning process, for example: “Working in an interdisciplinary team can hone one’s critical thinking skills as they learn to become more personally aware of their own knowledge, overlaps between disciplines, and integrate concepts from other disciplines into their own studies/work.” The recognition that skills, such as problem solving and critical thinking, would be especially relevant for interdisciplinary groups suggests students anticipated a learning process distinct from their typical experience, perhaps offering a novel opportunity for personal growth.

The importance of the learning process was also demonstrated regarding research skills. The virtual exchange project required students to use their research skills to develop a solution, and this became the source of many student goals such as, “To enhance my skillset, I need to improve my research skills” and “I have started working on creating better search strategies.” Many of these reflections did not specifically indicate whether students pursued these goals in hopes of a better end product or for general personal development, suggesting students may have used the virtual exchange project as an opportunity to hone elements of the learning process for use in future projects as well as the current one.

DISCUSSION

Through this quality improvement project, we wanted to explore student perception of a virtual exchange project in higher education. Our qualitative analysis revealed key takeaways from students that can be used to inform future global education collaborations. In this section, we will further discuss our qualitative findings, implications, and future directions.

Findings

According to USFQ students, inter- and intrapersonal skills development and utilization contributed greatly to the virtual exchange experience. Students mentioned traits such as respect, empathy, trust, and responsibility as essential facilitators of a virtual exchange collaboration. Such traits are known to encompass key components of one’s emotional intelligence (Di Lorenzo, Venturelli, Spiga, and Ferri 2019). Overall, students recognized that a successful intercultural collaboration necessitates a set of inter- and intrapersonal, or “soft” skills that foster a positive team dynamic. Such sentiments were mirrored by McMaster University students who frequently referenced the importance of fostering an inclusive atmosphere when working in intercultural teams. Students expressed a desire to create a space that felt comfortable, welcoming, and friendly for everyone. This finding is especially meaningful since it suggests McMaster University students had a recognition of Western bias and dominance when they partook in this global collaboration. Researchers have extensively documented the issue of Western dominance in international exchanges, collaborations, and in Latin America more generally (Walsh 2007; Zuchowski, Gopalkrishnan, King, and Francis 2017). It is possible that McMaster University students recognized this dominance as a result of several factors. The instructional teams at McMaster University and USFQ worked collaboratively and

engaged in shared decision making. For example, when students had questions about the virtual exchange, we would inform students that we needed to check with the other institution before making a decision. This process might have modeled for students how one might engage in a reciprocal and inclusive team environment. It is also possible that the reflections, which were mandatory for the McMaster University students, facilitated student awareness of Western dominance, as they encouraged students to reflect on their cultures, social positionality, and intercultural interactions as they engaged in the virtual exchange. This process of reflection and action encourages deep learning in a variety of education settings, including the development of intercultural competency (Gregersen-Hermans and Pusch 2012; Wain 2017). Thus, our findings further showcase the power of global collaboration to promote cultural awareness and inclusivity.

Interestingly, we found that USFQ students valued the opportunity to improve their English skills, perhaps more so than the academic benefits of the project. We hypothesize that Spanish-speaking students were keen on expanding their English-speaking abilities due to the professional advantages that come with the ability to communicate in English. Literature suggests that fluency in English may improve graduate employability rates in nations where English is not the first language (Noah et al. 2020; Zainuddin et al. 2019). On the other hand, McMaster University students, who were experienced English speakers, emphasized ways in which they altered their communication styles to promote comfort and alleviate the language barrier. This finding reinforced prior reports in the literature in which students found the need to explain colloquialisms, expressions, or idioms that they used (de Castro et al. 2019). Overall, both groups of students leveraged the global exchange opportunity to enhance their communication skills while keeping intercultural sensitivity at the forefront of their interactions. These qualitative results are consistent with much of the literature on the value of virtual exchanges, suggesting that these experiences lead to increased intercultural skills (Commander et al. 2022; de Castro et al. 2019; Hagley 2020; Naicker et al. 2022; West et al. 2024). That said, the emergence of the theme language expansion among the Ecuadorian but not Canadian students is perhaps additional evidence of a possible Western cultural dominance; although informally some Canadian students mentioned the virtual exchange motivated them to learn Spanish. Nevertheless, considering ways in which Western dominance can be mitigated is an important objective in virtual exchanges.

Furthermore, the virtual exchange experience allowed students to develop professional skills. Knowledge acquisition in our context involves both scientific findings, such as information related to neuroscience and psychology, as well as a deeper understanding of cultural differences. USFQ students considered such knowledge as beneficial to their future professional careers. A comparative study of Chinese and American undergraduates, in which knowledge and skill achievement through an international cooperative learning project was mostly positive, revealed similar findings (Lai and Wang 2013). The reflections of McMaster University students also frequently referenced the theme of knowledge acquisition. Students highlighted key elements of a learning process, including problem identification and problem solving, while referencing skills that facilitated learning, such as organization and creativity. Notably, the learning process was more commonly discussed than the project outcome, or “end-goal.” The focus on process is an interesting and important finding, as the education literature generally suggests students tend to be grades focused (Cain, Medina, Romanelli, and Persky 2022; Chamberlin, Yasué, and Chiang 2023; Horne, Yuen, Beveridge, and McLean 2022; Van Etten, Pressley, McInerney, and Liem 2008). It is possible that our inquiry- and problem-based approach, which placed students at the center of their learning, further promoted the focus on process in our virtual exchange project. Other related literature suggests that such student-directed pedagogies lead to positive student outcomes, including better achievement and engagement, and

increased intrinsic motivation and a sense of belonging (Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, and Wenderoth 2014; Salinas and Garr 2009; Theobald et al. 2020; Wong 2024; Wong, Al-saqqar, Nash, Al-Humuzi, Dottori, and Secord 2024).

Considerations and future directions

Overall, our qualitative findings suggest our virtual exchange project between institutions in Canada and Ecuador succeeded in providing students with a way to reflect on and to practice their intercultural and collaboration skills. Despite this success, the results also highlight several areas for improvement.

Technology considerations

We hosted this virtual exchange project on Microsoft Teams, an LMS that is used across the majority of health science undergraduate courses at McMaster University. We thought the inclusion of this platform would be beneficial for several reasons: (1) Microsoft Teams allows external users to be added to the environment; (2) Microsoft Teams, unlike other LMSs, is a shared space for instructors and students that allows for direct communication among all users; and (3) Microsoft Teams has a translation feature that enables users to easily translate between English and Spanish. Despite these perceived advantages, however, the students barely used Microsoft Teams. As indicated by the qualitative data, the USFQ students did not enjoy this platform, and many student groups migrated to WhatsApp. A few possibilities for the limited adoption are the steep learning curve of Microsoft Teams and that this LMS is not typically used by the USFQ students, so it was forgotten. Our experience is not uncommon; engaging students in LMSs is a commonly reported struggle (Ashrafi, Zareravasan, Savoji, and Amani 2022; Deng and Tavares 2013; Khan, Srivel, and Wong 2025; Sobaih, Salem, Hasanein, and Abu Elnasr 2021). One barrier to student engagement in LMSs that has been reported in the literature is the formality of LMSs. Deng et al. (2013), for example, found that students tend to prefer less formal social media platforms, such as Facebook, for communication because they are not associated with homework or assignments. This may explain why the students in our virtual exchange shifted to WhatsApp. One interesting observation is WhatsApp is much more commonly used in Latin America than in Canada (Espinoza-Mina and Suárez-Riofrío 2016; Gruzd, Jacobson, Mai, and Dubois 2017; Nagel, Remillard, Aucoin, and Takenishi 2018; Poushter 2024). In fact, informal conversations with the Canadian students revealed none of them had used WhatsApp for group work prior to this virtual exchange. In light of literature suggesting international exchanges and higher education are often dominated by Western views (Zuchowski et al. 2017), the adoption of WhatsApp is further evidence that our modeling and reflective assignments (see above) may have helped to reduce Western bias and dominance.

Future virtual exchanges should carefully consider the LMS (and related technologies) that they use, as increased engagement on these platforms would allow the instructional team to further support the students and their work. It may therefore be helpful to find technologies that are familiar and less formal to students. Additionally, it may be helpful for the instructional team to stress the importance of using a common LMS between students and instructors, so communication is transparent and supports are more easily implemented.

Time considerations

In addition to technology, another important consideration is time. We implemented three time points during which students could interact: at the beginning, middle, and end of our virtual

exchange. Despite this, our students might have benefitted from additional opportunities to connect. Although we encouraged students to make use of Microsoft Teams for asynchronous discussions and to find times within their smaller groups to meet outside of scheduled times, our qualitative data suggest these were not effective. For example, one student commented, “Throughout the semester one frequent struggle was finding a time for everyone to attend meetings . . .” Another student said, “Longer time period to make meaningful connection with the [virtual exchange] team, explore potential problems, explore potential solutions.” Conceivably, we could have scheduled additional times for both institutions to meet. For our collaboration, this was difficult because our classes were delivered at different times of the week and for different durations.

Another challenge was balancing the amount of time spent on the virtual exchange project with other learning objectives. If permitted institutionally, one possible solution to these challenges is to schedule mutual times for small student groups to meet, perhaps facilitated by a teaching assistant or a student course coordinator similar to a tutorial (for example, see Yakubov and Wong 2025). This approach would allow easier scheduling and enable more time for students to connect and work on their projects.

Conclusion and future directions

Our qualitative data suggest students became more appreciative and aware of cultural differences, a primary goal of this project. Although successful overall, our collaboration was not without challenges. Future virtual exchange collaborations would benefit from additional meeting times and careful consideration of an LMS that is interactive, easy to use, and familiar to students. Nevertheless, our virtual exchange project fostered a unique learning environment that not only asked students to work on and develop their intercultural skills but to challenge and reflect on their own assumptions and biases. While we acknowledge our article is specific to the collaboration between our two institutions and is exploratory in nature, we feel the student perceptions described here are informative to the virtual exchange literature as a whole, which has been dominated by partnerships with institutions in the United States. Our findings are particularly significant because they, to our knowledge, capture student experiences of the first-ever Canadian-Ecuadorian virtual exchange and highlights the voices of students that were underrepresented in previous virtual exchange literature.

NOTES

1. Unfortunately, to our knowledge, Ecuadorian-specific statistics have not been reported in the literature.

ACKNOWLEDGMENTS

We would like to thank Kelsey Harvey for sharing several relevant articles with us.

AUTHOR BIOGRAPHIES

Michael Wong (Canada) is an assistant professor in the Department of Psychiatry and Behavioural Neurosciences and an instructor in the Honours Health Sciences (BHSc) Program at McMaster University. His research focuses on ways to foster belonging in the classroom.

Nergiz Turgut (Ecuador) is a professor of psychology in the College of Social Sciences and Humanities at Universidad San Francisco de Quito. Her research focuses on neurorehabilitation, mental and global health, and education.

Catherine Anabel Hidalgo Rios (Canada) is a master's student in the Department of Psychiatry at McGill University. She obtained her undergraduate degree in psychology from Universidad San Francisco de Quito.

Rose Yakubov (Canada) is a dual degree MD/MEng student at the University of Toronto. She holds an undergraduate degree in health sciences from McMaster University.

Emma Marsden (Canada) holds a master's degree from the neuroscience graduate program and worked as a research assistant in the Department of Psychiatry and Behavioural Neurosciences at McMaster University.

María Sol Garcés (Ecuador) is a professor of psychology in the College of Social Sciences and Humanities at Universidad San Francisco de Quito. Her research focuses on neurocognition, neuropsychiatry, mental health, and education.

Paul Leegsma (Canada) is a manager of strategic initiatives and special projects in the Office of International Affairs at McMaster University.

FUNDING DETAILS

The Partnered in Teaching and Learning grants program at McMaster University provided funding for this project.

ETHICS

The local research ethics board at USFQ and the Hamilton Integrated Research Ethics Board at McMaster University provided an ethics exemption for this research.

REFERENCES

- Amani, Monija, and Mikyong Minsun Kim. 2018. "Study Abroad Participation at Community Colleges: Students' Decision and Influential Factors." *Community College Journal of Research and Practice* 42 (10): 678–92. <https://doi.org/10.1080/10668926.2017.1352544>.
- Antonio, Anthony Lising. 2001. "The Role of Interracial Interaction in the Development of Leadership Skills and Cultural Knowledge and Understanding." *Research in Higher Education* 42: 593–617. <https://doi.org/10.1023/A:1011054427581>.
- Ashrafi, Amir, Ahad Zareravasan, Sogol Rabiee Savoji, and Masoumeh Amani. 2022. "Exploring Factors Influencing Students' Continuance Intention to Use the Learning Management System (LMS): A Multi-Perspective Framework." *Interactive Learning Environments* 30 (8): 1475–97. <https://doi.org/10.1080/10494820.2020.1734028>.

- Asojo, Abimbola Oluwatoni, Yuliya Kartoshkina, Babatunde Jaiyeoba, and Dolapo Amole. 2019. "Multicultural Learning and Experiences in Design through Collaborative Online International Learning (COIL) Framework." *Journal of Teaching and Learning with Technology* 8 (1): 5–16. <https://doi.org/10.14434/jotlt.v8i1.26748>.
- Braun, Virginia, and Victoria Clarke. 2006. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3 (2): 77–101. <https://doi.org/10.1191/1478088706qp0630a>.
- Brux, Jacqueline M., and Blake Fry. 2010. "Multicultural Students in Study Abroad: Their Interests, Their Issues, and Their Constraints." *Journal of Studies in International Education* 14 (5): 508–27. <https://doi.org/10.1177/1028315309342486>.
- Cain, Jeff, Melissa Medina, Frank Romanelli, and Adam Persky. 2022. "Deficiencies of Traditional Grading Systems and Recommendations for the Future." *American Journal of Pharmaceutical Education* 86 (7): 908–15. <https://doi.org/10.5688/ajpe8850>.
- Chamberlin, Kelsey, Maï Yasué, and I-Chant A. Chiang. 2023. "The Impact of Grades on Student Motivation." *Active Learning in Higher Education* 24 (2): 109–24. <https://doi.org/10.1177/1469787418819728>.
- Chien, Y. Grace. 2020. "Studying Abroad in Britain: Advantages and Disadvantages." *Journal of Research in International Education* 19 (1): 69–83. <https://doi.org/10.1177/1475240920916944>.
- Commander, Nannette Evans, Wolfgang F. Schloer, and Sara T. Cushing. 2022. "Virtual Exchange: A Promising High-Impact Practice for Developing Intercultural Effectiveness across Disciplines." *Journal of Virtual Exchange* 5 (January): 1–19. <https://doi.org/10.21827/jve.5.37329>.
- Deardorff, Darla K. 2009. *The SAGE Handbook of Intercultural Competence*. Sage Publications.
- de Castro, A. B., Natalia Dyba, Elizabeth D. Cortez, and Genecar G. Pe Benito. 2019. "Collaborative Online International Learning to Prepare Students for Multicultural Work Environments." *Nurse Educator* 44 (4): E1–5. <https://doi.org/10.1097/NNE.0000000000000609>.
- de Diego-Lázaro, Beatriz, Kevin Winn, and María A. Restrepo. 2020. "Cultural Competence and Self-Efficacy after Study Abroad Experiences." *American Journal of Speech-Language Pathology* 29 (4): 1896–1909. https://doi.org/10.1044/2020_AJSLP-19-00101.
- Deng, Liping, and Nicole J. Tavares. 2013. "From Moodle to Facebook: Exploring Students' Motivation and Experiences in Online Communities." *Computers & Education* 68 (October): 167–76. <https://doi.org/10.1016/j.compedu.2013.04.028>.
- Di Lorenzo, Rosaria, Giulia Venturelli, Giulia Spiga, and Paola Ferri. 2019. "Emotional Intelligence, Empathy and Alexithymia: A Cross-Sectional Survey on Emotional Competence in a Group of Nursing Students." *Acta Biomedica Atenei Parmensis* 90 (4-5): 32–43. <https://doi.org/10.23750/abm.v90i4-S.8273>.
- Earnest, David R., Katherine Rosenbusch, Devin Wallace-Williams, and Alaina C. Keim. 2016. "Study Abroad in Psychology." *Teaching of Psychology* 43 (1): 75–79. <https://doi.org/10.1177/0098628315620889>.
- Espinoza-Mina, Marcos A., and Patricia L. Suárez-Riofrío. 2016. "Study of Use, Privacy and Dependence on Social Networks by Students in the Ecuadorian Universities." In *Technologies and Innovation: Second International Conference, CITI 2016, Guayaquil, Ecuador, November 23–25, 2016, Proceedings*, edited by Rafael Valencia-García, Katty Lagos-Ortiz, Gema Alcaraz-Mármol, Javier del Cioppo, and Nestor Vera-Lucio. Springer Nature. https://doi.org/10.1007/978-3-319-48024-4_10.
- European Commission/EACEA/Eurydice. 2020. "The European Higher Education Area in 2020: Bologna Process Implementation Report." Luxembourg. Publications Office of the European Union. <https://eurydice.eacea.ec.europa.eu/publications/european-higher-education-area-2020-bologna-process-implementation-report>.

- Foster, Monika. 2013. "Student Destination Choices in International Education: Exploring Brazilian Students' Attitudes to Study Abroad." *Practice and Evidence of the Scholarship of Teaching and Learning in Higher Education* 8 (3): 176–202.
- Freeman, Scott, Sarah L. Eddy, Miles McDonough, Michelle K. Smith, Nnadozie Okoroafor, Hannah Jordt, and Mary P. Wenderoth. 2014. "Active Learning Increases Student Performance in Science, Engineering, and Mathematics." *Proceedings of the National Academy of Sciences* 111 (23): 8410–15. <https://doi.org/10.1073/pnas.1319030111>.
- Gacel-Ávila, Jocelyne, Magdalena Bustos-Aguirre, and Jose Celso Freire Jr. 2017. "Student Mobility in Latin America and the Caribbean: Latest Trends and Innovative Programs." In *The Globalization of Internationalization: Emerging Voices and Perspectives*, edited by Hans de Wit, Elspeth Jones, Jocelyne Gacel-Ávila, and Nico Jooste, 61–72. Routledge.
- Global Affairs Canada. 2019. "Building on Success: International Education Strategy 2019–2024." <https://www.international.gc.ca/education/assets/pdfs/ies-sei/Building-on-Success-International-Education-Strategy-2019-2024.pdf>.
- Government of Canada. 2024. "Skills for Success." <https://www.canada.ca/en/services/jobs/training/initiatives/skills-success.html>.
- Gregersen-Hermans, Jeanine, and Margaret D. Pusch. 2012. "How to Design and Assess an Intercultural Learning Experience." In *Building Cultural Competence: Innovative Activities and Models*, edited by Darla K. Deardorff and Kate Berardo, 23–41. Stylus Publishing.
- Gruzd, Anatoliy, Jenna Jacobson, Philip Mai, and Elizabeth Dubois. 2018. "The State of Social Media in Canada." *Ryerson University Social Media Lab*. <https://doi.org/10.5683/SP/AL8Z6R>.
- Hagley, Eirc. 2020. "Effects of Virtual Exchange in the EFL Classroom on Students' Cultural and Intercultural Sensitivity." *Computer-Assisted Language Learning Electronic Journal* 21 (3): 74–87.
- Hofstede, Geert. 2011. "Dimensionalizing Cultures: The Hofstede Model in Context." *Online Readings in Psychology and Culture* 2 (1). <https://doi.org/10.9707/2307-0919.1014>.
- Horne, Andrew, Jenna J. Yuen, Tyler S. Beveridge, and Sarah McLean. 2022. "Grade-Focused Interactions in Higher Education: Has the Pursuit for Good Grades Replaced Learning?" *Advances in Physiology Education* 46 (4): 752–62. <https://doi.org/10.1152/advan.00021.2022>.
- Horváth, Dóra, Katalin Ásványi, Attila Cosovan, Tamás Csordás, Julianna Faludi, Daniella Galla, Zita Komár, Éva Markos-Kujbus, and Attila E. Simay. 2022. "Online Only: Future Outlooks of Post-Pandemic Education Based on Student Experiences of the Virtual University." *Society and Economy* 44 (1): 2–21. <https://doi.org/10.1556/204.2021.00026>.
- Jenifer, R. Delecta, and G. P. Raman. 2017. "Chinese and Indian Middle Level Employees: A Study on Cross Cultural Competencies." *FOCUS: Journal of International Business* 4 (1): 53–62. <https://doi.org/10.17492/focus.v4i01.9540>.
- Keystone Education Group. 2022. "State of Student Recruitment: Latin America." <https://www.keg.com/state-of-student-recruitment-latin-america-2022>.
- Khan, Shahzeb, Varshaa Srivel, and Michael Wong. 2025. "Enhancing Engagement in a Learning Management System through a Raffle Ticket System." *Teaching & Learning Inquiry* 13: 1–18. <https://doi.org/10.20343/teachlearningqu.13.27>.
- Lai, Kun, and Suosheng Wang. 2013. "International Cooperative Learning and Its Applicability to Teaching Tourism Geography: A Comparative Study of Chinese and American Undergraduates." *Journal of Teaching in Travel & Tourism* 13 (1): 75–99. <https://doi.org/10.1080/15313220.2013.756714>.

- McKinnell, Jennifer, Andrea McLellan, Stash Nastos, Debbie Nifakis, Sean Park, Stacey Ritz, Margaret Secord, Henry Szechtman, Kristina Trim, Sheila Barrett, Julie Butler, Elizabeth Cates et al. 2005. "Skill Development with Students and Explicit Integration across Four Years of the Curriculum." In *The Alan Blizzard Award—The Award Winning Papers*. McGraw-Hill Ryerson.
- Naffziger, Douglas W., Jennifer P. Bott, and Carolyn B. Mueller. 2008. "Factors Influencing Study Abroad Decisions among College of Business Students." *International Business: Research, Teaching and Practice* 2 (1): 39–52.
- NAFSA. n.d. "Trends in U.S. Study Abroad." Accessed June 30, 2024. <https://www.nafsa.org/policy-and-advocacy/policy-resources/trends-us-study-abroad>.
- Nagel, Tyler W. S., Chaseten Remillard, Robert Aucoin, and Akari Takenishi. 2018. "Findings on Student Use of Social Media at the Collegiate, Undergraduate, and Graduate Levels: Implications for Post-Secondary Educators." *Journal of University Teaching and Learning Practice* 15 (1). <https://doi.org/10.53761/1.15.1.8>.
- Naicker, Ashika, Evonne Singh, and Tonnie van Genugten. 2022. "Collaborative Online International Learning (COIL): Preparedness and Experiences of South African Students." *Innovations in Education and Teaching International* 59 (5): 499–510. <https://doi.org/10.1080/14703297.2021.1895867>.
- Niitsu, Kosuke, Akiko Kondo, Renaguli Abuliezi, and Natalia A. Dyba. 2023. "The Impact of Collaborative Online International Learning on Intercultural Sensitivity among Nursing Students in the United States and Japan." *Nursing Education Perspectives* 44 (4): 250–51. <https://doi.org/10.1097/01.NEP.0000000000001077>.
- Noah, Joanna Bunga, and Azlina Abdul Aziz. 2020. "A Systematic Review on Soft Skills Development among University Graduates." *EDUCATUM Journal of Social Sciences* 6 (1): 53–68. <https://doi.org/10.37134/ejoss.vol6.1.6.2020>.
- O'Dowd, Robert. 2021. "What Do Students Learn in Virtual Exchange? A Qualitative Content Analysis of Learning Outcomes across Multiple Exchanges." *International Journal of Educational Research* 109: 101804. <https://doi.org/10.1016/j.ijer.2021.101804>.
- Palameta, Boris, Cam Nguyen, Wendy Lee, Hua Que, and David Gyarmati. 2021. "Research Report to Support the Launch of Skills for Success: Structure, Evidence, and Recommendations: Final Report." *Social Research and Demonstration Corporation*. <https://www.srdc.org/wp-content/uploads/2022/07/sfs-srdc-final-report-en.pdf>.
- Pazil, Afifah Hanim Md, and Razli Che Razak. 2019. "Perspectives of Asian Employers on Graduates' Soft Skills: A Systematic Review." *Universal Journal of Educational Research* 7 (11): 2397–405. <https://doi.org/10.13189/ujer.2019.071117>.
- Poushter, Jacob. 2024. "WhatsApp and Facebook Dominate the Social Media Landscape in Middle-Income Nations." *Pew Research Center*. <https://www.pewresearch.org/short-reads/2024/03/22/whatsapp-and-facebook-dominate-the-social-media-landscape-in-middle-income-nations/>.
- Qiang, Zha. 2003. "Internationalization of Higher Education: Towards a Conceptual Framework." *Policy Futures in Education* 1 (2): 248–70. <https://doi.org/10.2304/pfie.2003.1.2.5>.
- Rubin, Jon. 2017. "Embedding Collaborative Online International Learning (COIL) at Higher Education Institutions: An Evolutionary Overview with Exemplars." *Internationalisation of Higher Education* 2: 27–44.
- Rubin, Jon. 2019. "Collaborative Online International Learning (COIL): Now Preparing Students for International Virtual Work." In *Internationalization and Employability in Higher Education*, edited by Robert Coelen and Cate Gribble, 189–199. Routledge.

- Salinas, Moises F., and Johanna Garr. 2009. "Effect of Learner-Centered Education on the Academic Outcomes of Minority Groups." *Journal of Instructional Psychology* 36 (3): 226–37.
- Sison, Marianne D., and Linda Brennan. 2012. "Students as Global Citizens: Strategies for Mobilizing Studies Abroad." *Journal of Marketing for Higher Education* 22 (2): 167–81. <https://doi.org/10.1080/08841241.2012.736884>.
- Sobaih, Abu Elnasr E., Amany E. Salem, Ahmed M. Hasanein, and Ahmed E. Abu Elnasr. 2021. "Responses to COVID-19 in Higher Education: Students' Learning Experience Using Microsoft Teams versus Social Network Sites." *Sustainability* 13 (18): 10036. <https://doi.org/10.3390/su131810036>.
- Stains, M., J. Harshman, M. K. Barker, S. V. Chasteen, R. Cole, S. E. DeChenne-Peters, M. K. Eagan, J. M. Esson, J. K. Knight, F. A. Laski, M. Levis-Fitzgerald, C. J. Lee, et al. 2018. "Anatomy of STEM Teaching in North American Universities." *Science* 359 (6383): 1468–70. <https://doi.org/10.1126/science.aap8892>.
- Tamas, Anca. 2014. "Advantages of Study Abroad from the Students' Perspective." *International Journal of Teaching and Education* 2 (4): 67–88.
- Theobald, Elli J., Mariah J. Hill, Elisa Tran, Sweta Agrawal, E. Nicole Arroyo, Shawn Behling, Nyasha Chambwe, Diane Laboy Cintrón, Jacob D. Cooper, Gideon Dunster, Jared A. Grummer, Kelly Hennessey, et al. 2020. "Active Learning Narrows Achievement Gaps for Underrepresented Students in Undergraduate Science, Technology, Engineering, and Math." *Proceedings of the National Academy of Sciences* 117 (12): 6476–83. <https://doi.org/10.1073/pnas.1916903117>.
- Trilokekar, Roopa Desai, and Sarah Rasmi. 2011. "Student Perceptions of International Education and Study Abroad: A Pilot Study at York University, Canada." *Intercultural Education* 22 (6): 495–511. <https://doi.org/10.1080/14675986.2011.644951>.
- Van Etten, Shawn, Michael Pressley, Dennis M. McInerney, and Arief Darmanegara Liem. 2008. "College Seniors' Theory of Their Academic Motivation." *Journal of Educational Psychology* 100 (4): 812–28. <https://doi.org/10.1037/0022-0663.100.4.812>.
- Wain, Amanda. 2017. "Learning through Reflection." *British Journal of Midwifery* 25 (10): 662–66. <https://doi.org/10.12968/bjom.2017.25.10.662>.
- Walsh, Catherine. 2007. "Shifting the Geopolitics of Critical Knowledge: Decolonial Thought and Cultural Studies 'Others' in the Andes." *Cultural Studies* 21 (2–3): 224–39.
- Weaver, Gregory C., Paige L. McDonald, Gordon S. Louie, and Taylor C. Woodman. 2024. "Future Potentials for International Virtual Exchange in Higher Education Post COVID-19: A Scoping Review." *Education Sciences* 14 (February): 232. <https://doi.org/10.3390/educsci14030232>.
- West, Hailey, Keiko Goto, Sebastian Alonso Navas Borja, Sara Trechter, and Seth Klobodu. 2024. "Evaluation of a Collaborative Online International Learning (COIL): A Food Product Analysis and Development Project." *Food, Culture & Society* 27 (1): 152–73. <https://doi.org/10.1080/15528014.2022.2069441>.
- Wong, Michael. 2024. "Inclusion May Not Lead to Belonging: The Case for Student-Centered Classrooms." *College Teaching*: 1–3. <https://doi.org/10.1080/87567555.2024.2307884>.
- Wong, Michael, Shahad Al-saqqar, Jennifer Nash, Ali Al-Humuzi, Mark Dottori, and Margaret Secord. 2024. "The Impact of Virtual or Blended Learning on Sense of Belonging in First-Year Undergraduate Health Sciences Students Enrolled in an Inquiry-Based Course." *Collected Essays on Learning and Teaching* 15 (1). <https://doi.org/10.22329/celt.v15i1.8105>.

- Yakubov, Rose, and Michael Wong. 2025. "A Partnership between an Undergraduate Student and a University Faculty Member: Experiences and Takeaways of a Student Course Coordinator." *International Journal for Students as Partners* 9 (1): 314–20.
<https://doi.org/10.15173/ij sap.v9i1.5730>.
- Zainuddin, Siti Zaidah Binti, Stefanie Pillai, Francisco Perlag Dumanig, and Adriana Phillip. 2019. "English Language and Graduate Employability." *Education + Training* 61 (1): 79–93.
<https://doi.org/10.1108/ET-06-2017-0089>.
- Zuchowski, Ines, Narayan Gopalkrishnan, Julie King, and Abraham Francis. 2017. "Reciprocity in International Student Exchange: Challenges Posed by Neo-Colonialism and the Dominance of the Western Voice." *Aotearoa New Zealand Social Work* 29 (1): 77–87.



Copyright for the content of articles published in *Teaching & Learning Inquiry* resides with the authors, and copyright for the publication layout resides with the journal. These copyright holders have agreed that this article should be available on open access under a Creative Commons Attribution License 4.0 International (<https://creativecommons.org/licenses/by-nc/4.0/>). The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited, and to cite *Teaching & Learning Inquiry* as the original place of publication. Readers are free to share these materials—as long as appropriate credit is given, a link to the license is provided, and any changes are indicated.