Engineering Educators Bringing the World Together
2025 ASEE Annual Conference & Exposition
Palais des congrès de Montréal, Montréal, QC • June 22–25, 2025 ASEE
Paper ID #47027

Impact of International Short-Term Faculty-Led Programs on Pedagogical Techniques in Engineering

Joshua E. Katz, University of Illinois at Urbana - Champaign

Joshua E. Katz is a Ph.D. student in the Department of Curriculum and Instruction, DELTA program, at UIUC, where his research centers on collaborative learning in engineering education and other STEM disciplines. He obtained his B.S. in Technology and Engineering Education in 2019 and his M.S. in STEM Education and Leadership in 2021 from Illinois State University. Additionally, he holds a professional educator license for secondary education in Technology and Engineering Education in Illinois.

Hannah Dougherty, University of Illinois at Urbana - Champaign

Hannah Dougherty is an Academic Advisor and Coordinator of International Programs for International Programs in Engineering in the Grainger College of Engineering at the University of Illinois Urbana-Champaign (UIUC). She coordinates programming for virtual global experiences, faculty-led programs, student organizations and other non-traditional study abroad opportunities while also advising students. She also leads faculty-led programs over breaks and oversees the Global Engineering Ambassador (GEA) program. She holds a BS and a MS from the University of Illinois at Urbana-Champaign. In 2019, Hannah completed a Fulbright U.S. Graduate Award at the University of Waikato in New Zealand.

Ernest-John Ignacio, University of Illinois Urbana-Champaign

Ernest-John Ignacio is a Teaching Assistant Professor in Civil and Environmental Engineering at the University of Illinois Urbana-Champaign. He earned a B.Eng. (2004) and M.Eng. (2005) in Civil Engineering from the Cooper Union for the Advancement of Science and Art in New York, NY; and Ph.D. (2024) in Civil Engineering at the University of Illinois at Urbana-Champaign. Before pursuing a Ph.D., he worked in the construction industry in New York City for eleven years. He joined the Department of Civil and Environmental Engineering at the University of Illinois in 2018, and currently serves as the Interim Associate Director for Corporate Relations and Industry Partnerships.

Dr. Molly H Goldstein, University of Illinois Urbana-Champaign

Dr. Molly H. Goldstein is a Teaching Assistant Professor and Product Design Lab Director in Industrial and Enterprise Systems Engineering at the Grainger College at the University of Illinois. She is also courtesy faculty in Mechanical Science and Engineering, Curriculum & Instruction (College of Education) and Industrial Design (School of Fine and Applied Arts). Dr. Goldstein's research focuses on student designers through the study of their design actions and thinking.

Dr. Brian Woodard, University of Illinois at Urbana - Champaign

Dr. Woodard received his Ph.D. in Aerospace Engineering from the University of Illinois at Urbana-Champaign in 2011. His Aerospace research interests currently focus on the effects of icing on the aerodynamics of swept-wing aircraft. In engineering education, he has an interest in the role of spatial visualization in preparing students to be engineers. Additionally, he has been working to expand faculty-led study abroad opportunities for students by supporting faculty and studying student learning outcomes associated with all types of global classrooms.

Impact of international short-term faculty-led programs on pedagogical techniques in engineering

Abstract

The demand for short-term faculty-led programs and virtual global learning to develop students' global learning experiences has grown. Since 2020, these programs have gained significant traction, yet few studies report on instructor outcomes from leading these types of programs. Both instructor recruitment and changes in their perspectives from participating in these experiences need to be evaluated. At this university, three approaches are taken to provide students with the opportunity to engage in global learning (outside of traditional exchange programs). The first approach is through short-term faculty-led programming (7 – 14-day travel program). The second approach is virtual only learning known as global classrooms (referred to as COIL in this paper) at this university is an expansion of Collaborative Online International Learning (COIL) pedagogy that allows for a deepened global engagement for students without the need for international travel. The third approach is COIL+ programs, courses that are full or part of term with a virtual component combined with an optional (or occasionally required) post-course short-term faculty-led program. The objective of this study is to qualitatively analyze and evaluate the impact of recruitment and program experiences on the instructors who run these types of programs. Through the use of a post-travel nineteen-question instructor survey, we gain insight into instructor experiences and how engaging in short-term faculty-led programming (both with and without a global classroom component) has impacted their pedagogical practices. The instructors answered several Likert-Scale and open-ended questions. These include questions about teaching strategies, technology, global classrooms, and student learning perceptions. The survey questions were analyzed using an inductive approach to coding the data to uncover common themes. The results indicate that instructors who participate in these programs gain valuable insight into integrating cultural and technological elements into their teaching practices beyond short-term faculty-led courses.

Keywords: Short-term faculty-led programs, Collaborative Online International Learning (COIL), global classroom, global learning experiences

Introduction

Background

Short-term faculty-led study abroad programs not only offer beneficial opportunities for students, but for the instructors who facilitate them. These programs vary in duration and destinations, allowing them to be adapted to specific courses or offer unique opportunities [1]. Recent studies have shown that understanding instructors' motivation and goals is vital for advancing study-abroad programs [2]. Similarly, according to [3], faculty must be globally competent to engage effectively in the classroom. Various methods and frameworks have been studied in these circumstances [4], [5]. Research suggests that instructors that lead study abroad programs acquire new cultural learning, travel skills, pedagogical growth, and professional development [2]. International education programs are vital in engineering education [6]. These experiences often correlate with facilitating international short-term study abroad programs [7]. Recent assessments of instructors within engineering programs highlight those experiences abroad often present significant obstacles, including logistical, cultural, and curriculum alignment issues. According to [8] paper, some leaders do not have personal investments or experiences with study abroad programs. These leaders also have limitations from in-house or international partners, resulting in mixed outcomes for leaders and students [9]. Equipping instructors with the necessary skills and pedagogical knowledge are vital in fostering cultural awareness among students and leaders. While numerous studies have examined the impact of international programs on students, limited research has focused on the impacts on instructors, specifically in terms of skill development, technological integration, pedagogical growth, and leadership progression during these global learning experiences.

Existing framework

In the early 2000s, the Collaborative Online International Learning (COIL) framework was developed by SUNY COIL to offer intercultural engagement among students [10]. This pedagogical method facilitates rich global engagement for students, faculty, and staff without international travel [11]. This program connects students and leaders with people worldwide to collaborate on projects and discussions [12]. Prior studies on COIL indicated primarily positive impacts on students where instructors both taught and learned themselves within global classrooms [13], [14], [15]. These students connected deeper to cultures, enhancing collaboration and communication skills [16].

The COVID-19 pandemic sparked a resurgence of popularity of the COIL pedagogical method. Several pedagogical structures exist within the COIL virtual frameworks, such as online synchronous, online asynchronous, and hybrid in-person and online [12]. From this variety of formats, each collaborator can gain expertise in intercultural relations, educational development, and educational technologies [12]. Through the COIL frameworks, instructors can collaborate with colleagues from various cultural backgrounds, connecting them with cross-cultural skills and global perspectives. The instructors who facilitate the COIL program undergo various training backgrounds to prepare pedagogical methodologies [12]. Many of these methods may vary due to the institution and classrooms. As [11] states, academic calendars, time zone

differences, and technology integration can be foreseeable obstacles while running these programs, suggesting that administrative resources are necessary for instructor success.

Programs have many approaches to preparing instructors for these leadership opportunities. Depending on each program, the skills that may be developed in these leadership roles can relate to curriculum development, collaboration, participation, career development, and adaptation [17]. Initial training, with a group of short-term program instructors, can be in the form of group meetings that are in-person or virtual. During these training sessions, logistical and team-building exercises are facilitated between members. If the program contains a travel component, there are usually pre-departure and re-entry meetings for the instructors [18]. Program leaders share travel safety, team building, and logistical information at these meetings.

COIL offers significant opportunities for virtual engagement in helping to address challenges related to limited student mobility. This university has enhanced the traditional COIL model by introducing full-semester COIL courses that include an optional short-term study abroad experience following course completion, referred to as COIL+. Within this paper, No-COIL is used to refer to traditional faculty-led study abroad programs. Using traditional faculty-led and collaborative online international learning (COIL) frameworks, there is a lack of research comparing instructor development in these programs. Minimal studies discuss the impact of No-COIL and COIL instructor experiences and outcomes. Similar to our prior study comparing No-COIL, COIL, and COIL+ students' experiences and outcomes [19], this study's analysis focuses on a comparison between instructor outcomes between the No-COIL, COIL, and COIL+ programs by a post-experience survey. We were motivated to ask the following research questions:

1. How do different international program structures (No-COIL, COIL, and COIL+) influence instructors or program leaders in terms of skill development, technological and pedagogical growth, collaboration, and overall experience?
2. What are the major differences in leadership experiences amongst instructors or program leaders participating in No-COIL, COIL, and COIL+ programs?

Methods

Design

This study uses qualitative methods to assess the experiences and perceptions of the instructors that facilitate the No-COIL, COIL, and COIL+ programs. We conducted post-surveys with nineteen questions to be individually filled out by the instructors to understand their experience in the program and their impact on their pedagogical methods. The surveys contained Likert-Scale and open-ended questions. The research team administered the surveys after the program returned from travel or at the conclusion of the course if there was no travel. Each survey was completed by the instructor via the survey platform without a time restriction. The surveys were analyzed using an inductive approach to coding to discover themes.

Context

The project studied instructors in several engineering courses, a part of their global learning experiences at a large Midwestern University in the United States in the spring and fall of 2024. Courses are designed to have either a No-COIL, COIL, or COIL+ component. No-COIL classes are structured only to have an international short-term faculty-led program, with most interactions occurring during the travel program. A COIL course also known as a global classroom at this university involves an entirely virtual classroom that collaborates with international partners such as non-governmental organizations, local communities, private companies, start-ups (in the courses studied, these are start-up companies). COIL+ courses collaborate with international partners within the course, which is then followed by a short-term faculty-led program.

Participants

In total, 20 program leaders or instructors participated in these related experiences. Nine of the 20 program leaders identified as male, and eleven identified as female. Figure 1 indicates the number of instructors in each type of program based on gender. Similar to students, female instructors are more involved in global learning experiences than their male counterparts [20].

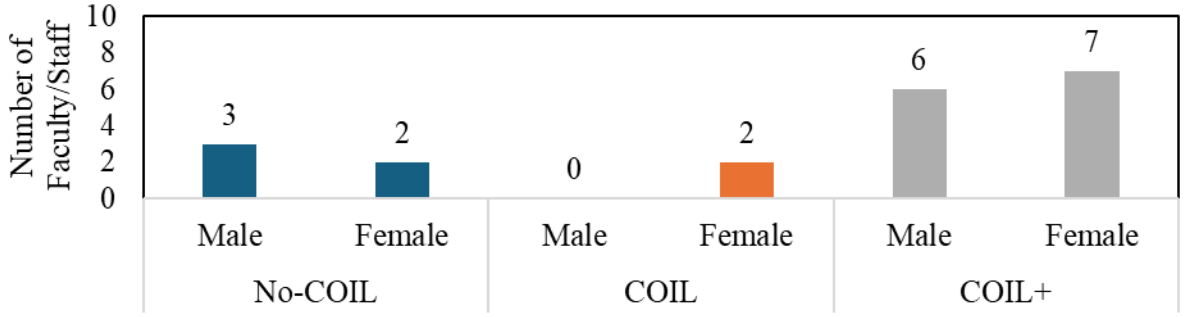

Figure 1. Gender Breakdown Between Program Type

The participants represent a variety of departments, both within and outside of engineering: General College of Engineering (60%), Aerospace Engineering (15%), Civil and Environmental Engineering (5%), Agricultural and Biological Engineering (5%), Electrical Engineering (5%), Center for Latin American and Caribbean Studies (5%), and Student Affairs (5%). The participants were in various types of academic professions. Each participant has distinct roles and responsibilities within the university. All participants hold a bachelor's degree or higher. Five (25%) participants were also enrolled as students pursuing advanced degrees.

Each instructor in these programs participated in various trainings to be an instructor and program leader (for the mobility programs). Instructors met with administrative staff to cover logistics, safety protocols, and best practices. Some programs also have their international partners run meetings to familiarize themselves with staff members from those organizations. These training sessions provide details for pre-immersion preparations, immersion experiences in that country, and re-entry evaluations. Both in-house and international partners have trainings for instructors to gain knowledge and skills to lead students. The international partner training typically includes a meet-and-greet component as part of the meeting. If the leaders are

facilitating a No-COIL, COIL, or COIL+ program, each leader must participate in these meetings. Mobility program leaders (No-COIL and COIL+) in Engineering all meet to discuss and share knowledge prior to departing for their travel programs.

Demographic Information

Figure 2a indicates the number of instructors in each program type. Twenty instructors participated in total—five in the No-COIL group, two in the COIL group, and 13 in the COIL+ group. The No-COIL courses traveled to Jamaica, South Africa, and Vietnam. The COIL course collaborated with students from Guatemala. The COIL+ groups worked with people from and traveled to Bolivia, Brazil, Italy, Jamaica, Puerto Rico, and Trinidad and Tobago. There were primary and secondary leaders or instructors for each program. From the surveys, there were eleven primary leaders and nine secondary leaders. Figure 2b indicates the breakdown of primary and secondary leaders for each type of program. For each program, there were instructors with diverse leadership experience, from individuals running their first program to those who have led more than five programs. Figure 2c illustrates the number of instructors in each program type who have led one program, two to four programs, or five or more programs.

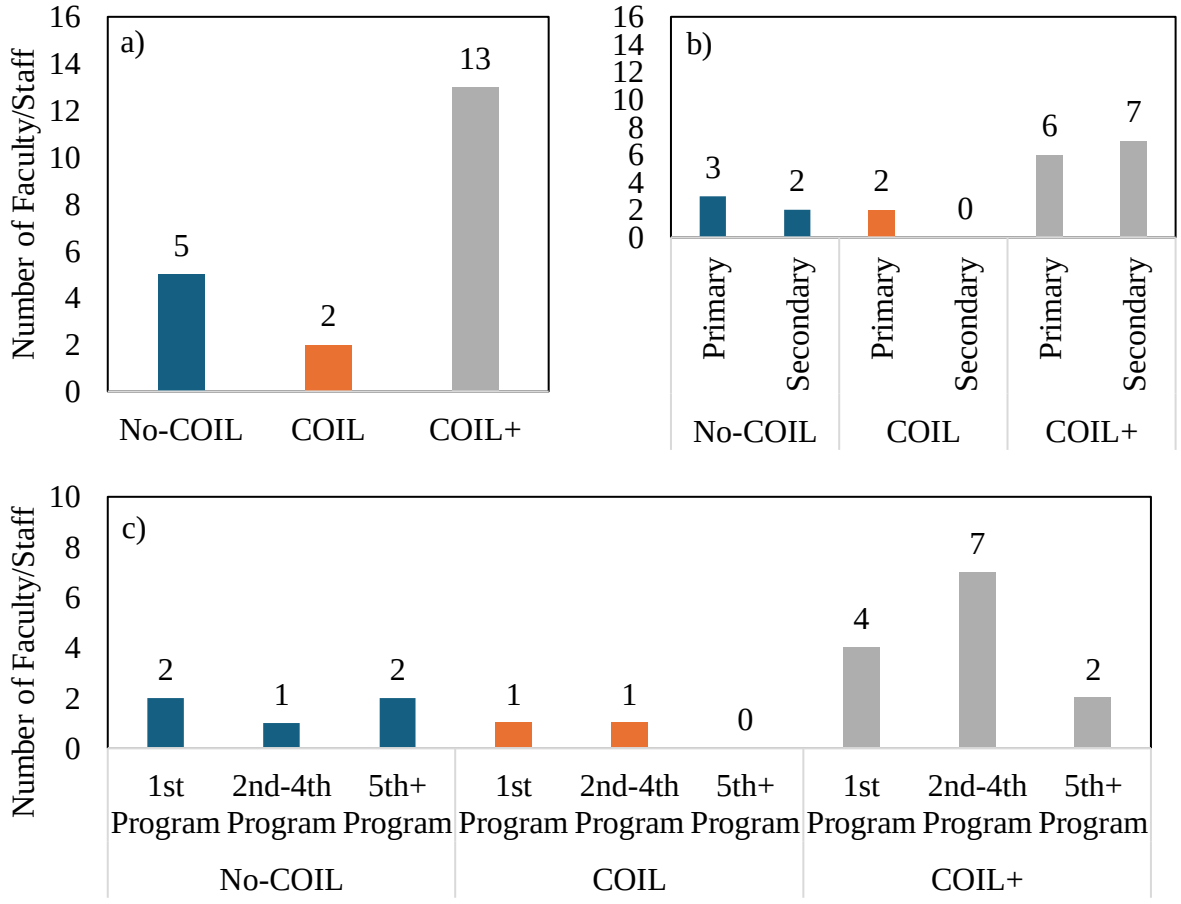

Figure 2. Instructor Information: 2a. Breakdown of Instructors Between Program Type, 2b. Primary and Secondary Leadership Breakdown, 2c. Quantity Prior Programs Led

Data Collection

The program participants received an email link to participate in the post-travel or course survey. The survey was structured to ask for a series of Likert-Scale and open-ended responses throughout the nineteen-question survey. While it did not collect demographic information, it did gather institutional details such as participants' names, departments, and other school-related affiliations. There was no time limit to completing the surveys, but they were to be completed by a given date. Some contributors took several weeks to complete the survey due to their schedules. The survey questions were modeled after those deployed by DePaul University and presented at IVEC in their presentation "Faculty Data on the Impact of Design and Implementation of Virtual Exchanges" [21]. Questions were slightly adapted to fit the terminology used by our university (Appendix A). The survey was designed to be open-ended to provide flexibility for instructors to answer questions based on their experiences. Instructors were free to respond however they chose, and not all provided input on each question. A researcher conducted weekly checks to ensure that submissions were completed.

Analysis Procedures

A researcher downloaded the results and organized each question into columns in a separate Microsoft Excel sheet. The researcher calculated descriptive statistics within the sheet for each Likert-scale question. Similarly, the researcher read through each long answer response and conducted a thematic analysis after the data collection phase. Coding was designed based on thematic groups from a prior presentation from which the survey questions were developed [21]. After reviewing the participants' responses, each response was coded using a binary method (0, 1), where if a theme was identified as present, it received a 1. Additional notes were listed in a separate column to identify group distinctions. Each response could have indicated several themes. The researcher compiled the responses associated with each theme to analyze and compare each answer. Notably, some questions were left blank by participants. The totals of each code were calculated and compared with the results. The responses were coded twice, at two different points, by a single researcher to determine the consistency of the codes.

Results

For each survey response, a researcher coded the open-ended and Likert-scale questions. The nineteen questions were then organized into the themes of new knowledge or skill development, technological improvements, pedagogical growth, collaborative environment with partners, obstacles and supports, teaching global learning experiences reflections, and overall reflections and impressions of their global classroom experiences. Each question's response was coded to an inductive thematic analysis or averages of each program type's Likert scales. The themes were totaled to compare the across the program types. This study led to interesting findings for each theme, where there were slight differences among all the instructors between program types.

New Knowledge and General Skill Development

Instructors were asked:

1. This experience introduced me to new knowledge and skills related to globalization and teaching in a global classroom (Likert)

2. What knowledge or skills did you develop? (Open-ended)

The findings in the figures below show the comparison between each course type. Figure 3a indicates the average skill and knowledge growth. The results suggest that instructors engaged in COIL+ programing reported marginally greater skill and knowledge development compared to the other two types of programs. The No-COIL and COIL program groups averaged the same; they are still learning a great deal from the respective programs.

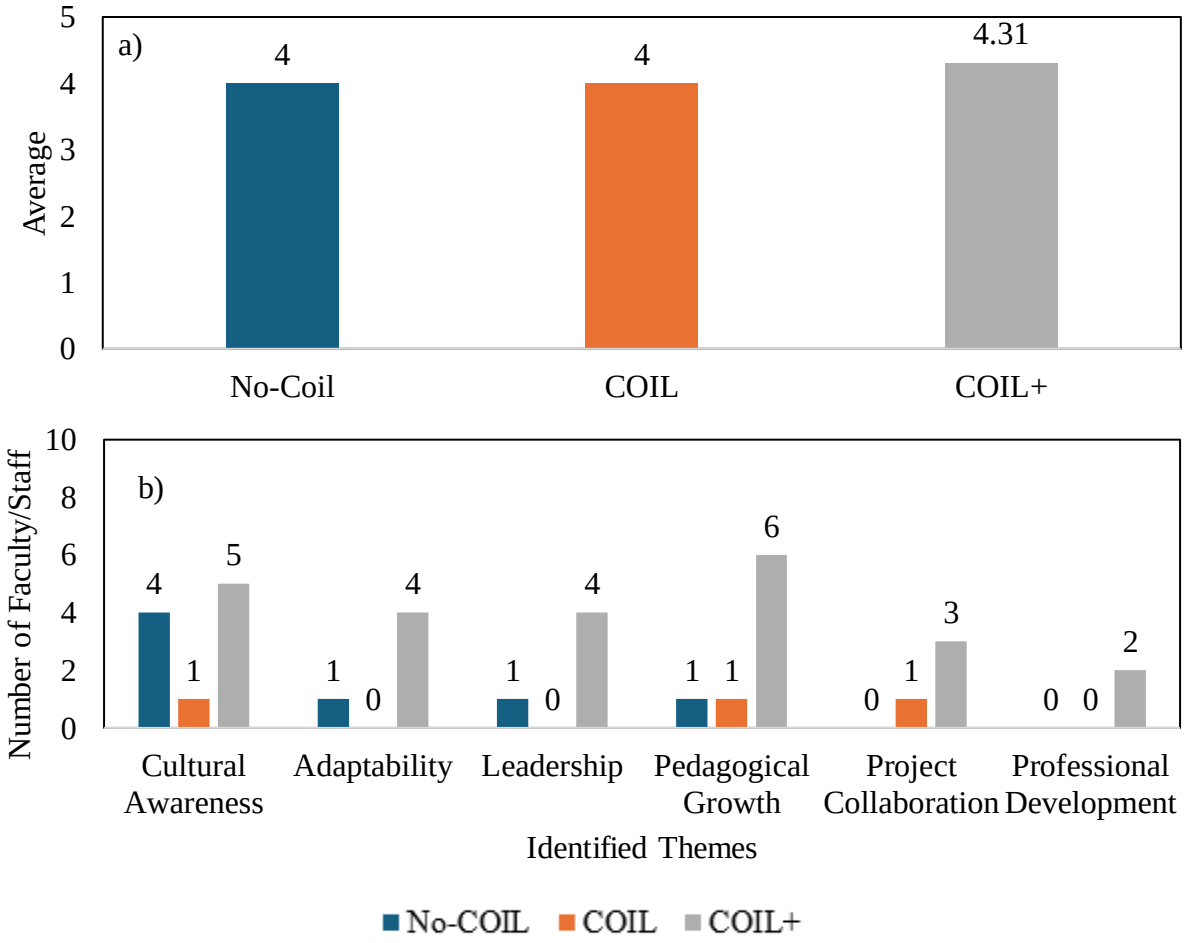

Figure 3. Knowledge and Skill Development: 3a. Average Ratings: Gaining Knowledge and Skills for Globalized Teaching, 3b. Themes of New Skills and Knowledge Figure

In question 2, the answers add context for skills and knowledge advancements. Figure 3b shows the inductive themes from each instructor's responses. Many wrote about cultural awareness, adaptability, leadership, pedagogical growth, project collaboration, and professional development. In this figure, instructors from all three program types indicated growth in their cultural awareness. They noted making cross-cultural communications and having made connections with people and organizations abroad. For adaptability and leadership development skills, instructors from the No-COIL and COIL+ groups indicated increased progression. These leaders talked about dealing with different situations and modifying how to oversee them within these programs. With the pedagogical growth theme, there were instructors of all three program

types present. An example was described as wanting to use group dynamics while teaching future courses and students. COIL and COIL+ instructors discussed project collaboration. Many instructors want to be more explicit in their expectations of international partners. The No-COIL group had no representation within this theme. Finally, several instructors of the COIL+ group wrote about professional development. Overall, COIL+ personnel indicated skill and knowledge development in each theme.

Technological Improvements

Instructors were asked:

1. This experience improved my ability to integrate technology into my teaching. (Likert)
2. I felt prepared for the technological demands of the experience. (Likert)
3. The technology chosen felt appropriate for the needs of the experience. (Likert)

Figures 4a, 4b, and 4c below present the Likert-scale questions based on technological needs and improvements from the various global learning experiences and programs. Figure 4a shows the average of each type of programs instructor's progress in integrating technology into their teaching. The COIL group agreed that these experiences improved their ability. Meanwhile, for both the No-COIL and COIL+ groups, averages were in the middle of the scale. In Figure 4b, the instructors responded to the question about feeling prepared for the technological demands of the experience. The COIL+ group reported feeling more prepared than the other two groups. The No-COIL group rated slightly above the median, while the COIL group was right at the scale's midpoint. Figure 4c represents the average scores for how appropriate technology was for global learning experiences. Instructors from the COIL and COIL+ programs found the technology well-suited to their needs. Leaders from the No-COIL programs rated the technology slightly above the median, suggesting it was reasonably suitable.

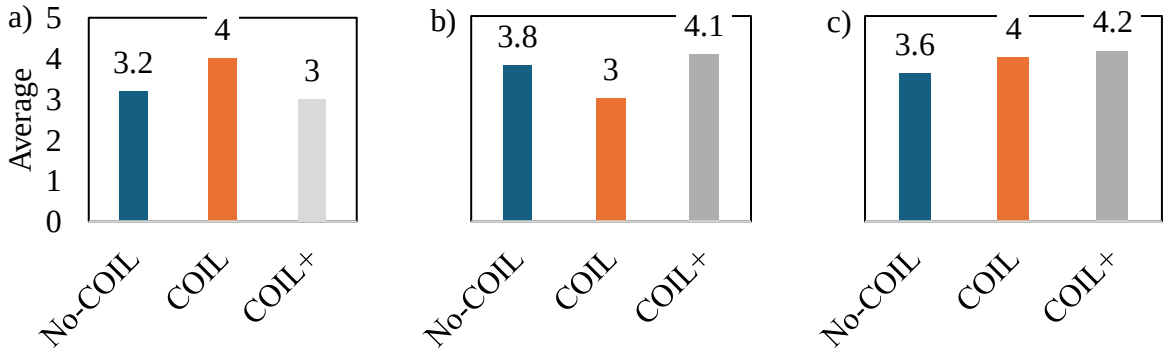

Figure 4 Technology: 4a. Average Ratings: Improved Ability to Integrate Technology into Teaching, 4b. Average Ratings: Preparedness for Technological Demands, 4c. Average Ratings: Appropriateness of Chosen Technology

Pedagogical Growth

Instructors were asked:

1. This experience will improve my teaching as a whole. (Likert)
2. This experience provided skills and knowledge that I will use in other courses I teach. (Likert)

Figure 5a illustrates the average responses regarding the extent to which each global learning experience will improve their teaching. Instructors involved in each program type conveyed that these experiences would positively impact their pedagogical skills. The No-COIL and COIL groups reported a higher average score compared to the COIL+ counterpart. Figure 5b shows the average responses regarding instructor intent to apply the skills and knowledge gained from the program to other courses they teach. Overall, survey participants across all program types indicated they would incorporate pedagogical expertise and experiences from these courses in their future teaching endeavors. Consistent with the previous question, the No-COIL and COIL groups reported a higher average score than the COIL group.

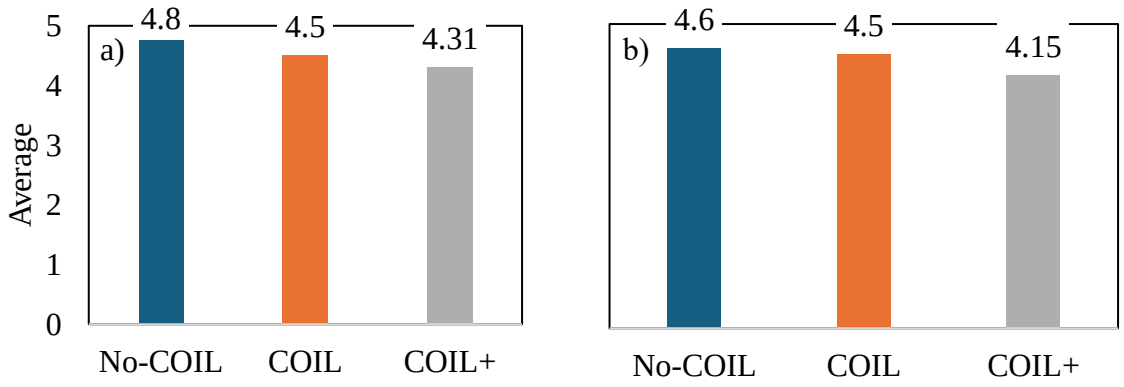

Figure 5. Pedagogical Impacts: 5a. Experience Will Improve My Teaching Average, 5b. Average of Faculty Using Pedagogical Skill in Other Courses

Collaboration with local and international partners

Figure 6a illustrates responses regarding their willingness to maintain partnerships with international collaborators from the global learning experiences. All No-COIL instructors indicated a strong desire to collaborate with these partners again. Similarly, COIL+ instructors expressed eagerness to sustain these connections. In contrast, COIL instructors showed a more neutral stance, aligning their average response with the median. Figure 6b depicts responses regarding instructor preparedness for the cultural aspects of collaboration with faculty, students, and partner organizations. Among the three groups, the No-COIL group felt the most prepared. The COIL+ group also reported feeling comfortable, though to a lesser level. In contrast, COIL instructors expressed lower comfort levels, with their average score falling below the median.

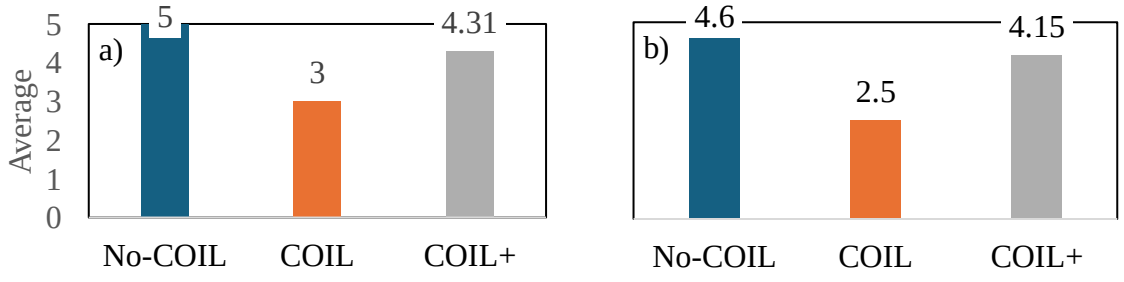

Figure 6. Partner Collaborations: 6a. Average Ratings: Connections with International Partners, 6b. Average Ratings: Preparedness for Cultural Aspects of Collaboration

Obstacles and Support

Instructors were asked:

1. What cultural aspect/obstacles did you encounter? Why do you think you encounter these obstacles? Could these obstacles have been prevented. (Open-ended)
2. Was there anything you wish you had to better support or obstacles you needed to overcome? (Open-ended)

Figure 7a depicts themes of obstacles that instructors of each program discussed in their open-ended responses. The themes of cultural understanding, communication, student challenges, logistical obstacles, personal reflections, and preventable obstacles were present. Cultural understanding appeared as a prominent obstacle across all programs. COIL+ and No-COIL instructors reported cultural challenges, with COIL+ instructors highlighting time and work expectations influenced by the visiting country's culture and No-COIL instructors mentioning laws, cultural clothing, and expectations. A COIL instructor also reported encountering similar obstacles. Communication was a significant challenge for all program leaders. No-COIL instructors discussed language barriers, while COIL and COIL+ groups highlighted the importance of mediators in facilitating initial conversations. As each individual program is student-centered, the instructors discussed student challenges. COIL+ instructors mentioned issues such as trust-building and souvenir-buying, while No-COIL instructors cited insufficient packing preparation. The COIL instructors conveyed concerns about students' lack of full engagement in the program and international connections. Logistical issues were most prominent for the COIL+ group, which faced scheduling, punctuality, and partner availability challenges. Personal reflections varied across groups, with COIL+ instructors reflecting most frequently. They wanted to better prepare by learning cultural norms and languages for future programs. Instructors also discussed understanding the "norms" of international partners and their cultures. Preventable obstacles were a theme unique to the COIL+ group. Instructors suggested addressing food-related issues and ensuring concise communication with global partners. In contrast, No-COIL and COIL instructors did not mention preventable measures.

Figure 7b illustrates themes of instructor support for overcoming obstacles, including program support, communication, recommended improvements, and overcoming barriers. For the topic of program support, many No-COIL and COIL+ instructors felt well supported by the international programs office and their global partners. COIL instructors did not describe the same level of fulfillment. Both No-COIL and COIL+ instructors reported that better communication could help manage obstacles. They emphasized the significance of clearer daily itineraries and expectations to improve communication with international partners. They would also benefit from communication before the travel component. Instructors also recommended improvements where COIL instructors stressed the need for a better curriculum structure and suggested adding bilingual student facilitators to provide guidance and support for those virtual global experiences. No-COIL and COIL+ instructors suggested enhancing communication between instructors and international partners to address challenges more effectively. Finally, the theme of overcoming barriers revealed that instructors successfully managed situational obstacles such as flight ticketing issues and cancellations.

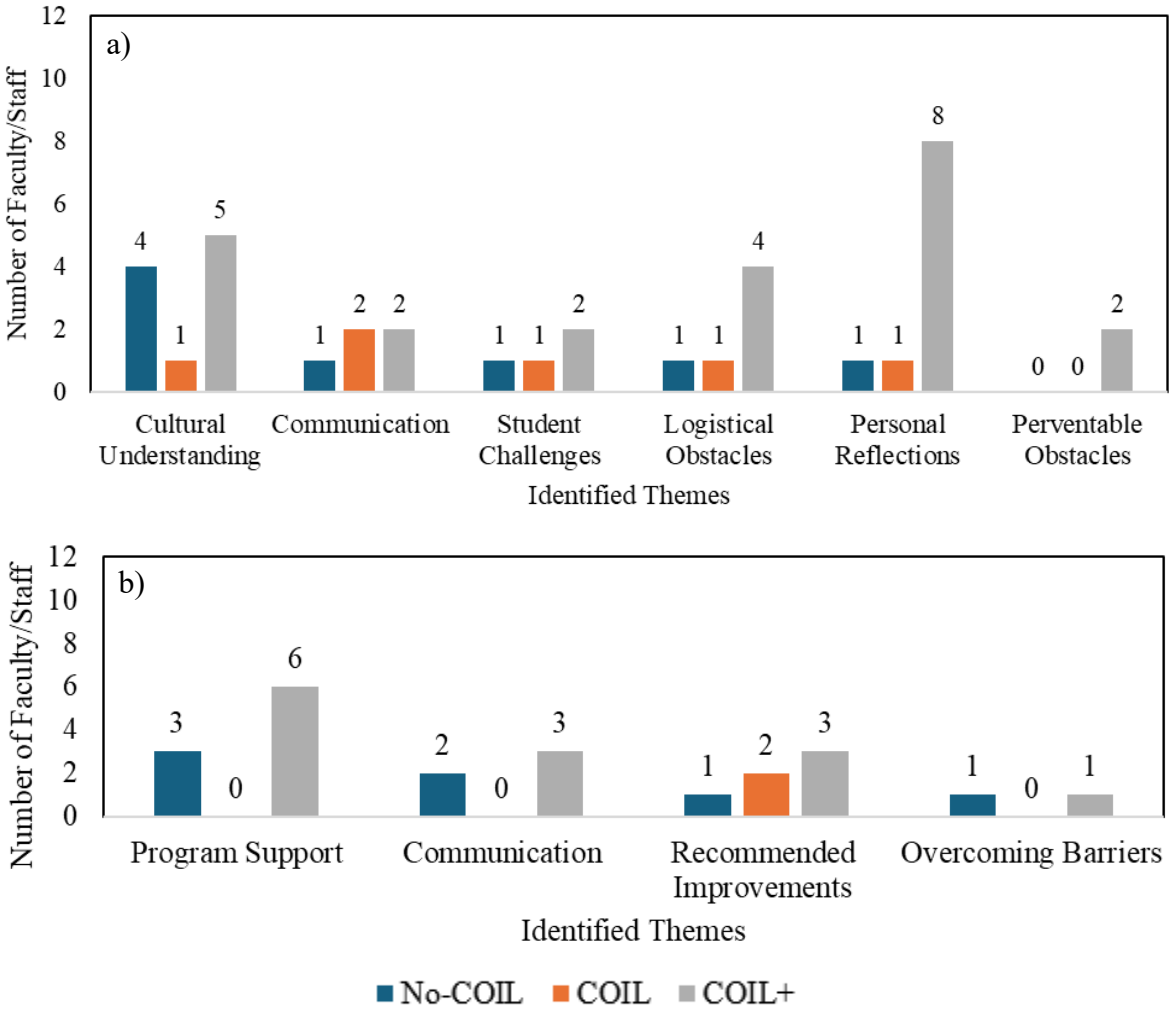

Figure 7. Obstacles and Support: 7a. Obstacles Encountered, 7b. Desired Support for Overcoming Obstacles

Global Learning Exchange (GLE)/Virtual Global Exchange (VGE)
Instructors were asked:

1. The amount of time I invested in the Global Learning Experience (GLE), also known as COIL or a Virtual Global Experience (VGE) component of this course was worthwhile. (Likert)
2. I would recommend teaching a course with a GLE component to other faculty. (Likert)
3. I would like to teach a course with a GLE component again. (Likert)
4. This experience increased my interest in further opportunities for international cultural exchanges such as leading a study abroad program (if not already), research abroad such as an REU or IRIS/REIF grant, facilitating other virtual or short-term opportunities, or otherwise.' (Likert)

Figure 8a illustrates instructor perceptions of the time invested in their GLE or VGE programs or global classroom. Survey participants from the COIL+ programs felt their time investment was significantly worthwhile compared to the No-COIL and COIL instructors, which had averages

marginally above the median. Responses varied across all groups, with many instructors expressing neutral views. In Figure 8b, the averages illustrate how instructors perceive the value of recommending GLE experiences to others at the university. Overall, instructors from all program types indicated they would recommend these experiences to their colleagues. Figure 8c illustrates the averages of instructor interest in running a GLE program in the future. Parallel to the questions on recommendations, instructors from each program are interested in teaching a GLE course during future semesters. Figure 8d represents instructors' interests in pursuing further international cultural exchanges in virtual or in-person short-term contexts. Based on the averages, personnel from the No-COIL and COIL+ groups showed strong interest in advancing their participation. While the COIL group also expressed interest, their average, slightly above the median, suggests some reservations.

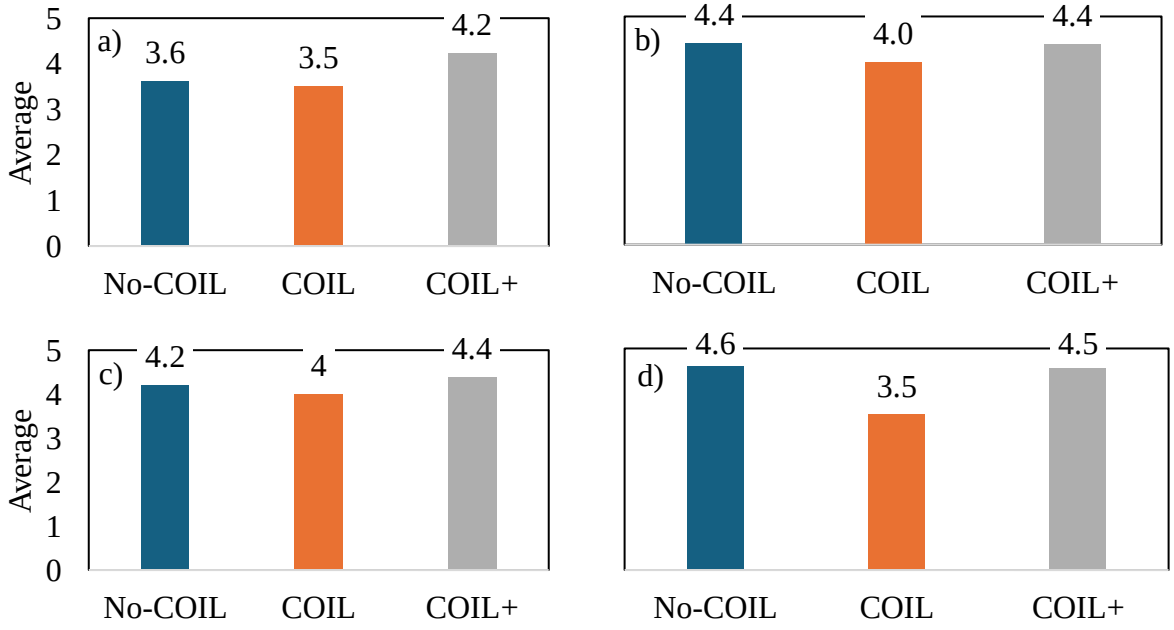

Figure 8. Faculty Perceptions: 8a. Perceived Value of Time Investment in Program, 8b. Recommend GLE Courses to Other Instructors, 8c. Interest in Teaching a GLE Course Again, 8d. Interest in Future International Cultural Exchange Opportunities

Impressions and Reflections on Global Learning Experiences

Instructors were asked:

1. Overall, at the end of the GLE component of this course I felt: (Likert)
2. What was your overall impression of leading a global classroom? (Open-ended)
3. What made this experience worth it for you? Were you valued for this? (Open-ended)

Figure 9a illustrates instructor feelings at the end of the GLE component. Overall, No-COIL and COIL+ program leaders expressed high satisfaction, while COIL personnel reported neutral to moderate satisfaction with their experiences.

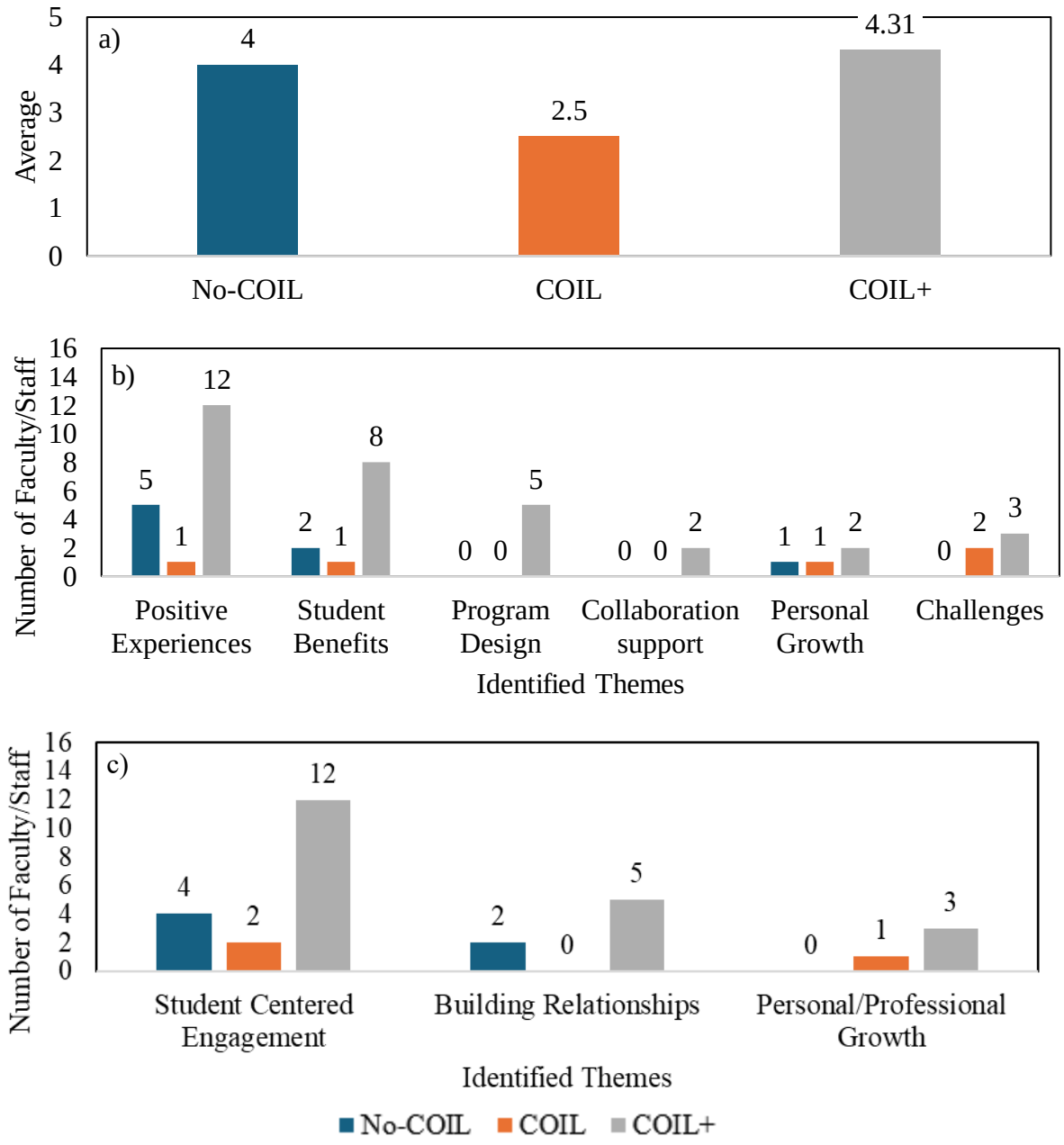

Figure 9. Impressions and Reflections: 9a. End-of-Course GLE Experience, 9b. Impression of Leading a Global Classroom, 9c. Value of Experience

Figure 9b presents instructor responses to an open-ended question about their overall impressions of leading global classrooms. The main themes that emerged were positive experiences, student benefits, program design, collaboration support, personal growth, and challenges. In the positive experiences theme, many described the experience as highly rewarding. All three program groups shared this sentiment, with COIL+ instructors expressing joy in leading global classrooms. At the same time, some No-COIL and COIL instructors enjoyed the experience. The theme of student benefits was widely discussed, with many instructors noting that these programs provided students with valuable exposure and inspiration to work internationally. Some

COIL+ instructors also highlighted the importance of building rapport with students inside and outside the classroom. The program design was another theme exclusive to COIL+ instructors. Many instructors appreciated how in-house and international partnerships facilitated program implementation. Others recommend that the curriculum be shortened to a two to four-week experience focusing on crucial takeaways rather than a 12-week course. Collaboration support was considered essential and beneficial, when collaborating with international partners throughout the programs. The personal growth theme connected with many instructors, with one COIL leader describing the experience as an opportunity to "think outside the box." Finally, the challenges' theme highlighted difficulties, especially for COIL+ leaders who struggled to set expectations with partner providers. COIL leaders also faced challenges; one leader found the COIL course setup overwhelming, while the other leader encountered difficulties managing the experience behind the scenes.

Figure 9c illustrates responses to the open-ended question, "What made the experience worth it?" The identified themes were student-centered engagement, building relationships, and personal or professional growth. Across all program types, faculty, and staff highlighted student engagement as the primary focus. Many leaders stressed the value of students interacting with local cultures and international partners. Instructors in the No-COIL and COIL+ groups also discussed the benefits of building relationships with industry and university partners. Some COIL and COIL+ instructors also reflected on their personal growth, valuing the professional connections formed with international partnerships. All instructors expressed that the program held significant value for students and themselves.

A final question asked program leaders about additional resources that could have improved their experience. No-COIL leaders emphasized the need for scholarships and reducing students' financial burdens. COIL leaders suggested additional training and student workers to assist with course facilitation. They also mentioned the need for resources like technology licenses and school supplies to enhance classroom interactivity. The COIL+ leaders were primarily satisfied but highlighted the importance of student scholarships. Some faculty suggested weekly meetings with the in-house international programs office to improve coordination and support.

Discussion

This study evaluated instructor perceptions of facilitating several short-term faculty-led and global classroom programs, including No-COIL, COIL, and COIL+, by assessing their responses to a post-travel survey. The results, presented in order by listed themes, highlighted variations in professional and learning experiences among each program leader, arising from differences in the course curricula.

General New Knowledge and Skill Development Analysis

For the first two survey questions, instructors reflected on the skills and knowledge gained through their global learning experiences. All leaders highlighted improvements in cultural understanding, as collaborating with international partners was a core part of their roles. Adaptability was frequently mentioned by No-COIL and COIL+ leaders, due to the short-term

nature of their study abroad experiences. Additionally, COIL and COIL+ leaders discussed project collaborations, a key component of the COIL curriculum. The COIL+ leaders further emphasized their pedagogical and professional development through these experiences.

Technological Preparedness

For questions three, nine, and ten, instructors in the COIL group reported significant improvements in their ability to integrate technology into teaching. This finding aligns with the design of COIL courses, which emphasize technological integration to collaborate with international partners. Similarly, the COIL+ group felt well-prepared for technological demands, due to their experience running multiple programs in the past. In contrast, the No-COIL and COIL groups, which included some newer faculty, found the technology somewhat appropriate, with No-COIL instructors feeling less confident. This finding relates back to Doscher's point on trouble with technology integration in COIL program [11]. This result may be attributed to a lack of previous virtual global learning experiences.

Pedagogical Growth

The fourth and fifth questions focused on the pedagogical impacts of these experiences and their influence on future teaching. All instructors indicated that these experiences provided valuable insights to enhance their teaching practices, which they plan to incorporate into other courses. These results highlight how growth in pedagogical knowledge gained through these programs often translates into broader applications in future teaching endeavors.

Collaborations with International Partners

Questions six and seven addressed connections with international partners and collaboration among students, faculty, and staff. Instructors from the No-COIL and COIL+ programs expressed enthusiasm about maintaining their established connections, while COIL instructors were less inclined. Additionally, instructors from the No-COIL and COIL+ programs felt well-prepared for these collaborations, whereas COIL instructors reported feeling less prepared. Some COIL instructors noted challenges sustaining student participation and engagement with partners.

Obstacles and Supports

Questions eight and eighteen focused on obstacles encountered and the support needed to overcome them. Instructors identified themes including cultural understanding, communication, student challenges, logistical issues, personal reflections, and preventable obstacles. All program type instructors indicated they faced difficulties related to cultural experience, which may stem from navigating unfamiliar cultural contexts. Communication, student challenges, logistical issues, and personal reflections were mentioned across all program types, although only a few instructors shared specific memories. Given the complexities of international partnerships, a range of challenges can arise. When obstacles arise, additional support is often needed. Many instructors from the No-COIL and COIL+ programs felt fully supported in their in-house and international partnerships. However, both groups also emphasized the need for more consistent communication. This relates to [11]'s literature communication is key from all parties involved to have a successful program. A few instructors from each group offered recommendations to

improve the program and address these barriers. These findings may be attributed to the varying experience levels among instructors. Challenges may arise from managing global collaborations with students and international partners.

Teaching Global Learning Exchange (GLE)/Virtual Global Exchange (VGE)

Questions eleven, twelve, thirteen, and fourteen focused on teaching global learning experiences or virtual global experiences. All COIL+ instructors found these opportunities valuable, while some No-COIL and COIL instructors shared this feeling, others were neutral. This variation may be attributed to the diverse range of experiences within the No-COIL and COIL programs. Instructors across all three programs expressed a willingness to recommend these programs to other educators and a desire to teach them again, noting that they enjoyed leading the programs and saw opportunities for improvement in future iterations. Instructors from the No-COIL and COIL+ groups appeared more willing to further engage with global learning experiences. In contrast, COIL leaders seemed content with their current level of involvement, likely reflecting the diversity of experiences across the groups.

Impressions and Reflections on Global Learning Experiences

The final three questions delved into leadership experiences within the various program types. Instructors from the No-COIL and COIL+ programs reported feeling delighted after the component of global learning experience, while the COIL instructors expressed some satisfaction. This variation may be from challenges some COIL instructors face, such as difficulties implementing lessons and engaging students. All instructors highlighted the student-centered nature of these experiences and the importance of building professional relationships with all parties involved. Instructors also emphasized the opportunities for personal growth. COIL+ instructors stressed the essential role of collaboration with local and international partners. However, they also acknowledged the challenges in these collaborative relationships.

Observed Differences between Instructors Experiences

Based on the preceding points, instructors from all program types acknowledged the value of global learning experiences. They emphasized opportunities for personal growth, cultural understanding, and professional development. Each instructor was willing to recommend these programs to other educators and their desire to lead similar programs. Differences in engagement and challenges varied between programs. COIL+ instructors generally expressed the most satisfaction and professional growth. This finding can be attributed to their vast exposure to in-person and virtual global collaboration components. No-COIL instructors appreciated the adaptability skills they gained but reported less confidence in technological and global classroom integration, as these were not components of their program. COIL instructors recognized the importance of cultural and technological aspects of their classrooms, but faced more challenges related to lesson implementation and student engagement. Overall, each program was considered valuable, though the obstacles varied depending on students, classroom dynamics, and international partnerships. These findings relate to the outcomes described by [2].

Limitations

The authors identified several limitations that may affect these findings. For example, the study included responses from 20 instructors, with only two instructor responses from the COIL group. The limited population sizes representing certain program types can skew the overall average due to the large weight of an individual response. Another limitation was the variation in the timing of responses with some participants completing the survey months after the course. Additionally, the survey did not collect instructor demographic information, which may provide insight into how personal backgrounds influenced program leadership. Finally, these findings are specific to one academic college in one institution and further work is needed before these findings can be generalized to other contexts.

Conclusions & Future Work

This study assesses instructor experiences between No-COIL, COIL, and COIL+ program types. Instructors from all three program types gained knowledge of skills related to cultural awareness, skill development, and leadership outcomes. All groups gain knowledge in cultural awareness. The No-COIL and COIL+ instructors highlighted benefits in valuable skills like adaptability, pedagogy, and leadership. COIL and COIL+ instructors developed stronger expertise in international project collaborations and technology integration in their classrooms. No-COIL, COIL, and COIL+ instructors will all use these experiences in future teaching endeavors. The No-COIL and COIL+ instructors are eager to collaborate with international partners in the future, while the COIL instructors are more hesitant. As a result, COIL instructors were less enthusiastic and willing to further their interactions with additional programming. Additionally, the COIL instructors needed more assistance, while No-COIL and COIL+ instructors felt support. Despite these findings, each instructor would recommend teaching global learning experiences to others. All instructors emphasized student-centered learning and building relationships in these programs. Some COIL+ instructors also reflected on personal or professional growth from these experiences. However, satisfaction with program investment varied where No-COIL and COIL instructors expressed moderate satisfaction. Future research will focus on expanding the sample size in order to compare instructor experiences across all three program types, which will be aggregated as a percentage instead of a numerical count. Additional data collection and analysis will assist in recognizing specific areas for improvement and facilitating stronger instructor support to implement future global learning experiences.

References

[1] M. M. Dwyer, "More Is Better: The Impact of Study Abroad Program Duration", *Frontiers*, vol. 10, no. 1, pp. 151–164, Aug. 2004.

[2] E. Niehaus and A. Wegener, "What are we teaching abroad? Faculty goals for short-term study abroad courses," *Innovative Higher Education*, vol. 44, pp. 103–117, 2019.

[3] L. Brajkovic and R. Helms, "Mapping Internationalization on US Campuses," *International Higher Education*, p. 11, Jan. 2018, doi: 10.6017/ihe.2018.92.10277.

[4] T. Giedt, G. Gokcek, and J. Ghosh, "International education in the 21st century: The importance of faculty in developing study abroad research opportunities," *Frontiers: The Interdisciplinary Journal of Study Abroad*, vol. 26, no. 1, pp. 167–186, 2015.

[5] T. Sandgren, B. Sonesson, Å. R. Ahlgren, and T. Länne, "The diameter of the common femoral artery in healthy human: influence of sex, age, and body size," *J Vasc Surg*, vol. 29, no. 3, pp. 503–510, 1999.

[6] J. M. Grandin and E. D. Hirleman, "Educating engineers as global citizens: A call for action/A report of the national summit meeting on the globalization of engineering education," *Online Journal for Global Engineering Education*, vol. 4, no. 1, p. 1, 2009.

[7] L. Seccia, "Developing a global engineer: Study abroad experiences of engineering majors in one university system," University of California Santa Barbara, UC Santa Barbara, 2017.

[8] G. M. Warnick, M. S. Call, and R. Davies, "Understanding engineering and technology student perceptions: Barriers to study abroad participation," in *2018 ASEE Annual Conference & Exposition*, 2018.

[9] A. H. Stroud, "Who plans (not) to study abroad? An examination of US student intent," *J Stud Int Educ*, vol. 14, no. 5, pp. 491–507, 2010.

[10] SUNY COIL Center, "COIL Methodology," https://coil.suny.edu/.

[11] A. Vahed and K. Rodriguez, "Enriching students' engaged learning experiences through the collaborative online international learning project," *Innovations in Education and Teaching International*, vol. 58, no. 5, pp. 596–605, 2021.

[12] S. Doscher, "Professional Development for Coil Virtual Exchange: What Should It Entail?," in *The Guide to COIL Virtual Exchange*, Routledge, 2022, pp. 244–273.

[13] K. A. Davis and D. B. Knight, "Comparing students' study abroad experiences and outcomes across global contexts," *International Journal of Intercultural Relations*, vol. 83, pp. 114–127, 2021.

[14] E. Niehaus, J. Reading, M. J. Nelson, A. Wegener, and A. Arthur, "Faculty Engagement in Cultural Mentoring as Instructors of Short-Term and Semester Study Abroad Programs,"

Frontiers: The Interdisciplinary Journal of Study Abroad, vol. 30, no. 2, pp. 77–91, Apr. 2018, doi: 10.36366/frontiers.v30i2.413.

[15] A. J. Spenader and P. Retka, "The role of pedagogical variables in intercultural development: A study of faculty-led programs.," *Frontiers: The Interdisciplinary Journal of Study Abroad*, vol. 25, pp. 20–36, 2015.

[16] A. Osborne, "Student and instructor perceptions of collaborative online international learning projects for increasing intercultural competence," 2024.

[17] B. D. Ruben and D. Lederman, *Implementing sustainable change in higher education: Principles and practices of collaborative leadership*. Routledge, 2023.

[18] A. E. Reed, "Student participation in coil programs and its impact on study abroad enrollment," 2016.

[19] J. E. Katz, H. Dougherty, M. H. Goldstein, E. J. Ignacio, and B. Woodard, "Focus group analysis of engineering Collaborative Online International Learning (COIL+) compared to short-term study abroad programs," in *2024 ASEE Annual Conference & Exposition Proceedings*, Portland, OR, June, 2024. doi: 10.18260/1-2--47469.

[20] F. Cordua and N. Netz, "Why do women more often intend to study abroad than men?," *High Educ (Dordr)*, vol. 83, no. 5, pp. 1079–1101, 2022.

[21] G. Besana and R. León, "Faculty Data on the Impact of Design and Implementation of Virtual Exchanges," Chicago, IL, 2020.

Appendix A:

	Questions
1	This experience introduced me to new knowledge and skills related to globalization and teaching in a global classroom (Likert)
2	What knowledge or skills did you develop? (Open)
3	This experience improved my ability to integrate technology into my teaching. (Likert)
4	This experience will improve my teaching as a whole. (Likert)
5	This experience provided skills and knowledge that I will use in other courses I teach. (Likert)
6	Through this experience I made connections with international partners that I am eager to maintain. (Likert)
7	I felt prepared for the cultural aspects/obstacles of the collaboration with faculty, students, or local partner or organization. (Likert)
8	What cultural aspect/obstacles did you encounter? Why do you think you encounter these obstacles? Could these obstacles have been prevented. (Open)
9	I felt prepared for the technological demands of the experience. (Likert)
10	The technology chosen felt appropriate for the needs of the experience. (Likert)
11	The amount of time I invested in the Global Learning Experience (GLE), also known as COIL or a Virtual Global Experience (VGE) component of this course was worthwhile. (Likert)
12	I would recommend teaching a course with a GLE component to other faculty. (Likert)
13	I would like to teach a course with a GLE component again. (Likert)
14	This experience increased my interest in further opportunities for international cultural exchanges such as leading a study abroad program (if not already), research abroad such as an REU or IRIS/REIF grant, facilitating other virtual or short-term opportunities, or otherwise. (Likert)
15	Overall, at the end of the GLE component of this course I felt: (Likert)
16	What was your overall impression of leading a global classroom? (Open)
17	What made this experience worth it for you? Were you valued for this? (Open)
18	Was there anything you wish you had to better support or obstacles you needed to overcome? (Open)
19	If you could have additional resources, what would they be? (Open)