

Exploring the Impacts of a First-Year Engineering Study Abroad Program on Subsequent College Experiences

Kirsten A. Davis and David Knight
Department of Engineering Education
Virginia Tech
Blacksburg, VA
daviska@vt.edu, dbknight@vt.edu

Abstract—The Rising Sophomore Abroad Program (RSAP) is a program for first-year engineering students that combines a spring semester global engineering course with a two-week international module in May immediately following the semester. RSAP has been running for 10 years, and a variety of assessments have demonstrated benefits for students participating in the program. However, the goals of RSAP extend beyond the immediate learning outcomes of the experience. The program seeks to influence students' interests and participation in global activities throughout their college experience and into their engineering careers. This study assessed these mid-term goals by administering a survey of open-ended questions to RSAP alumni during their senior year to learn how RSAP influenced their time in college. Students reported an increased interest in travel and global topics, and all had traveled abroad since completing RSAP. They also described attitudes, knowledge, and skills that they learned from the program and have since been able to apply. Looking toward graduation, many reported a sustained interest in pursuing a career where they could work abroad. These results represent a unique contribution to the literature on global engineering programs in their exploration of the mid-term impacts of a short-term engineering study abroad program.

Keywords—study abroad; first year programs; global engineering

I. INTRODUCTION

Engineering work increasingly requires international collaboration as companies become more globalized and expand their reach around the world [1]. To prepare engineering students for successful careers in this environment, it is important that they begin to develop global engineering competency and intercultural skills during their time in college [2], [3]. A variety of different types of programs have been introduced to help undergraduate engineers develop these skills, ranging from short-term study abroad trips to entire degree programs [4], [5]. Studies of such programs have shown improvements in students' global competency in a variety of ways [2], but the majority of these studies collect data during and immediately following the program. This paper explores the college experiences and decisions of a cohort of senior engineering students who participated in a global engineering program three years ago during their first year of college. Our study uncovers some of the longer-term effects of the global experience.

II. RELEVANT LITERATURE

Engineering students have been underrepresented among study abroad participants historically [6]. Although these numbers are growing, several factors contribute to engineering students' lack of participation, including full and sequenced engineering curriculums, inability to transfer credits back to home institutions, and scheduling around internships [5]. Existing programs trying to work around these constraints include global engineering courses (e.g., [7]), short-term trips (e.g., [8]), and study abroad programs that combine with an internship or research/design project abroad [5], [9]. Such programs can only do so much if students do not show interest, however, and engineering students may enter their first year of college with a lower intent to study abroad than those in the humanities [10], [11]. Thus, part of the challenge may be getting engineering students to be interested in study abroad and global programs in the first place. The program studied in this paper seeks to address this concern by providing a global program specifically designed for first-year engineering students with the aim of raising their interests in global topics early in their college experience.

For students who do participate in study abroad, a number of positive outcomes have been identified. Developing students' intercultural sensitivity is a central goal of study abroad, and has been shown to be a successful outcome by several study abroad researchers [12]–[14]. Other studies have shown study abroad to improve student academic success [15], spark identity development [16], and increase civic engagement [17], among a variety of other positive outcomes. Within engineering education, research has focused on the idea of “global engineering competency,” defined generally as the skills required for engineers to operate in a global environment [2]. Although measurement of this construct is still being explored, a few studies have begun to explore what types of programs may help in its development [18], [19].

Most of these outcomes have been identified by studying students during or immediately following their study abroad experience, and only a few studies have explored whether studying abroad has longer-term impacts on student learning and decision-making. One significant study in this area looked at survey responses from 50 years of study abroad participants and found that their experiences abroad influenced career

decisions, academic attainment, intercultural development, and personal growth [20]. Another analysis of the same data focused on career decisions specifically, revealing that study abroad influenced a majority of respondents' careers and nearly half had pursued a globally related career [21]. Similar results were obtained by Paige, Fry, Stallman, Josi, and Jon [22], who additionally showed study abroad influence on long-term civic engagement, philanthropy, and social entrepreneurship. Although these studies show promising results on a career-long basis, there is less research exploring the mid-range impact of study abroad, namely how do students integrate their experiences back into their immediate college lifestyle and near-term career decisions? Researchers exploring this question have found that students experience challenges in making actionable changes to their lifestyle or college plans [23], and those who are successful in doing so are the ones who participate in another educational opportunities where they can apply the skills learned during their time abroad [24]. Further research is needed in this area, particularly in cases where study abroad takes place early in the college experience. This paper seeks to add to this emerging discussion and introduce this topic of inquiry within the engineering education space.

III. PURPOSE AND RESEARCH QUESTIONS

The purpose of this study is to explore how completing a global engineering program during their first year in college influenced engineering students' thinking and activities throughout the rest of their college experience. We address two research questions:

1. What lessons from the program are most memorable to students three years later?
2. How did the program impact the decisions students made during their undergraduate careers?

IV. BACKGROUND

The Rising Sophomore Abroad Program (RSAP) is a global engineering program for first-year students that combines a spring semester course on global engineering practice with a two-week global module during May. The program has been running for eight consecutive years and for the past three years (2015-2017) has been housed in the Department of Engineering Education at Virginia Tech. While the course structure has shifted and continued to develop each year, the course learning outcomes have remained relatively constant. The central topics covered in the course are global challenges, cross-cultural communication, and international travel skills, which are explored by inviting speakers from across the university and industry to speak in class. These talks are supplemented by individual assignments completed before, during, and after students' time abroad. This paper focuses on current seniors who participated in the 2014 RSAP program as first year engineering students. Those students were asked to complete the following projects: an essay on their motivation for participating in the program, an essay on the locations they would travel to, daily journals while abroad, and an e-Portfolio capturing their entire experience. The international module included time spent in Heidelberg and Munich in Germany, Lugano in Switzerland, and Milan in Italy. In each location,

students participated in planned visits to both engineering companies and cultural sites in addition to having free time to explore these cities on their own.

V. METHODS

For this study, we reached out the alumni from the 2014 RSAP program who are currently seniors at Virginia Tech. It has been three years since they participated in RSAP, and many of them are nearing graduation and making decisions about how to start their career. To understand how RSAP influenced them during college, we used a survey with a combination of multiple-choice and open-ended questions to learn more about their experiences since RSAP. The 2014 RSAP cohort included 20 Virginia Tech students who were all enrolled in general engineering as first year students. These students selected their specific engineering majors after completing RSAP, or, in a few cases, switched out of engineering entirely. We sent the survey to the entire cohort and received 11 responses, or a 55% response rate. No incentives were offered for participation, and the study was approved by the Virginia Tech IRB.

A. Survey Instrument

The survey used in this study included two multiple-choice questions and five open-ended questions which are shown in Table 1. These questions were designed to align with the overall goals of the program as well as to explore learning outcomes for study abroad that have been discussed in the literature.

TABLE I. SURVEY INSTRUMENT

Question	Multiple-Choice Options
Did RSAP influence your decision to participate in any of the following international experiences since completing RSAP? (check all that apply)	Semester/year study abroad, short-term study abroad, service learning abroad, international internship/co-op, travel for club/extracurricular activity, personal travel, other (text entry)
Did RSAP influence your decision to participate in any of the following activities since completing RSAP? (check all that apply)	Global-themed club, global-themed course, global-themed major/minor, global-themed course projects, travel abroad experience (any from question 1), other (text entry)
What are the most memorable aspects of the RSAP program for you at this point in your college career and how have they influenced you?	Open-Ended
How has participation in RSAP influenced your academic plans, interests, and decisions during the rest of your college career? (e.g., coursework, major, extracurriculars, study abroad)	Open-Ended
How has participation in RSAP influenced your career plans, interests, and decisions?	Open-Ended
How has RSAP influenced your work in other courses throughout your college career?	Open-Ended

How might your RSAP experience influence your professional work after graduation?	Open-Ended
---	------------

B. Data Analysis

Although specific open-ended questions were asked on the survey, students' responses tended to blend from one question to the next. This observation led to the decision to analyze and code the data in response to the two research questions presented in this paper instead of based on the questions presented in the survey. In particular, although students were not directly asked what they learned from the RSAP experience, all of them discussed something they learned as they were responding to the existing prompts. The open-ended survey responses were coded using an open coding strategy where themes were allowed to emerge from the data [25]. The same codes were applied across all survey questions and these codes were aggregated into major themes that describe the lessons and decisions discussed by the students.

C. Limitations

One general weakness of this kind of survey is that students who found the program to be most influential may be more likely to respond. Thus, it is possible that our results are biased in a positive direction, showing more impact than was felt by participants on average. Because we received responses from over half of the participants, however, this concern should be lessened although still worth acknowledging. In addition, using a survey format instead of interviews means that we were not able to ask follow-up questions to get additional detail to our open-ended questions [26]. We are planning to hold focus groups to follow-up on some of the findings from the survey; the decision to start with a survey was intentional to gain greater participation, which has proven to be effective (i.e., more students participated in the survey than volunteered for focus groups). A final limitation of this study is selection bias in terms of which students chose to participate in the RSAP program in the first place. It is possible that these students would have chosen to engage in global activities without the RSAP program, so although they may attribute their decisions to RSAP's influence, it is hard to say for sure.

VI. RESULTS

A. Research Question 1: What lessons from the program are memorable to students?

As noted, students were not directly asked about the lessons they learned from the RSAP program. All of the responses presented in this section were volunteered by students in response to questions relating to favorite memories or academic and career decisions. Despite this, every respondent discussed something that they learned from the RSAP program, and these responses were grouped into three themes: attitudes, knowledge, or skills. These themes are summarized in Table 2, which lists them in order of how frequently they appeared in student responses from greatest to least. The remainder of this section defines these themes in greater detail.

TABLE II. THEMES IDENTIFIED IN RESPONSE TO RQ1

Theme	Sub-Categories
<i>Attitudes</i>	Attitudes about themselves Attitudes towards others
<i>Knowledge</i>	Global knowledge Career knowledge Engineering knowledge
<i>Skills</i>	Interpersonal skills Travel skills

1) *Attitudes*: The most common type of learning students discussed was the development of new attitudes as a result of their RSAP experiences. Nine out of eleven respondents mentioned an attitude shift, either in their perspective on themselves or in how they view other people. Students discussing a change in their attitude toward themselves and mentioned learning more about themselves as people, changing career goals, discovering a love of traveling, or developing an increased willingness to get outside their comfort zone. For example, one student described their experience this way:

My most memorable learning experience from RSAP is that you have to choose what to make of any experience you have. I learned while on RSAP that simply being in a new place didn't necessarily mean that great times would just present themselves to me, but that I had to go out and seek adventures instead of waiting for them to come to me.

Other students came away from RSAP with a different perspective on other people and how to interact with them. These students talked about becoming more open-minded, learning to embrace differences in others, and recognizing opportunities to interact with international students at Virginia Tech. An example of this type of attitude shift is a student who said:

I think the experience of a culture outside of my own was memorable and valuable at this point in my career. This helped me be more open-minded about how there are many ways to do something (both in industry and daily life), and that differences should be celebrated - not immediately marked as "wrong."

Nearly every student in our survey discussed some sort of attitude change as a result of the RSAP experience, with the majority focusing on shifts in attitudes about themselves. Indeed, this sub-category was the most common out of all of the themes, with seven respondents discussing something they learned about themselves through the RSAP program.

2) *Knowledge*: The second type of learning that students discussed was acquiring new knowledge through their RSAP experience. Students mentioned three different kinds of knowledge in their responses: global knowledge, career knowledge, and engineering knowledge. Global knowledge was discussed most frequently, where students described learning about other cultures, identifying opportunities and information about how to study abroad, and developing an understanding of why cultural and global topics are important to engineering. One student described the knowledge they gained by saying:

RSAP definitely helped teach me the importance of a global understanding in order to succeed professionally. That became even more apparent when I worked for a global company the next summer and realized the importance of understanding the cultures of other countries that your company does work for or has business locations in.

This quote also highlights the fact that students were able to connect the knowledge gained through RSAP to other experiences throughout their undergraduate experience. This finding particularly applies to the career knowledge that several students mentioned, which included information about job options and desirable employer characteristics. One example of this type of learning is a student who explained:

Through observing the culture of various companies, it caused me to start thinking about what's important for me in a career.

A third type of knowledge that students discussed was engineering knowledge, which included discipline-specific knowledge, information on engineering applications abroad, and awareness of different ways to solve problems. One student put it this way:

Visiting the foreign countries and seeing how the companies operated [was memorable]. I remember the physical memories of the experiences the most. They have influenced me by teaching me that there is more than one way to solve a problem correctly. I relate the company visits to companies I have worked for often.

Overall, eight of the eleven students mentioned knowledge they gained through RSAP and many of them discussed how they have been able to apply this knowledge in their classes, internships, and other experiences over the past three years.

3) *Skills*: In addition to attitudes and knowledge, several students mentioned skills that they developed through the RSAP program. These skills fell into two different categories: interpersonal skills and travel skills. Interpersonal skills were the most common type of skills mentioned, mainly as students discussed how they were better able to work and interact with people of different backgrounds. An example of how a student described this type of learning is one who said:

It helped develop my communication skills, especially when communication had limiting factors (language barriers). It also helped me to figure out how to get acquainted with a group of people a lot faster.

Other students thought about their interpersonal skills in more of a professional context, including one student who said:

This trip and the course that went with it taught me a few things about working in a professional environment - how to work with others that have a different background than you, and how to adjust and adapt to a changing environment.

This student also mentions developing adaptability through the RSAP experience, which several students discussed as a skill that would help them on future trips. Another student discussing this type of learning said:

[I developed] confidence to travel independently (for example, in a future service-learning trip).

As hinted at by this student, the development of travel skills gave students the confidence to seek out more travel experiences during their time in college. Overall, fewer students explicitly discussed learning skills compared to attitudes or knowledge, but the skills mentioned are directly tied to the learning outcomes for the RSAP program.

B. Research Question 2: How did the program impact students' decisions?

As alluded to in some of the student quotes in the last section, the attitudes, knowledge, and skills that students gained through their RSAP experience influenced decisions they made during the rest of their college career. Table 3 summarizes the results of the checklist survey questions asking students to identify the global activities in which they participated since completing RSAP.

TABLE III. STUDENT PARTICIPATION IN GLOBAL ACTIVITIES (N=10)^a

% of Respondents	Global Activity
100	Traveled abroad since completing RSAP
80	Participated in personal travel since completing RSAP
70	Joined a global-themed club or extracurricular activity
50	Took an global-themed course
50	Traveled in an educational context (i.e., not personal travel)
50	Participated in a short-term study abroad or service learning trip
20	Completed a global-themed project in another course
0	Completed a global-themed minor with engineering major
0	Completed a semester or year abroad

^a One student did not respond to these multiple-choice questions.

Students elaborated on some of these responses in their open-ended responses, and their responses can be categorized into three different categories: career interests, academic decisions/interests, and extracurricular decisions. Academic decisions/interests and extracurricular decisions are related to activities that students participated in or *wished they could have participated in* during their college career. Career interests represented the largest topic area, discussed by nearly every respondent, but focused mainly on goals or desires for the future, so it will be discussed at the end of this section to maintain a chronological order.

1) *Academic Decisions/Interests*: In this category, students talked about both academic decisions they made and academic interests they had hoped to pursue but were not able to realize for a variety of reasons. The most common topic discussed in this area was the desire that many students had to learn a new language as a result of the RSAP program. Several students mentioned that they came back from the trip with a new interest in getting a foreign language minor, but it seems that this did not work out for any of them, mainly because of the

full engineering curriculum. For example, one student described their experience this way:

We took a German language course last summer, and it made me want to learn a new language. Even though there wasn't room in my schedule last fall, I tried to keep up with German in Duolingo.

Similarly, another student said:

Being a part of RSAP made me really want to get a minor in German. Unfortunately, due to the way that classes panned out, I'm not sure if that is going to be an option, but I did spend a better part of my free time one semester using the Virginia Tech free access to Rosetta Stone!

Based on Table 3, a few students were able to work one or two global-themed courses into their schedule but not a complete minor. One student actually changed his major out of engineering after the RSAP program to study International Studies and Economics, but those who remained in Engineering were limited to taking one-off classes or pursuing foreign language study on their own time.

2) *Extracurricular Decisions:* One way that students got around the tightness of the engineering schedule was to become involved with global-themed extracurricular activities. As indicated in Table 3, 70% of respondents took this route, a higher percentage than taking a course, participating in study abroad, or working on a global project. Several extracurricular opportunities exist on campus at Virginia Tech, such as the one described by this student:

I am an ambassador for Student Engineers Abroad Council because I wanted to get other students excited about studying abroad and to share about some of my experiences.

In addition to joining this group or one of several service-oriented organizations on campus, some students sought global experiences through external programs or personal travel. One student described their plans this way:

Although I never had the chance to study abroad [beyond RSAP], I have been inspired by this trip to travel more. I have already planned international trips following graduation, and I applied to a three-week program in Germany for this summer.

As indicated by this student and triangulated with data shown in Table 3, longer-term study abroad programs were not options for these students. Although most students did not mention study abroad in their open-ended responses, Table 3 reveals that 50% of students were able to take another short-term trip during their undergraduate careers. It is unclear in students' responses whether scheduling challenges or a lack of desire to leave campus for an extended period of time drove this distinction between the length of programs and travel.

3) *Career Interests:* By far the most popular topic for students in their open-ended responses was discussing how RSAP has influenced their future career interests. Nearly every respondent stated that they are interested in or actively seeking a job that will allow them to work abroad. For many students, this desire seems to be a future goal as opposed to

being something to try in their first job out of college. For example, one student stated:

RSAP made me extremely interested in working abroad at some point in my future (preferably sooner rather than later), especially if I could work in Germany.

On the other hand, some students are ready to jump into an international job right away, such as the student who said:

I have applied to a couple of jobs in Europe or rotational programs that include a rotation internationally.

Only one or two students have already been able to make concrete career decisions as a result of RSAP, including one who participated in an international internship and another who chose to work in different states. The latter student remarked that:

I am significantly more willing to travel as a result and have worked in different states across the country as a result.

Overall, while students have made some academic and extracurricular decisions as a result of their RSAP experience, many of them seem to see their future careers as the primary opportunity to apply what they learned in the program.

VII. DISCUSSION

In response to our first research question, we found that students reported learning new *attitudes, knowledge, and skills* during the RSAP program. Examples of lessons commonly discussed by students include an increased willingness to go outside their comfort zones, an understanding of why global skills/knowledge are important in engineering, and the ability to work and interact with people of different backgrounds. In response to our second research question, we learned that students were motivated to find more opportunities to travel after completing the RSAP program. Every student who took the survey had taken a personal trip abroad, and half had participated in international educational trips. In addition, most students had joined a global-themed extracurricular group and several had taken global-themed courses. Contrastingly, none of the students studied abroad for a full semester or were able to complete a global-themed minor (although several expressed interest). Themes that emerged from the open-ended responses highlighted students' *academic decisions/interests, extracurricular decisions, and career interests*. Nearly every student expressed interest in working abroad at some point in their career, and it seems that many students see such opportunities as their main chances to apply what they learned through the RSAP program.

The results of this study indicate that even three years after completing the RSAP program, students remember important lessons that they learned through the experience. It was particularly encouraging that students volunteered information about the *attitudes, knowledge, and skills* that they gained without being explicitly asked. What is more encouraging, however, is the cases where students discussed their ability to apply this learning elsewhere in their college experience. For example, several students mentioned applying their newfound knowledge in other courses or internship experiences, which

has been shown to be an important part of internalizing and retaining such lessons over the long-term [24]. All of the students who responded to the survey developed an interest in travel and a desire to pursue a career where they would be able to travel, aligning with previous findings on the long-term outcomes of study abroad [21], [22]. These outcomes suggest that the RSAP program is succeeding at achieving its goal of helping engineering students develop an interest in global topics early in their college careers.

Despite these positive outcomes, there remain challenges for engineering students hoping to gain global experience. Most notable in our data were students who wanted to obtain foreign language minors but were unable to fit them into their schedules. Although this is a perennial problem in tight engineering course sequences [5], it is particularly disheartening that even students who developed a global interest early in their programs could not make it fit. As having follow-on educational experiences is important to continued growth [24], it will be important for us to continue to gather data on whether students are able to take advantage of the global educational opportunities available at Virginia Tech. It may be that a more structured solution to this problem is necessary, such as global tracks within engineering majors that help students intentionally combine these two areas of interest [5], [9]. The students in our survey did not discuss their reasons for not pursuing semester or year-long study abroad options, but based on their experiences with minors, we speculate that scheduling issues drove these decisions. This topic will be an area for us to follow-up on in our planned focus groups.

This study focused on a single cohort of RSAP participants containing only 20 students, but the program has grown in the years since 2014. We anticipate repeating the survey presented here each year as a new cohort of RSAP participants graduates, which will include 46 students from the 2015 cohort, 92 students from the 2016 cohort, and 135 students from the 2017 cohort. The RSAP course has also changed over the past few years, incorporating more information about global opportunities at Virginia Tech and a project where students plan out how they would complete a longer-term study abroad program within their selected engineering major. The Virginia Tech study abroad office suggested to us that a major reason why students do not study abroad is that it takes too much time to figure out how to make it work. It is our hope that this project and information provided through the RSAP course will result greater numbers of students recognizing that it is possible to design schedules so that they may participate in longer-term study abroad trips within the College of Engineering.

REFERENCES

- [1] D. Bremer, "Engineering the world," *Online J. Glob. Eng. Educ.*, vol. 3, no. 2, pp. 13–18, 2008.
- [2] A. Johri and B. K. Jesiek, "Global and international issues in engineering education," in *Cambridge Handbook of Engineering Education Research*, A. Johri and B. M. Olds, Eds. New York, NY: Cambridge University Press, 2014, pp. 655–672.
- [3] A. Parkinson, "The rationale for developing global competence," *Online J. Glob. Eng. Educ.*, vol. 4, no. 2, pp. 1–15, 2009.
- [4] G. L. Downey *et al.*, "The globally competent engineer: Working effectively with people who define problems differently," *J. Eng. Educ.*, vol. 95, no. 2, pp. 107–122, 2006.
- [5] A. Parkinson, "Engineering study abroad programs: Formats, challenges, best practices," *Online J. Glob. Eng. Educ.*, vol. 2, no. 2, pp. 1–15, 2007.
- [6] Institute of International Education, "Open Doors Report on International Educational Exchange," New York, NY, 2015.
- [7] V. Maldonado, L. Castillo, G. Carbajal, and P. Hajela, "Building international experiences into an engineering curriculum – A design project-based approach," *Eur. J. Eng. Educ.*, vol. 39, no. 4, pp. 377–390, 2014.
- [8] E. J. Berger and R. Bailey, "Designing short-term study abroad engineering experiences to achieve global competencies," presented at the ASEE International Forum, Atlanta, GA, 2013.
- [9] J. R. Lohmann, H. A. Rollins Jr., and J. J. Hoey IV, "Defining, developing and assessing global competence in engineers," *J. Eng. Educ.*, vol. 31, no. 1, pp. 119–131, 2006.
- [10] J. Luo and D. Jamieson-Drake, "Predictors of study abroad intent, participation, and college outcomes," *Res. High. Educ.*, vol. 56, pp. 29–56, 2015.
- [11] E. Niehaus and K. K. Inkelas, "Understanding STEM majors' intent to study abroad," *Coll. Stud. Aff. J.*, vol. 34, no. Spring, pp. 70–84, 2016.
- [12] L. A. Braskamp, D. C. Braskamp, and K. C. Merrill, "Assessing progress in global learning and development of students with education abroad experiences," *Front. Interdiscip. J. Study Abroad*, vol. 18, pp. 101–118, 2009.
- [13] I. Clarke III, T. B. Flaherty, N. D. Wright, and R. M. McMillen, "Student intercultural proficiency from study abroad programs," *J. Mark. Educ.*, vol. 31, no. 2, pp. 173–181, 2009.
- [14] M. E. Engberg, "The influence of study away experiences on global perspective-taking," *J. Coll. Stud. Dev.*, vol. 54, no. 5, pp. 466–450, 2013.
- [15] E. C. Ingraham and D. L. Peterson, "Assessing the impact of study abroad on student learning at Michigan State University," *Front. Interdiscip. J. Study Abroad*, vol. 10, pp. 83–100, 2004.
- [16] C. Miller-Perrin and D. Thompson, "The development of vocational calling, identity, and faith in college students: A preliminary study of the impact of study abroad," *Front. Interdiscip. J. Study Abroad*, vol. 19, pp. 87–103, 2010.
- [17] M. A. Tarrant, D. L. Rubin, and L. Stoner, "The added value of study abroad: Fostering a global citizenry," *J. Stud. Int. Educ.*, vol. 18, no. 2, pp. 141–161, 2013.
- [18] S. V. Levonisova *et al.*, "Identifying factors that enhance undergraduate engineering students' global preparedness," presented at the 2015 ASEE Annual Conference and Exposition, Seattle, WA, 2015.
- [19] G. R. Ragusa, "Engineering global preparedness: Parallel pedagogies, experientially focused instructional practices," *Int. J. Eng. Educ.*, vol. 30, no. 2, pp. 400–411, 2014.
- [20] M. M. Dwyer, "More is better: The impact of study abroad duration," *Front. Interdiscip. J. Study Abroad*, vol. 10, pp. 151–163, 2004.
- [21] E. M. Norris and J. Gillespie, "How study abroad shapes global careers: Evidence from the United States," *J. Stud. Int. Educ.*, vol. 13, no. 3, pp. 382–392, 2009.
- [22] R. M. Paige, G. W. Fry, E. M. Stallman, J. Josi, and J. E. Jon, "Study abroad for global engagement: The long term impact of mobility experiences," *Intercult. Educ.*, vol. 20(sup 1), pp. S29–S44, 2009.
- [23] R. Kiely, "A chameleon with a complex: Searching for transformation in international service-learning," *Mich. J. Community Serv. Learn.*, vol. 10, no. 2, pp. 5–20, 2004.
- [24] H. T. Rowan-Kenyon and E. Niehaus, "One year later: The influence of short-term study abroad experiences on students," *J. Stud. Aff. Res. Pract.*, vol. 48, no. 2, pp. 213–228, 2011.
- [25] M. B. Miles, A. M. Huberman, and J. Saldana, "Fundamentals of qualitative data analysis," in *Qualitative Data Analysis: A Methods Sourcebook*, 3rd Edition., Los Angeles, CA: SAGE Publications, 2014, pp. 69–103.
- [26] R. A. Singleton Jr. and B. C. Straits, *Approaches to social research*, 5th Edition. New York, NY: Oxford University Press, 2009.