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1. Introduction

As the world becomes increasingly globally connected and diverse, employees need to be able to “identify and communicate points of connection that transcend their differences and enable them to build relationships and to work together effectively” [1]. As a result, intercultural competence, “the complex abilities that are required to perform effectively and appropriately when interacting with others who are linguistically and culturally different from oneself” [2], has become a highly desirable skill for all workers in the 21st century. Therefore, helping students develop their intercultural competence has become an important mission for higher education [3].

The development of students' intercultural competence has been positively associated with the study abroad experience and program and curricular interventions. However, little is known on how study abroad curriculum impacts students' development of intercultural competence. To fill this gap, this study investigates to what extent study abroad curricular interventions support students' development of intercultural competence.

2. Literature review

2.1. Intercultural competence: theoretical models and assessment tools

Over the past few decades, scholars have devoted much effort to understand what constitutes intercultural competence, and this effort has produced a multitude of intercultural competence models and frameworks [4], [5], [6], [7], [8], [9]. Spitzberg and Changnon [9] identified five overarching models produced by a score of scholars and authors in approaching intercultural competence. These approaches follow either a compositional, co-orientational, developmental, adaptational, or causal process. Due to the limitation of space and relevance to the purpose of this paper, focus will be placed on the developmental and compositional models of intercultural competence.

Developmental models are rooted in the recognition that intercultural competence evolves over time. An influential example is the Developmental Model of Intercultural Sensitivity (DMIS) created by Milton J. Bennett [10]. There are six stages in the DMIS model where interactants progress from relatively ethnocentric understandings of other cultures to a more differentiated, sophisticated and ethnorelative comprehension and appreciation: “Denial” reflects attitudes that only one's own culture is in some sense real or legitimate, while other cultures are considered relatively irrelevant; “Polarization” is a judgmental orientation that views cultural difference in terms of “us” versus “them;” “Minimization” highlights cultural commonality and universal values and principles that may also mask deeper recognition and appreciation of cultural differences; “Acceptance” recognizes and appreciates patterns of cultural difference and commonality in one's own and other cultures; “Adaptation” is an orientation that enables one to shift cultural perspective and change behavior in culturally appropriate and authentic ways; and “Integration” is characterized by the meta-coordination of meaning and action that defines intercultural communication.

Various assessment tools have been developed to measure the development of intercultural competence quantitatively, where researchers use a Likert scale to rate statements that assumably reflect these DMIS stages. Among these, the Intercultural Development

Inventory (IDI) is one of the premier psychometric instruments. It comes in the form of a questionnaire containing 50 items that represent the first five stages of the DMIS model, i.e., Denial, Polarization, Minimization, Acceptance, and Adaptation. These five stages comprise what is called in IDI the Intercultural Development Continuum (IDC). By choosing to what degree someone agrees with a certain statement, IDI places the assessment takers to the corresponding stage in IDC. Currently, IDI has been utilized extensively in both academic and business contexts to provide information about the assessment takers' mindset/skillset towards cultural differences and commonalities.

Unlike the developmental models which highlight the process of progression over time, the compositional models aim to identify the hypothesized components of intercultural competence, i.e., the traits and characteristics that constitute intercultural competence. By exploring three different dimensions that intercultural competence covers—cognitive, behavioral, and affective [11], there has been an emerging consensus on the key sets of elements that constitute intercultural competence: knowledge, skills, and attitudes [12]. According to Deardorff, knowledge consists of “cultural self-awareness, deep cultural knowledge, and sociolinguistic awareness,” skills include the ability “to listen, observe, evaluate, analyze, interpret, and relate,” while attitude incorporates respect, openness, curiosity, and discovery [12].

Based on the three dimensions that intercultural competence covers and the three key elements that constitute intercultural competence, the Association of American Colleges Universities (AAC&U) created an Intercultural Knowledge and Competence VALUE Rubric outlining the learning outcome for each of the three key sets of elements of knowledge, skills, and attitudes. “Knowledge” in the Rubric covers two key areas of cultural self-awareness and knowledge of cultural worldview frameworks; “Skills” reflects empathy and verbal and nonverbal communication; and “Attitudes” signify curiosity and openness [13]. The AAC&U Rubrics have been widely adopted as a qualitative benchmarking for the assessment of learners' intercultural competence.

2.2 Impact of study abroad on intercultural competence

Research shows that study abroad can have highly uneven impacts on students' intercultural development. Davis and Knight [14] summarize over a decade of research on study abroad. It shows that students do not automatically develop intercultural competence through study abroad experiences. In fact, they relate research from large-scale studies that have found that only well-structured study abroad programs that prepare students before departure, support them and help them leave their comfort zone during their periods abroad, and integrate their experience upon return consistently help students make significant gains in intercultural competence. Hudson and Tomás Morgan [15] state that study abroad “is a high-impact practice that can lead to transformation learning” but that it depends on the duration of the program and on the involvement of the student in certain learning and engagement activities. Paras, Carignan, Brenner et. al [16] underline that study abroad programs that include a service-learning component “provide particularly rich opportunities for intercultural learning.”

Chwialkowska [17] notes that cultural exposure alone does not guarantee growth in cross-cultural learning, for many students fail to immerse themselves in the new culture. Forsey, Broomhill, and Davis [18] attest that if the program is not well designed, students return from study abroad with “little insight or deeper understanding of the differences between ‘home’ and ‘away’.” The studies undertaken by Spenader & Retka [19] and Vande Berg, Connor-Linton, & Paige [20] have found that simply studying abroad is not enough to gain cultural intelligence.

More precisely, Engberg, Jourian, & Davidson [21] find that learning relates to how much students push themselves to seek new experiences and get outside their comfort zones. Additionally, pre-departure orientation, guidance and mentorship in-country, and coordinated post-study abroad reflection have been documented as significant to student learning through study abroad [22], [23], [24].

2.3 The role of curricular intervention in study abroad

The gains of study abroad depend on targeted interventions that foster greater student development. Vande Berg, Connor-Linton, and Paige found positive correlations between student learning abroad and certain program features, specifically program length, enrollment in content courses taught in L2, and pre-departure orientations, leading them to the conclusion that “students learn most effectively abroad given proactive learning interventions” [20]. Dewey et al. [25] investigated which variables of study abroad are most linked to gains in language proficiency and found that the program design itself has the highest correlation. Engle and Engle [26] describe the kind of study abroad program they oversee and show that their particular program design fosters significantly higher gains among students than other programs. Concerning specific program design features, Baker-Smemoe, Dewey, Brown, & Martinsen [27] determine that intercultural sensitivity and social network formation are the two strongest predictors of language gains and consequently suggest that programs should focus on developing these. Hernandez and Boero [28] find that a focus on pragmatic competence generates significant gains in language abilities. Watson and Wolfel [29] found significant correlation between language gains and certain language socialization practices, such as hours of target language conversation. Engelking [30] describes the inclusion of critical incidents while abroad to simultaneously develop students’ language skills and intercultural skills.

2.4 Research questions

Although study abroad and curricular interventions have both been positively associated with the development of students’ intercultural competence, there is no study that specifically examines what kind of interventions are effective and to what extent study abroad curricular interventions support students’ development of intercultural competence. To fill this gap, this paper aims to address the following two research questions:

1. Do the curriculum interventions aimed at helping students immerse fully in and engage with the target culture have an impact on their intercultural competence? If so, to what extent do curricula support the development of intercultural competence during the study abroad period?
2. What aspects of intercultural competence can curricular interventions help improve in students’ intercultural learning?

3. Methodology

3.1 Setting

The International Engineering Program (IEP), the International Business Program (IBP) and the International Computer Science Program (ICSP) at the *University X* offer students the opportunity to combine a Bachelor of Science degree in engineering, business, or computer science with a Bachelor of Arts degree in one of five languages (Chinese, German, French, Italian, and Spanish) or with a Global Area Studies Major, Japanese track. The signature learning

experience for students in these programs is a year of study abroad typically taking place during their fourth year of study and occasionally in the fifth year.

During their year abroad, students complete a semester of coursework and then enter a six-month internship for the remainder of their time in the host country. This experience allows students to enhance their fluency in the target language and gain practical experience working in an area related to their area of expertise. During the internship, students also enroll in a six-credit internship course offered by each program in the target language designed to integrate their workplace experience with their academic coursework and support their intercultural development. The IEP program was chosen as a setting to examine the role of study abroad curricular interventions in engineering students' development of intercultural competence.

3.2 Curricular interventions

This research examines to what extent the curricula interventions support engineering students' development of intercultural competence during their study abroad. To establish baseline data for intercultural development over the year abroad, we will specifically focus on the impact of curricular interventions on students' intercultural development after the course has been established based on best practices in study abroad programming. The timeline for streamlining course interventions is as follows: The internship course was redesigned in a few of the IEP country specific programs beginning with the 2017–18 academic year, then developed for all IEP programs in a transitional year 2018–19 with interventions not yet aligned with specific program goals across all programs, and ultimately refined for the 2019–20 cohorts with alignments to our program goals to more directly support students' intercultural development specifically during their internship period. The following part is an introduction of the curricular interventions adopted by all IEP programs for the 2019–20 cohort.

Three phases of curricular interventions are involved: pre-departure, during students' year abroad, and after their return. The first phase of curricular interventions takes the form of pre-departure orientations, which emphasize culture-general awareness and include students from all language branches of the program. There are some culture-specific orientations as well, but these also involve practical questions related to the specific country and partner university. For the culture-general pre-departure orientations, the interventions involve three activities, each one followed up by discussions and reflections. The first is an ice breaker activity called *Me or Not Me* in which students sort themselves in groups after statements are read such as "I eat meat" with the goal of raising awareness of heterogeneity and building community within the cohort. The second is called *Circles of My Multicultural Self* which aims to make students aware of their identity and of its cultural situatedness. The third is an activity called *Albatross* which introduces students to a fictitious culture through two of its representatives [31]. The representatives act out ceremonies from the fictitious culture, including the students in them. The aim is to get students to experience the otherness of the culture and then to describe, interpret, and evaluate the culture based on what they saw in the ceremony. It is a powerful exercise designed to bring to the surface preconceived notions and assumptions of one's own cultural lenses, norms and behaviors.

The second phase of interventions takes place during the internship of their year abroad. Students are enrolled in the respective foreign language courses which were designed to accompany their six month professional internship in a company or research lab. They earn six credits of French 315/316, German 315/316 and so on. For these internship course interventions, students complete a series of assignments that are designed to develop both their language skills

and their intercultural skills by putting them in situations where they must interact with the locals in various ways.

Task Title	Task Description
1. <i>University X</i> Scholar Travel Log entries	Go to four different settings, observe, and reflect on what you see. What do people do in this setting? How do they interact? What did you learn from your observations that will help you navigate this setting the next time?
2. Discover your internship area!	What will the town, region, city, or neighborhood of your internship be like? Do some internet research to find out what it will be like and write a 400-word presentation of the area and what you look forward to doing there.
3. a. Compare cultural differences OR 3. b. Compare cultural differences in the workplace.	3. a. What are the differences you have noticed between the local culture and American culture? Then create your own three to four minute video in which you speak about 90% of that time, and in which you comment on your perceptions of the target culture. 3.b. Compare the difference between the local working culture and in the US. What did you observe? Describe interesting work situations, in which you observed cultural differences especially poignantly.
4. Scavenger Hunt	Make audio and/or video recordings of yourself making local transactions. After having done everything on this scavenger hunt list, make a video or audio of between 2 and 3 minutes in which you assess how well you were able to handle these tasks linguistically, how well you handled them culturally, and how challenging you found this assignment overall.
5. Compare a typical day at your internship site to a typical day at your study abroad site.	Begin by writing about three of your personal values or things that are important to you. Then write about three goals that you have for yourself during this year abroad. Write about a page or a page and a half comparison of a typical day at your internship site to a typical day at your study abroad site. Conclude with a paragraph in which you discuss which site (study abroad or internship) seems better for helping you attain your values and goals.
6. Interview a colleague!	Create an interview video in which you ask a colleague at your internship site about her/his academic preparation, career path, and other questions about the biographical facts of this person. Conclude your video with a short segment in which you talk about how this person's career path compares to yours or to that of someone else in the US.

7. Write a technical description!	Create a glossary of 35–50 technical words or expressions in your language of study that relate to your internship. Then write a detailed 250-word description of a technical process or object that is part of your internship experience. Conclude with a brief paragraph reflecting on how being able to use the right technical language has helped you become part of the professional culture at work.
8. Describe a cultural incident!	For these purposes, a cultural incident is a moment when you did something that was not within the cultural norms and it created a moment of awkwardness, humor, unease, or conflict. Make a video in which you describe in detail what happened. Describe the context, narrate the incident step by step, describe how people reacted, and how you felt. Conclude by reflecting on what you learned from this incident.
9. Photo Essay	Take pictures of five to six things that you feel are different or unusual in the local culture. You can take pictures of a few big things, like a Gothic cathedral, but take most pictures of very small, everyday things like door knobs, street signs, or bus passes. Then write a 500-word essay about these things. Start your essay with a general paragraph about cultural differences. In the next paragraphs, describe in detail what is different about the objects you photographed. Also, analyze what these differences might show about the values within the target culture. Write about how these differences might make sense in the local context, but less so in the US. Conclude with a paragraph analyzing how small differences can reveal more profound ones between cultures.
10. Describe how you have changed!	Write a 500-word essay, describing the ways in which you have had to change during your time abroad. Write one paragraph, describing how your language skills have forced you to change the way you communicate. Include specific examples. Write another paragraph about how the local habits and customs have forced you to adopt new ones and to abandon, at least temporarily, others. Include specific experiences. Write a third paragraph about the ways you have had to change your outlook on the world and yourself because of these modifications. Add an introduction in which you summarize the main change or changes. Conclude with a paragraph in which you explain how you think these changes will affect you upon return to the US.
11. IEP Poster Presentation	Create your IEP poster. This is a great way to reflect on the impact your year abroad has had on your life and career. Be prepared to present your poster in the fall semester at University X to other students or at professional conferences. Follow the template.

The third phase takes place after students return from study abroad. We will focus on it in more detail in a future article. We experimented with various intervention formats including debriefing workshop (2018), focus group interviews in small groups (2019), and re-entry integration seminar (2020).

The Fall 2018 debriefing workshop reviewed definitions of culture and cultural competence, collected examples of perceived individual growth, and conceptualized the experience to maximize its impact for resume building and job interviews. The IDI group profile was used to help the returning cohort understand its development along the Intercultural Development Continuum.

The goal of the hour-long/hour-and-a-half long focus group interviews with IDI certified faculty in 2019 was to debrief returning cohorts in small groups across IEP programs, deliberately mixing students who had been to different countries, and on getting their feedback on questions related to linguistic and cultural learning, culture shock, strategies of integration, cultural incidents and on their reaction to the IDI instrument.

The re-integration seminar conducted virtually upon the unexpectedly early return of the 2020 cohort due to COVID was to help the students reintegrate emotionally upon return to the US as a consequence of the university's general re-call. It focused on sharing their return stories, strategies to cope, and on lessons still learned abroad despite the cutting short of the internships [32].

While there are three phases to the program's preparation of students, this paper will focus only on the second phase of interventions, which occurs during the internship portion of their year abroad.

3.3 Participants

The participants are 4th and 5th year students in the IEP programs returning in August after their internships in Asia (China, Japan, Taiwan); Europe (Austria, Belgium, France, Germany, Italy, Spain) or Latin America (Chile, Costa Rica). To examine to what extent the curricula interventions support students' development of intercultural competence during their study abroad, we include two groups of students in this research: the 2017–18 cohort who received limited curricular interventions to support their intercultural development, and the 2019–20 cohort who received curricular interventions aligned to our program goals for their intercultural development.

The total number of participants who agreed to participate and whose records are accessed for this study was as follows:

2017–18 cohort: 59

2019–20 cohort: 38

Total: 97 participants

3.4 Data collection and analysis

Data was collected and analyzed using a mixed methods approach. Quantitative analysis stemmed from students' IDI scores before and after their IEP program abroad. Qualitative data was collected from student responses to the prompts given in the internship courses that accompanied their company internships and reflect our respective program and curricular design.

There are a myriad of intercultural competence assessment tools available to researchers, products of different frameworks to interpret what intercultural competence is [2], [33].

Although the available inventories of the assessment tools do not share or follow clear criteria to create a taxonomy of the available tools, they underline the correlation between different ways of conceptualizing intercultural competence and the purpose, audience, and expected outcome of such tools. The consequence is clear: a universally accepted intercultural competence assessment instrument that can be used in every context does not exist. Our decision to use the IDI for our quantitative analysis is rooted in our belief that the development of intercultural competence is a progressive and ongoing process [2], [34], [35]. The IDI is recognized as a cross-nationally validated psychometric instrument developed based upon Milton Bennett's DMIS that spans from monocultural orientations to intercultural orientations to cultural differences. The instrument provides an indication of respondents' predominant orientation to cultural differences, referred to as their Developmental Orientation. The IDI is well established as an instrument to measure student gains in intercultural competence during study abroad programs. Different studies have proved its validity and reliability [36], [37].

Completion of the IDI pre-departure and post-return is part of the curricula for the IEP year-long study abroad programs. Outgoing students complete the IDI as part of pre-departure preparations. The results are used by the respective directors to better supervise students in their intercultural development and problem solve challenges for individual students as they occur during their time abroad. Returning students complete the IDI as part of their post-study abroad debriefing and reflection process. The returning cohorts receive group debriefings based on the group Intercultural Development Report and Intercultural Development Plan generated by IDI, LLC. For the purpose of this paper, the primary quantitative analysis will focus on statistical analyses of change in Developmental Orientation on the IDI for returning students in 2017–18 and 2019–20 cohorts respectively.

Despite the wide usage of output- and evidence-based quantitative tools which measure intercultural competence, intercultural learning is difficult to operationalize and measure and needs to be additionally analyzed through “softer” ways of evaluations [38] such as (autobiographical) student reflections [39]. In addition to quantitative data from the pre-departure and post-return IDI reports, our analysis in this paper will also focus on using qualitative student reflections from written assignments given during the foreign language courses they are enrolled in during their six-month professional internships. To understand students' development in intercultural competence, we will focus on students' development in the key sets of elements that constitute intercultural competence, i.e., knowledge, skills, and attitude, and the data will be analyzed in reference to the AAC&U Intercultural Knowledge and Competence Value Rubric.

4. Results

4.1 Quantitative analysis

The IDI survey was administered to the two groups of 59 (2017–18 cohort) and 38 (2019–20 cohort) students before and after their IEP program abroad. The IDI measures participants' sensitivity to cultural differences ranging from no awareness (denial) to judging (polarization), de-emphasizing (minimization), and deep comprehension (acceptance) of differences and, finally, to exhibiting an intercultural mindset (adaptation). Intercultural sensitivity is measured on a scale from 0 to 145 with the following cut points: below 70 = denial; above 70 = polarization; 85 and above = minimization; 115 and above = acceptance; and 130 and above = adaptation. Table 1 shows students' worldview category in the two cohorts before and after their program abroad (numbers are rounded).

Cohorts	2017–18		2019–20	
Category	Pre-	Post-	Pre-	Post-
Denial	9 (15%)	4 (7%)	6 (16%)	4 (11%)
Polarization	21 (36%)	29 (49%)	13 (34%)	13 (34%)
Minimization	28 (47%)	21 (36%)	19 (50%)	21 (55%)
Acceptance	1 (2%)	5 (8%)	0	0
Adaptation	0	0	0	0
Total	59 (100%)	59 (100%)	38 (100%)	38 (100%)

Table 1 Worldview Categories Before and After Program Abroad

From Table 1, we can see that the majority of the students in the 2017–18 cohorts were placed in the first three stages of Denial, Polarization, and Minimization. There was only one student placed in Acceptance before the IEP program abroad, but this number increased to five after their return. No students were placed in Adaptation either in their pre- or post-study abroad IDI reports. In a similar fashion, all the students in the 2019–20 cohorts were placed in the first three stages, with no students placed either in the Acceptance or Adaptation stages either in their pre- or post-study abroad IDI reports. To gain a more detailed understanding of students’ changes in scores in their pre- and post-study abroad IDI reports, Table 2 demonstrates the descriptive statistics of the change in scores from the pre- to post-study abroad in the 2017–18 and 2019–20 cohorts.

Cohorts	<i>N</i>	Median	Mean	S.E.	SD	Min	Max
2017–18	59	3.99	3.21	1.84	14.12	-34	30
2019–20	38	4.32	4.32	2.28	14.1	-46.32	25.94

Table 2 Descriptive Statistics of the Change in Scores from 2017 and 2018 and from 2019 and 2020

From Table 2, we can see that the two cohorts are quite comparable in all these categories, with the 2019–20 cohorts’ changes in median and mean slightly higher than the 2017–18 cohort. Both groups have students who have increased their IDI scores, i.e., post-study abroad IDI scores higher than the pre-study abroad IDI scores, with a maximum increase of 30 points in the 2017–18 cohort and 25.94 in the 2019–20 cohort. Meanwhile, both groups also witness students’ decrease in the IDI scores, with a maximum decrease of 34 points in the 2017–18 cohort and 46.32 in the 2019–20 cohort.

To understand the overall impact of the curricular interventions on students’ intercultural competence, we compared the IDI scores of these two cohorts before their study abroad program. The results are shown in Figure 1.

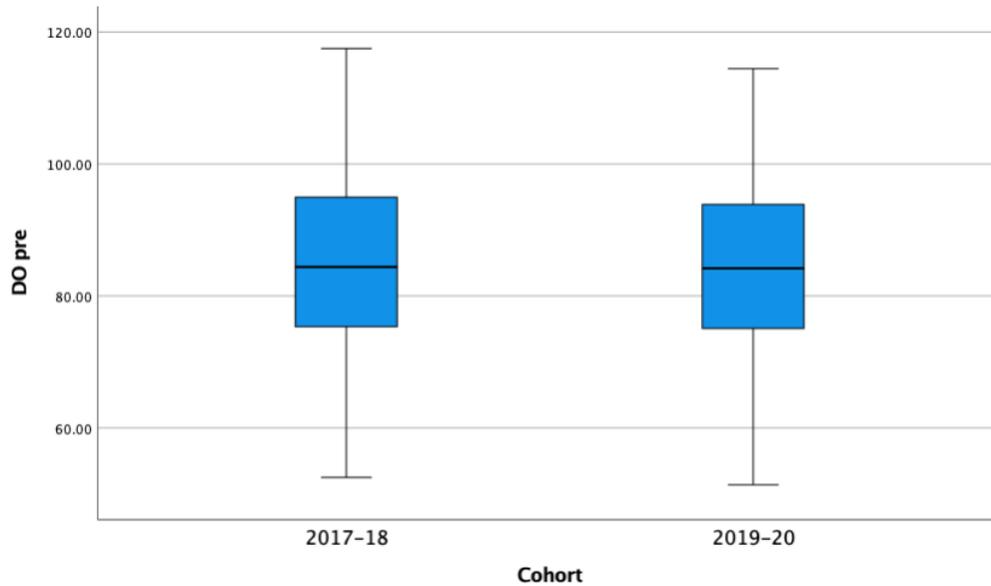


Figure 1 Boxplots of Student Scores Before Their Study Abroad Program by Cohort

An independent-samples *t*-test comparing the pre-study abroad IDI scores of the cohort 2017–18 with 2019–20 did not show any significant differences: $t = 0.48$, $df = 109$, $p = 0.63$. This result warrants further comparison of students' scores after their study abroad program, because these two cohorts are homogenous in terms of their overall distribution of scores, the medians and means of these two cohorts. The biggest difference between these two cohorts is that the lowest and highest pre-study abroad IDI scores in the 2019–20 cohorts are slightly lower than those in the 2017–18 cohort. On the basis of this result, we further compared the IDI scores of these two cohorts of students after their study abroad program.

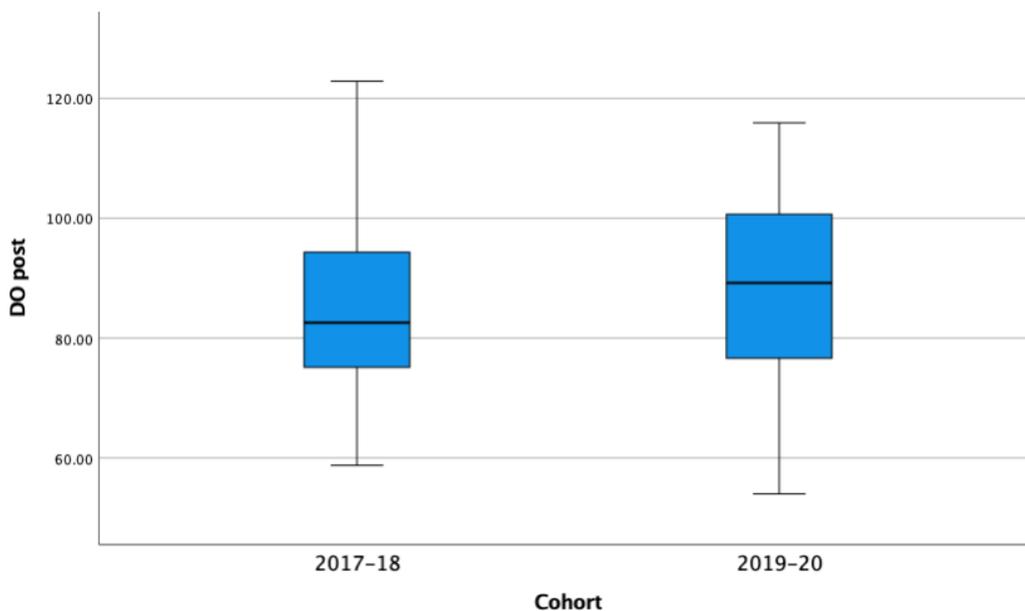


Figure 2 Boxplots of Student Scores After Their Study Abroad Program by Cohort

An independent-samples *t*-test comparing the post-study abroad IDI scores of the cohort 2017–18 with 2019–20 did not show any significant differences: $t = -0.49$, $df = 108$, $p = 0.63$. Although statistically insignificant, we can still identify some meaningful changes comparing the two cohorts' students' IDI scores after their study abroad programs. Combining the results of Figures 1 and 2 and Table 2, we can see that similar to the pre-study abroad IDI scores, the lowest and highest post-study abroad IDI scores in the 2019–20 cohorts are still slightly lower than those in the 2017–18 cohort. However, the median of changes moved from 3.99 in the 2017–18 cohort to 4.32 in 2019–20 cohort, and the mean of changes moved from 3.21 in the 2017–18 cohort to 4.23 compared to the 2019–20 cohort. In addition, the 50 percentiles in the 2019–20 cohort also moved up compared with the 2017–18 cohort. Albeit the fact that changes did not show any significant differences from a statistical perspective, these moderate yet positive changes reflect a fairly accurate and objective impact that the curriculum interventions were able to have on students' intercultural development over a short period of time.

4.2 Qualitative analysis

According to Genkova [40], while the construct of intercultural competence has been measured with existing (psychometric) instruments with a relative high degree of reliability in the respective culture-specific realms, these instruments are not demonstrating culture-comparative and culture-general reliability and validity. There is no norming or standardization of the construct of cultural competence as there is for other constructs, e.g. the related construct of intelligence [40]; Leung et al. list “self disclosure” as the most widely used method in scientific practice [41]. Genkova concludes that the future may lie in a multi-level approach which distinguishes between culture-general and culture-specific facets of intercultural competence [40]. While student responses generated by self inspection rather lead to insights about the experienced subjective degree of one's own cultural competence and not to “objective” insights [40], they do need to be considered, in our view, to balance the quantitative psychometric data we presented above. As it turns out, they reveal interesting insights, especially when aligned with matching rubrics, which go far beyond those revealed by a purely quantitative approach.

In the section below, excerpts taken from student writings and reflections assigned during the internship courses are partially aligned with the AAC&U Intercultural Knowledge and Competence Values Rubric. This rubric is informed in part by Bennett's DMIS [42] and in part by Deardorff's intercultural framework [43]. They “articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment.” Encouraged by the leeway the rubrics provide for individual application—they “can and should be translated into the language of individual campuses, disciplines, and even courses,”— below is an attempt to use some of the performance indicators that make the most sense for individual students' responses to the internship course prompts. Using these key rubric concepts allowed the authors to conceptualize, articulate and unpack in a more sophisticated and transferable way some of the “raw” and authentic student expressions. We followed these rubrics on the following key sets of elements that constitute intercultural competence, i.e., knowledge, skills, and attitude.

4.2.1 Intercultural knowledge

Many of our assignments asked students to focus on cultural products, practices or perspectives that they considered different or unusual in the target culture. In their reflections,

they are asked to describe in detail what is different about such products, practices or perspectives and analyze what these differences might show about the values within the new culture. This way, students have ample opportunities to raise their cultural self-awareness and enhance their knowledge of cultural worldview frameworks.

The code we are using to list students anonymously, e.g. CHN1_A8, denotes first the language course they are enrolled in, e.g. CHN, then the individual student # 1, and then the assignment reflected here, e.g. A8. Students' observations varied to a great degree in content and depth. In some cases, students just relate the differences and how they felt in those situations in a descriptive (sometimes even superficial) way. For example, one student just noted that "Chinese culture is different from American culture. One big difference is the interaction between workers and bosses. I went to a New Year's party with my coworkers in China. Our boss also went. I learned that workers and bosses expect to drink and get drunk. In America you don't want your boss to see you drunk. I find it very interesting" (CHN1_A8).

In some other cases, however, students were engaged at a much deeper level to reflect on the cultural knowledge that the study abroad experience has made them aware of. For example, a significant number of observations was related to ecological issues. Student SPA2 speaks about the public transportation system in Spain, her way to move around the city and what this says about the Spanish that "I have a bus card with my picture on it to pay a more affordable price to ride the bus. The bus in this picture produces zero emissions and it was designed by the research center in which I worked. Spanish people care a lot about the environment" (SPA2_A9). There is an implicit consideration that in contrast with some practices common in the US, such as car dependency, Spanish people seem to have developed values around ecological standards.

A student in French reached a similar conclusion about the culture in which he lived. Student FRN3 took pictures of the flushing mechanisms of toilets, reusable grocery bags, and eco buttons on showers. For the flushing mechanism, his picture shows a large flushing button split into two parts. He writes that one of the buttons uses more water than the other. He continues that the purpose of the mechanism is to "reduce unnecessary water usage, a concept respectful of the environment widely put into place by the French" (FRN3_A9). Concerning the reusable grocery store bags, he says it took him a while to get used to it, proven by his frequent forgetting to bring them with him to the grocery store. The bags themselves, he writes, are made from recycled material and allow for a considerable reduction of plastic waste. For the shower controls, he writes that he noticed a button on their handles. He says that it took him a while to understand its purpose, but then he learned that they stop the handle at a point "that indicates the quantity of water pressure most respectful to the environment. By pressing on the button, one can increase the water pressure." In his conclusion, he writes, "Even though these are tiny differences, they say a lot about French culture." He then adds that "recently it would seem that the US has regressed in its position on the subject of environmental protection while the French have integrated apparently modest solutions to contribute to the protection of the environment in daily life." This student makes a point of finding a unifying theme, which indicates curiosity about the culture since he makes an effort to synthesize his knowledge of specific cultural differences into a broader statement about fundamental values within the culture.

Another student in the French IEP program demonstrates a wide degree of knowledge about the French culture. Student FRN1 describes the context, both historical and social, within which each of these differences is placed. This is especially evident in her following discussion of small cars, narrow roads, and land-use patterns. Moreover, the student makes an effort to use this contextualization to explain why these differences exist. For example, she took the

photograph of the cars parked on the road to illustrate the small cars driven by the French. She says there is not a lot of empty space in France. “There is farmland, industrial areas, and residential areas. Not a lot of vacant land” (FRN1_A9). She also links this to urban development history and patterns. She says American cities are more recent so [the roads] are not as narrow. Also, the US is more spread out, which forces people to travel further.” In addition, she notes an attitudinal difference, pointing out that the saying, “Bigger is better,” does not exist in France. When discussing fondue and raclette, she says they “are really fun because everyone cooks their own food to a certain extent. It takes a bit of patience. This illustrates that the French take their time to eat and they like to discuss during dinner. It is a social event.” She also commented that the French like coffee and how they use coffee as a social aspect of their life. The wide knowledge of French culture is linked to the attitude element of intercultural competence, because it reflects curiosity about why the differences exist.

4.2.2 Intercultural skills

According to the AAC&U VALUE Rubric, intercultural skills mainly incorporate two broad aspects: empathy and verbal and nonverbal communication. The following example demonstrates how learning the technical vocabulary gives students the verbal communication skills which heighten their integration and interaction with their work teams. In this example, the student wrote a detailed explanation in which she described the different elements that affect such performance and the measurements used in her project. Her essay shows that the technical vocabulary was necessary for her verbal communication skills. SPA2_A7 wrote,

I did not know many of the words that I used in the previous paragraph [in this paragraph she explained the internship project she conducted at CEIT, a study of the efficiency of electric boat motors] before starting my internship. It is important to learn and understand the terminology used in an office in case your supervisor asks you about the performance [of an electric motor] or something work specific, I need to have the tools to answer and provide useful information. Also, if in the office I hear my co-workers speak, I can ask if I do not understand a concept and I learn more about the topic, which can help me in my own work.”

For this student, the verbal communication seems more transactional in that she must understand her supervisor and coworkers in order to know what to do and she must get herself understood in order to get help.

Another example comes from Student FRN2 who describes two projects. In one, he had to write and conduct tests on a medical device. In the other, he had to create a model of the bile duct-liver-duodenum system to be used to train surgical students at a university hospital. This student’s descriptions were less detailed than other students’ but included more information about the people he worked with in order to complete his projects. He needed to talk to engineers, doctors, and also his supervisor. The student noted that for each project he needed some engineering vocabulary in order to write the tests or operate the equipment. He also needed medical vocabulary because he would need to check with the doctors about the protocols for the tests and to check the realism of his model. He also needed to meet with his supervisor to discuss his progress. The student noted that he initially had difficulty understanding what he was supposed to do. But the student wrote, “However, once I started to understand the engineering and surgical terms, I was able to considerably improve my work.” He added, “In fact, I was recently congratulated for the improvement of my French since my arrival [here] four months

ago” (FRN2_A7). As with the other students, this one highlights the need for verbal communication skills. However, in this example, the student presents the communication as explicitly interactional with a need for discussion among himself, the engineers, the doctors, and his supervisor.

Throughout our program, we underline the role of the internship as the highlight of the program and the fact that students need both language and technical knowledge in order to succeed in such experiences. Our students were also aware that being able to communicate accurately was key to be perceived as a skillful professional and they developed their own strategies to acquire both the required technical and language skills before joining their companies:

Before starting my internship, I visited the website of 3P Biopharmaceuticals and I read articles in Spanish to be able to learn the terminology used in this field. I did not know a lot of pharmaceutical terminology prior to my start day, so I was a little nervous. The people in 3P Bio were very helpful as they understood that my Spanish was not perfect. After a short period working there I have a greater passion for this kind of field, but I have a better understanding of the professional culture not only in a Spanish company, but also in a pharmaceutical company. I believe that being able to speak with my co-workers about my job made me feel very professional and they were surprised to find out that my Spanish was better than what they expected. Being able to communicate in the language makes one feel more comfortable. (SPA6_A7)

Beyond leveraging their advanced and specialized technical foreign language skills to integrate into the workplace, IEP students additionally pick up and adapt to the non-verbal communications skills they observe in the local culture as GER 22_A2’s observation shows: he respectfully adapted his own way of doing things to fit in with the newly observed cultural practice and norm: “you should shake hands with each coworker – I even have to shake hands with coworkers who are not in my group.”

The following example is related to students’ development of empathy skills while doing study abroad. Student GER22_A3b recognizes that learning a new language is intimately related to encountering a new worldview after discovering and reflecting about a key term in which the German language expresses the value of a strict separation between work and leisure time, “Feierabend”. He writes

VW uses flex time, that means I can arrive between 7:30 and 9 a.m. and have to stay until 1 p.m. I work 35 hrs per week. I have 40 minutes for lunch and 1,67 days of vacation per month if you work less than 6 months and 20 days if you work full-time. I love this system, because the employees have more leisure time. Most workers with whom I spoke have worked for the company for 10 years or longer. All like their job [...] there are more vacation hours in Germany; work ends at “Feierabend”.

Along with his change in knowledge about this flex system, and the skill to understand how loaded in cultural connotations this new term is, comes along a change in his attitude that allows him to adapt to the value of separating work from leisure time. This happens after being confronted with the consequence of violating the related norm: “When I talked about a work assignment during lunch or after working hours, my coworker quickly changed the subject.” From this example, we can see that GER22_A3b’s empathy skills reached a capstone level in that he interprets his intercultural incident through the perspective of more than one value system

and demonstrates an ability to act in a supportive manner that recognizes the feelings of another cultural group. Understanding the norms and values behind usage of a particular linguistic term allows him, in the end, to adapt to the newly discovered practices in the German workplace.

4.2.3 Intercultural attitude

The intercultural attitude category comprises two traits: curiosity and openness. Curiosity incorporates such qualities as asking questions about other cultures and answering these questions from multiple perspectives; while openness indicates the ability to initiate and develop interactions with people who are culturally different from oneself, and suspend judgement in valuing their interactions.

In this assignment where students were asked to compare the difference between the working culture in Germany and in the US, student GER15_A3b's reflections interpret the concept already mentioned above, that of "flex time" in the German workplace, but relate it as derived from an underlying value system which honors a more balanced approach to life and work than he is used to from the US. In his judgment, he combines detailed observations and background information on which his interpretations and evaluations are based. In terms of the rubrics, student GER15_A3b has reached the capstone milestone of intercultural knowledge and competence. He writes:

I like the work culture in Germany, because employees focus more on their work and separate between work, family and hobbies. When you work overtime, you get more vacation hours. In the US that is different. Sometimes, work and family life are not separated, since we sometimes do work from home. And if we work overtime, we get more money. [...] It is a German law that every person has to get paid vacation, a law that does not exist in the US. I can't believe that it does not exist. It makes more sense and can improve the quality of life. Germans love their vacation, and I feel for them because I would too.

He demonstrates knowledge of cultural awareness by articulating insights into his own culture's rules and biases; he shows knowledge of cultural worldview frameworks demonstrating a sophisticated understanding of the complexity of elements important to members of another culture in relation to its values, beliefs and practices; his curious attitude has developed to a degree that he asks complex questions about other cultures, and seeks out and articulates answers to these questions that reflect multiple perspectives.

Similarly, student GER9_A3b begins to recognize intellectual and emotional dimensions of more than one worldview in his interactions when he writes, "A big difference between working in Germany and in the US is that work is here reserved for working hours only. I had told my supervisor that I wanted to study a new computer program a bit more at home, in order to work better and more efficiently, and he responded No, that is not necessary. 'Work is for work and not for your free time.' I believe that is different in the US". His attitude demonstrates openness as he initiates interactions with culturally different others and a beginning suspension of judgement in valuing what he discovered as new and surprising.

In the French IEP program, students demonstrate similar traits. For example, Student FRN2 mentioned that one of his goals while studying abroad in France is to improve his "French fluidity." In order to do it, he speaks "almost always in French and that he learns a lot about French culture from his colleagues" (FRN2_A5). By initiating, developing, and maintaining

meaningful interactions with the local people, this student demonstrates a high level of curiosity for another culture, the key trait in the enhancement of intercultural attitude. Similarly, when comparing the US and France, Student FRN1 writes “In France, there are a lot of cultural things that are very different from things in the US. In fact, almost everything is different.” She adds, “For me, these differences are neither better nor worse: I have things that I like better in the US and things that I like better in France” (FRN1_A5). What this student demonstrates is that when she is starting to be engaged with a cultural group different from her own, she is able to suspend making a value judgement based on what is familiar to her. Another example is that when she explains some of the significance of the Yellow Vest protest, she links it to a greater number of strikes and demonstrations in France compared with the US which show a greater desire on the part of the French people to make one’s voice heard. She refrains from judging the differences, which indicates a certain degree of openness.

4.2.4 Other factors

When discussing intercultural competence, we have focused on knowledge, skills, and attitudes, but there are other factors that also impact the development of students’ intercultural competence. For instance, the concept of action should be included. That is to say, what action can students put in place to effect a change in themselves or their situation in order to attain higher levels of achievement? While one could argue that this is subsumed by an attitude of openness (being open to change), there nevertheless needs to be an active decision to put in place the change. This became most apparent in Assignment 5 where students talked about their goals.

Some students made a decision to alter their goals in order to fit the new situation while other students seemed to accept their situation and leave certain values unfulfilled. On Assignment 5, Student FRN2 explains that learning is an important value. During the study portion of her year abroad, she explains, “there is always more work to do, more projects to do, more studies to do.” In contrast, she writes that during the internship period “I have more time to learn more about what I am interested in, whether it is the history of Rwanda or the life of Jimi Hendrix.” Thus, she took action to leverage the free time to pursue other learning interests. On the other hand, Student FRN2 lists close relations and music as two of her values. For close relations, she writes that during the study portion, the other Americans “became my family for the year,” but they all left Compiègne for their internship sites (FRN2_A5). During her internship part of her stay, she writes that she spends the evenings at her apartment cooking dinner and watching television, which seems to be a poignant vignette of social isolation. In addition, music seems to be a striking absence. She lists it as a value, but makes no mention of playing music or seeking out opportunities to perform with others. She describes no effort to seek out opportunities to change her situation in order to better fulfill her other values and goals. In the future, it might be good to incorporate into the assignment a part where the students need to address what they have done and what they can do to change their situation or themselves in order to attain a higher degree of fulfillment.

Moreover, Assignment 10 “How have you changed?” revealed how some students turned value into action and affected change. GER13_A10, for example, wrote that he valued leading a healthier lifestyle during his year abroad. He took action to turn his goal into reality, and wrote “When I arrived, I saw so many people on bikes. I found that fantastic and could not wait to buy a bike. I bought a bike and used it everyday, because it was so easy. My shared flat was a bit far from the university. There was a bus and a tram but not directly to the university. So I used my bike and the tram only when it rained or was very cold.”

Secondly, the idea of social network formation should be emphasized. Research has shown that developing a strong extensive social network benefits students' language gains while abroad [27]. Our qualitative data shows that this is hugely important for the students' integration into their new internship cities and workplaces, which in turn affords them greater opportunities to interact with people from the host country. For example, Student FRN3 concludes his Assignment 7 by saying that his internship site contributes more to his personal fulfillment. He says that he speaks "almost always in French and that he learns a lot about French culture from his colleagues" (FRN3_A7). The idea of social network formation does not fit into knowledge, skills, nor attitudes. It might make sense to list taking action and social network formation under a new category labeled "Strategies" since they are not examples of intercultural competence itself, but rather are a means to foster greater opportunities for intercultural competence.

5. Discussion

This section discusses the results in light of the research questions and relates them to the previous studies.

To understand whether the curriculum interventions have an impact on students' intercultural competence, we compared the IDI results of two cohorts of students, the 2017–18 cohort where students program design had limited curricular interventions to support their intercultural development, and the 2019–2020 cohort who received curricular interventions aligned to our program goals for their intercultural development, both before and after their study abroad. Pre-departure results show that these two cohorts are homogenous in terms of their overall distribution of scores, the medians and means. Post-return results demonstrate a moderate yet positive change in the 2019–2020 cohort compared with the 2017–18 cohort in terms of the median, mean, and the 50 percentiles of students' IDI scores. Our findings seem to confirm that curricular interventions have a clear and positive impact on the intercultural development of students participating in study abroad programs, as first indicated in Paras et al. [16] because it "provides students with a toolkit of skills for responding to cultural difference" (p. 23). We also learned to what extent curricula support the development of intercultural competence during the study abroad period. From the quantitative analysis of students' IDI scores pre- and post-study abroad we can see that although the impact of curricular interventions is positive, the changes in students' IDI scores after study abroad programs are not statistically significant. This seemingly discouraging result, as a matter of fact, reflects a fairly accurate and objective impact that the curriculum interventions were able to have on students' intercultural development over a short period of time. This result also confirms that the development of one's intercultural competence is a long-term, often lifetime process, with possible ups and downs.

The second research questions—what aspects of intercultural competence can curricular interventions help improve in students' intercultural learning?—is answered by the qualitative analysis which yields a more robust evidence of students' development of intercultural competence. By following the AAC&U Value rubric, we could not only confirm that students have developed their competencies in all key sets of elements of knowledge, skills, and attitudes, but also discovered some new areas of development, such as taking actions and forming meaningful social networks. This new finding could potentially complement the AAC&U Value rubric in a positive way. This result also underscores the need to triangulate any quantitative assessment analysis with qualitative evaluation when assessing one's intercultural competence.

6. Limitations and future research

Many factors could potentially shape students' experience abroad and have an impact on their intercultural development, either in a positive or negative way. In this research, we focused on one particular factor, i.e., study abroad curricular interventions, and examined to what extent curricula interventions support student's intercultural learning. In addition, we focused on providing a general picture of students' intercultural development as a whole, without much discussion at the individual level. As our data shows, in both the 2017–18 and 2019–20 cohorts there are some students who demonstrate an increase and some who demonstrate a decrease in their IDI scores. While we focus in this paper on the factors that could help students increase their intercultural competence, in particular the curricular invention *during* study abroad, it will be extremely interesting to delve into students' experience at the individual level, especially those who had significant regression in their IDI scores, to understand what happened in their study abroad that contribute to their IDI regression. In future research, we also plan to examine more closely how we can streamline our pre-departure and post study abroad re-entry interventions, and how those might help to boost such development.

This study is part of a longitudinal study that lasts for five years [IRB1819-164]. This paper only presents part of the data in the first three years. In the next two years, program and university records will provide additional variables, including GPA, participation in summer language immersion programs, and short-term study abroad (J-terms), as well as language proficiency level measured at host institution before study abroad and post study abroad during the last year before graduation. Given that the IEP cohorts double major in an engineering discipline and a foreign language, there is potential for several highly interesting future research questions such as

- a) Are there differences between each IEP language cohort (Chinese IEP; French IEP, German IEP, Italian IEP, Japanese IEP, Spanish IEP)?
- b) Are there regional differences as to the continents and countries of immersion (e.g. in Chile, China, France, Germany, Italy, Japan, Spain)?
- c) What impact do institutional data such as GPA, gender, prior language immersion during summers or January-term study abroad have on the development of intercultural competence during the long-term study abroad?
- d) Is there a correlation between the development of linguistic proficiency in the foreign language and intercultural competence during study abroad?

It is our belief that answering questions such as these will in the end lead to even more robust research results.

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