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Meta-Analysis of Purdue 2020-21 Virtual Study Abroad

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Purpose

The purpose of this report is to provide an overview of the student learning outcomes of the various virtual intercultural learning programs which, from September 2020 through August 2021, replaced Purdue's usual faculty-led or staff-led study abroad programs.

Background

In March of 2020, travel of all types, including study abroad and the pursuit of U.S. degrees by foreign nationals, was suspended by universities around the world due to the global pandemic. As Purdue pivoted to delivering high-quality online learning to more than 46,000 students, the Center for Intercultural Learning, Mentorship, Assessment and Research (CILMAR), also pivoted. CILMAR's annual ***Intercultural Pedagogy*** faculty/staff development program, previously open only to leaders of a Purdue overseas study program, was opened to instructors of formerly campus-based learning opportunities with a new emphasis on ***Virtual Experiential Intercultural Learning***.

Results

A total of twenty-five leaders were successful in creating virtual experiential intercultural learning (VEIL) programs in partnership with a non-US institution, while an additional eleven leaders added VEIL modules into a pre-existing (formerly on-campus) class or co-curricular student development program (without inter-institutional student interaction). The number of Purdue students that participated in either experience-- between September 2020 and August 2021-- came to 1,115 students.

Summary of Findings

- Embedding intercultural learning modules into online learning can in some circumstances result in statistically significant changes in intercultural competence ($p < .001$).
- Mean gains for these VEIL programs -- as measured by the Intercultural Development Inventory (IDI) -- were comparable to those arising from Purdue's physical study abroad programs in 2018 and 2019, respectively.
- Students who received intercultural mentoring, whether individually or in groups, continued to make greater intercultural competence gains than those who eschewed such mentoring;
- Pivoting to virtual partnerships:
    - reduced engagement with Europe, increasing engagement with the 'Global South;'
    - had a modest positive effect on rates of participation by traditionally under-represented ethnic groups, and;
    - had a substantial effect on the traditional gender imbalance of physical study abroad.

Overview

Inclusive, pervasive and revenue-neutral study abroad has been a goal of the Purdue International Programs division since academic year 2012 (AY12). In academic year 2019 (AY19), the last full academic year to have been untouched by global travel restrictions, 2,484 Purdue undergraduates participated in a for-credit Purdue approved learning experience outside the borders of the USA. However, in early spring of 2020, a global pandemic put a worldwide halt to travel, study abroad and even normal in-person, physically co-located teaching and learning.

As Purdue University pivoted to delivering high-quality online learning to more than 46,000 students, CILMAR, its Center for Intercultural Learning, Mentorship, Assessment and Research, also pivoted: to helping instructors learn how to embed effective and interactive intercultural modules into online learning. The annual ***Intercultural Pedagogy*** faculty development program, previously open only to leaders of an off-campus study program, was opened to instructors of what had previously been on-campus learning opportunities, as well; with a new emphasis on ***Virtual Experiential Intercultural Learning***.

Thus in the fall of 2020, 34 faculty and staff members entered into a semester-long learning cohort program with the intent of: (a) building a virtual intercultural learning partnership with an overseas partner or (b) leveraging the existing national and ethnic diversity of Purdue by adding intercultural online learning modules to a pre-existing course or co-curricular student development program. (Also, two instructors built virtual programs without joining the cohort.)

In a more typical year at Purdue, qualified faculty or staff develop and lead approximately 150 credit bearing study abroad programs. These programs usually range in length from 9 days to six weeks. By contrast, nearly all of this pandemic year's 36 intercultural learning programs took place within a semester-long instructional context. A few of the programs, led by eager, veteran faculty with significant study abroad experience, ran concurrently with the fall semester VEIL training; most, however, occurred during spring semester 2021.

Research Questions

1. To what extent, if any, did these virtual experiential intercultural learning experiences advance students' development of the attributes of intercultural competence?
2. How does virtual intercultural learning compare, in terms of intercultural competence development, to physical student mobility (study abroad) programs?
3. To what extent, if any, did these programs increase rates of participation in an intercultural learning experience by students from traditionally under-represented groups?

Methodology

Data Collection Methods

The VEIL faculty/staff development program required all participants to:

a) use backward design and the AAC&U Intercultural Competence Rubric to designate at least one intercultural learning outcome along with one or more aligned online activities which would scaffold intercultural learning;
b) to choose (with the help of CILMAR specialists) both formative and a summative assessment methods aligned with said learning goal(s); and
c) to report out on students' intercultural outcomes to CILMAR and IDA+A.

This report draws upon those program leaders' action plans and final reports. **A key component of Purdue's success in persuading faculty members to comply with the above expectations is the ability for program leaders to choose from a number of instruments when assessing students' learning across these experiences.** Table 1, below, describes the summative assessment methods chosen this year.

Table 1: Instruments chosen by Purdue program leaders
for summative analysis of 2020-21 virtual intercultural programs

Instrument	Leaders who chose it	Percent
Intercultural Development Inventory (IDI)	17	47%
Intercultural Attitudes, Skills & Knowledge Short Scale (ASKS2)	9	25%
AAC&U Intercultural Competence VALUE Rubric & Qualitative Data	4	11%
Instructor-Designed Custom Survey	3	8%
Cultural Intelligence Scale (CQS)	1	2.7%
Intercultural Effectiveness Scale (IES)	1	2.7%
Grounded Theory Analysis of Qualitative Data	1	2.7%

Instrument Descriptions

The IDI, or Intercultural Development Inventory, is a 50-question, proprietary survey, designed to measure, across a 5-stage continuum from ethnocentric to 'ethno-relative,' the effectiveness of the learner's behavioral and attitudinal reactions to cultural difference. The Intercultural Effectiveness Scale or IES, a somewhat newer survey instrument, also proprietary, measures six personal skills of competence across difference, including communication, extraversion and emotional resilience. The Intercultural Competence Rubric, created by a team of subject-matter experts for the American Association of Colleges and Universities as part of the VALUE (Valid Assessment of Learning in Undergraduate Education) initiative, was designed to facilitate inter-rater and inter-institutional reliability when evaluating authentic artifacts of student learning. Finally, the ASKS2 survey, developed at Purdue's Center for Instructional Excellence, is a 14-question self-report instrument which uses a six-point Likert scale based on Bloom's developmental taxonomy, to measure the same six facets of intercultural competence as the AAC&U Intercultural Competence rubric.

Data Analysis Methods: IDI Data

For this report, we looked first at the IDI data, in order to address comparability with prior years' reports of learning outcomes from Purdue instructor-led study abroad. After eliminating cases of students who had completed only the pre-test or only the post-test, we were left with 188 individual pairs of matched pre-post IDI data. Then, the mean developmental score or 'DO' from the final survey administration was compared against the initial mean DO score to come up with a mean IDI change score; statistical significance of the whole-group DO change was calculated using the two-sample Mann-Whitney technique (also known as Wilcoxon rank-sum). Mean change was calculated for the entire group, as well as for sub-groupings according to the intensity of the intercultural mentoring delivered to the students (which could be determined by instructors' final reports). In other words, the analyst looked at differences between student groups that received ***individualized intercultural mentoring***, those who received **group mentoring**, and those who ***eschewed participation*** in the available intercultural mentoring.

Finally, consistent with IDA+A's 2018 analysis of outcomes of Purdue-led study abroad programs, the DO scores were used to calculate the percentage of students who either (a) moved forward, (b) stayed in relative stasis within the same stage or (c) moved backwards on the Intercultural Development Continuum.

Data Analysis Methods: Other Data

For programs where the leader did not use the IDI as a summative assessment, a tally method was used to make sense of a methodologically varied set of information. This method tracked which of the six attributes of intercultural competence were set (and attained) as a learning outcome goal, to yield an instructional success rate for intercultural outcomes across the university. A disadvantage of this method is that some instructors set imprecise targets for their stated goals, which meant they had to be eliminated from the tally.

Finally, to explore who was engaging in these experiences (RQ3) a combined list of all enrolled VEIL Purdue students was generated and used to pull data on gender, first-generation status and ethnicity from the institutional data system. Percentages of the total were then calculated for each demographic group. Finally these participation rates were compared to participation rates of the similar demographic group from the academic year 2019 (AY19) study abroad season.

Implementation Fidelity

It should be surprising to few readers that the personal, institutional and societal strains of a year-long global pandemic created conditions that lowered fidelity to Purdue's 2020-2021 instructional and assessment plans for intercultural learning, as compared to prior years. The largest-scale fidelity issues were the following:

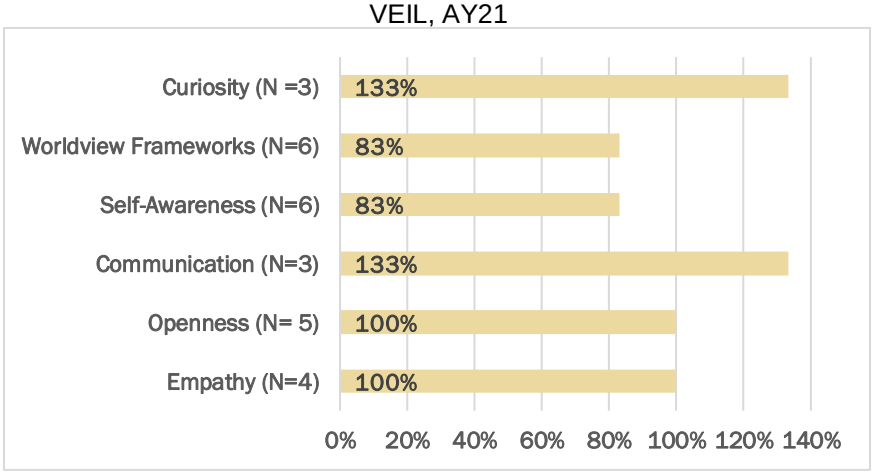
- The proposed methodology for 2020-21 was to use the IDI with all VEIL programs as well as to use a unified set of online reflection prompts. Going into Fall 2020, both CILMAR and its IDA+A liaison thought that strong systems were in place to support this; however, the more solitary nature of work-at-home combined with infelicities in our personal lives (and, often, the lives of instructors and students) proved us wrong. For the most part, we captured IDI data only from units or instructors who had familiarity with it prior to the pandemic, and, within that grouping, only from programs that included overseas partners. In addition, many students proved averse to online reflections in a year when the majority of their instructional interactions were also in online mode.
- Eight STEM instructors chose to add interactions with overseas partners into an existing team problem-solving course, while also using the AFS Global Competency Certificate program (hereinafter, the "GCC"). The GCC comprises a series of asynchronous on-line intercultural learning modules with regular peer feedback, punctuated about four times per semester by an expert-led group debrief of module content. Purdue has found that, when GCC participation is a required part of a course or learning experience, students experience increased rates of intercultural competence development (Jones, Campbell & Acheson, 2019). Unfortunately, not all of these instructors succeeded in persuading the students that the GCC modules and reflection exercises were as critical to their learning as the synchronous student-to-student interactions and the usual STEM assignments. In the end, a total of 43 students, out of the 203 who had access to the GCC modules, took advantage of that content and also completed two IDI surveys. Out of the 128 students who were in the same courses, but chose not to engage with the GCC, 35 students completed two IDI surveys. On the bright side, these 35 students' results form a valuable comparison group; similar to prior years' students who engaged in a semester of (physical) study abroad without the mentoring support (and extra work) of the GCC.

Findings

Non-IDI Data

Of the eighteen program leaders who used the ASK2, the IES, the CQS, a custom survey or qualitative methods to measure learning outcomes of a virtual experiential intercultural learning experience, only one leader found that his students made no significant gains. In other words, **during the AY21, 94% of these instructors found that intercultural learning can and does occur in VEIL experiences**. On the other hand, four of the instructors reported only partial success at assisting their students in attaining growth in multiple competency areas (e.g., succeeding in fostering growth in self-awareness but not in worldview, or vice-versa). In addition, in four cases, the instructor found (by virtue of using an assessment method that measures several facets of competence) that the students had attained growth in something that he or she had not intentionally designed in the curriculum. The chart below gives additional details about these efforts, with 'n' indicating the number of instructors who set that intentional learning goal.

Figure 1: Percent of instructors reporting attainment of a specific intercultural learning target
VEIL, AY21



Data from the IDI

All of the students whose learning was measured with a pre-semester and post-semester administration of the Intercultural Development Inventory (IDI), had multiple, repeated virtual interactions with students from an institution outside the U.S.A. For decades, physical interaction with students from other nations has been considered a key factor in creating attitude and behavioral shifts towards intercultural competence. However, the last decade of research literature about outcomes of (physical) study abroad indicates, across a variety of institutional types, that students who choose to focus exclusively on interactive experiences with individuals from other nations without also getting frequent intercultural mentoring (physical or virtual) seldom make gains on the IDI.

More specifically, the literature indicates that there is a strong correlation between frequency and intensity of the mentoring and upward shifts in IDI developmental orientations (DO) scores. In keeping with the literature, then, this analysis looked at the VEIL data in several ways, comparing the IDI results for:

- mentored students as opposed to students who did not participate in structured intercultural mentoring opportunities;
- ***group-mentored*** students (e.g. GCC participants) vs. students who received ***individualized mentoring***; and
- rates of IDI growth, stasis and regression by absence or presence of intercultural mentoring as well as intensity of the intercultural mentoring.

Mentored vs. Non-Mentored & VEIL vs. Physical Study Abroad

Table 2, below, compares IDI changes of all VEIL students who had mentoring which supported and interrogated their interactions with students from other nations with IDI changes of groups who interacted across national difference but had no such mentoring. The pre-post difference for the mentored VEIL students was significant at the $P < .0001$ level, using the Mann-Whitney method. Seven or more points of difference is considered meaningful change on this 100-point developmental scale (where the stages of effectiveness are generally 15 points apart).

Table 2: Outcomes, by group, as measured by Intercultural Development Inventory

Grouping	Number	Initial IDI Mean (DO)	T2 Mean DO	Change
Mentored VEIL students	152	89.96	97.74	7.78
Non-mentored VEIL students	35	87.06	86.49	-0.57

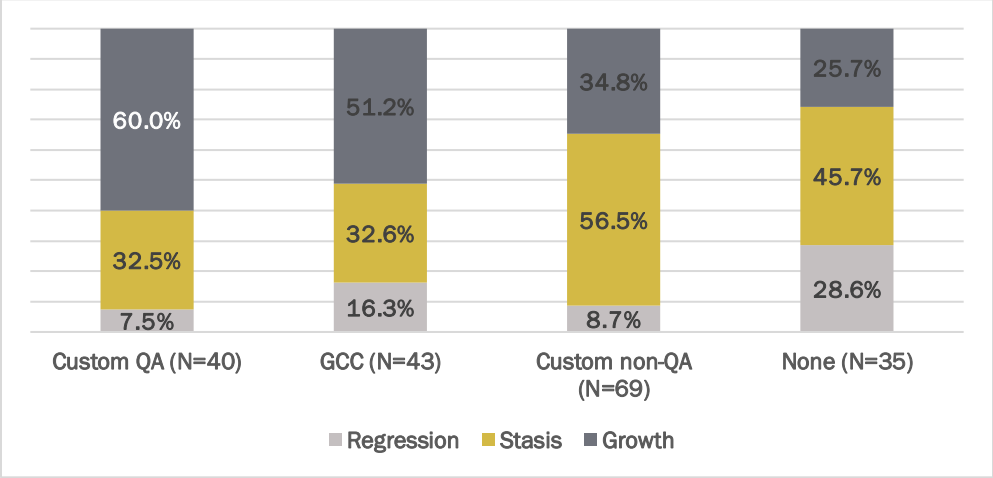
Table 3, compares IDI results for virtual programs in AY21 to in-person study abroad in prior years.

Table 3: Comparison of 2020-21 outcomes to other Purdue study abroad

Participants	Number	IDI Change
2020-21 Mentored Students (Virtual Study Abroad)	152	7.78
2018 Mentored Students (Spring semester programs)	220	8.34
2018 Mentored Students (Short-term, instructor-led)	222	10.03

In past years, Purdue has examined study abroad outcomes not only in terms of the mean change in IDI scores, but also by the percentage of students who moved forward in their developmental orientation (DO) by at least 7 points (growth) and those who do not grow. Figure 2, below, shows this year's growth, stasis, and regression patterns by intensity of the mentoring experience.

Figure 2: Patterns of IDI change by intensity of intercultural mentoring



As in prior years, we find that instructors' (prior) experience in designing these experiences and setting an intentional focus on intercultural competence can make meaningful differences in students' learning. **Courses that were custom-designed, e.g. that included *individualized mentoring* and were led by a qualified administrator of the IDI ("Custom QA") were able to facilitate meaningful growth in 60% of participants. Courses that used the Global Competence Certificate's turn-key curriculum and IDI-Trained mentors (to provide *group-based mentoring*) obtained a 51% rate of growth among students who engaged with the GCC curriculum, but also saw a higher rate of regression than did programs with individualized mentoring**. Even a non-expert instructor, however ("Custom non-QA") can, by adding intentional intercultural modules and mentoring, improve the rate of student growth and reduce regression as compared to a group where participants focused only on the experiential relationship building across cultures and received little to no intercultural mentoring ("None"). In the past, highly experienced Purdue instructors have achieved a 70% mean gain and less-seasoned instructors attained 43%. Therefore, we also observe that **the rate of IDI change for the mentored groups are not as robust as in normal years** (when study abroad was done in-person or physically outside of the U.S.A.).

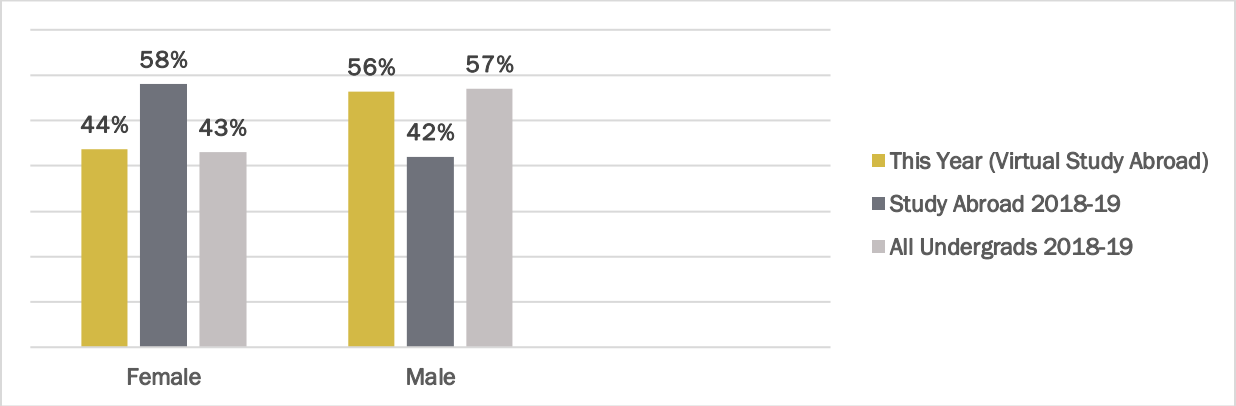
Participation Data

Equity and inclusivity are an important concern for Purdue, thus we explore the effect of the pandemic year on the inclusivity of the AY21 'virtual study abroad' season. In the greater world of U.S. study abroad, participation skews heavily female and predominantly white. Similarly, at Purdue, study abroad participation skews predominantly white and predominately female (despite the fact that undergraduate enrollment skews heavily male).

Figure 3, below, indicates this year's participation rate by gender (gold bar), as compared to the 2018-19 cohort of study abroad participants (dark grey bar); it also shows gender percentages for the total undergraduate population of Purdue in 2018-19. **Given that males are**

traditionally under-represented in study abroad, the diminution in female enrollment may be interpreted as more inclusive and is surely, at least, more representative of Purdue.

Figure 3: Comparative participation by gender



The ethnic and racial groups that are officially designated as 'under-represented' at Purdue include those students who identify as being: of two or more races, Black, Native American or Hawai'ian/Pacific Islander, or Hispanic. The percentage of students of these identities who participated in this year's virtual intercultural programs, in total, was 16.34%, while for the 2018-19 study abroad season 10% of student participants identified with one of these demographic designations. In other words, **virtual study abroad appears to have been more inclusive for ethnically under-represented students**. A full comparison chart of participants by ethnic identity, including 'over-represented' groups is available in Appendix B.

Moving on to the question of first-generation status as a measure of inclusivity, official sources report that "…over 20% of Purdue are first-generation students" [in the fall term of 2019]. For the 2018-19 study abroad season, participation by first-generation students came to 18% of total study abroad enrollments. However, for 2020-21 the percentage of first-generation participants in intercultural learning opportunities came to only 12% of the whole. In other words, **virtual study abroad seems to have been less inclusive than physical study abroad for our first generation students.**

Conclusion and Recommendations

Purdue's results in this pandemic year indicate that **well-designed, high-touch 'virtual study abroad' can create learning outcomes comparable to well-designed, high-touch physical study abroad**. In other words, for over 1,100 Purdue undergraduate students, the pandemic did not impair the improvement of intercultural competence, a key career proficiency, thanks to dedicated instructors and to CILMAR's support.

Further, we have learned that **virtual experiential intercultural learning in AY21 increased inclusivity of participation as compared to traditional (in-person or physical) study abroad**, irrespective of whether it included students from institutions outside the U.S.A. or simply leveraged the diverse ethnicities and nationalities of far-flung Purdue students to create intercultural learning opportunities.

Three recommendations arise from this meta-analysis:

1. Given its strong stimulus effect on inclusivity, Purdue should continue to support faculty and staff in the development of well-designed virtual experiential intercultural learning in the classroom, as a complement to physical study abroad.
2. To the extent that Purdue choses to move ahead with virtual study abroad options, it will want to be mindful of continuing to work more intentionally with the leaders of first-generation support programs (as it has done in pre-pandemic circumstances) to provide support for both physical and non-physical study abroad options that are attractive to these populations.
3. Given the strong (and unanticipated) surge of interest by instructors in using the ASK2 as a summative assessment instrument, CILMAR should consider forming a partnership with CIE to (a) validate the instrument for such uses as soon as possible and (b) provide more active support across units for consistency of method in its use and for ease of institutional meta-analysis.

Appendix A

Table 4: Roster of participating colleges & partner nations

Identifier	Number	College	Partner's Nation(s)
Instructor A	20	Agriculture	Afghanistan
Instructor B	11	Education	China, Kenya, Nepal, Tanzania & Zambia
Instructor C	33	Engineering	Ecuador & Mexico
Instructor D	90	Engineering	Canada, Chile, India, & Spain
Instructor E	10	Engineering	Germany
Instructor F	5	Engineering	Colombia
Instructor G	6	Engineering	China
Instructor H	43	HHS	None [Purdue students only]
Instructor I	9	HHS	India
Instructor J	35	HHS	None [Purdue students only]
Instructor K	20	Honors	None [Purdue students only]
Instructor L	4	Honors	India
Instructor M	35	Honors	Britain
Instructor N	38	Krannert	19 nations
Instructor O	169	Liberal Arts	Colombia
Instructor P	33	Liberal Arts	Italy
Instructor Q	13	Library School	None [Purdue students only]
Instructor R	4	Pharmacy	Britain
Instructor S	11	Pharmacy	Britain
Instructor T	8	Polytech	None [Purdue students only]
Instructor U	25	Polytech	None [Purdue students only]
Instructor V	15	Polytech	None [Purdue students only]
Instructor W	11	Polytech	Colombia
Instructor X	9	Polytech	China
Instructor Y	27	Polytech	China
Instructor Z	130	Polytech	None [Purdue students only]
Instructor AA	69	Polytech	Peru
Instructor AB	65	Polytech	Netherlands
Instructor AC	9	Polytech	Britain
Instructor AD	33	Polytech	China
Instructor AE	28	Science	None [Purdue students only]
Instructor AF	64	Student Life	Georgia
Instructor AG	8	Student Success	None [Purdue students only]
Instructor AH	16	Vet-Med	Brazil & Japan
Instructor AI	7	Vet-Med	None [Purdue students only]
	1113		

Appendix B

Table 5: Comparative participation by race and ethnicity (All groups)

Race or Ethnic Identity	This year (Virtual Study Abroad)	All Study Abroad 2018-19	Change in Percentage
All Under-represented	16.34%	10%	6.34%
Two or More Races*	5.63%	4.11%	1.52%
Asian-American	7.75%	6.28%	1.47%
Black*	3.94%	2.90%	1.04%
Hispanic*	6.76%	5.03%	1.73%
International	14.65%	10.19%	4.46%
Native American or Pacific Islander*	0.00%	0.20%	-0.20%
White	61.27%	67.55%	-6.28%
***Indicates a group which is under-represented at Purdue (West Lafayette campus)**			