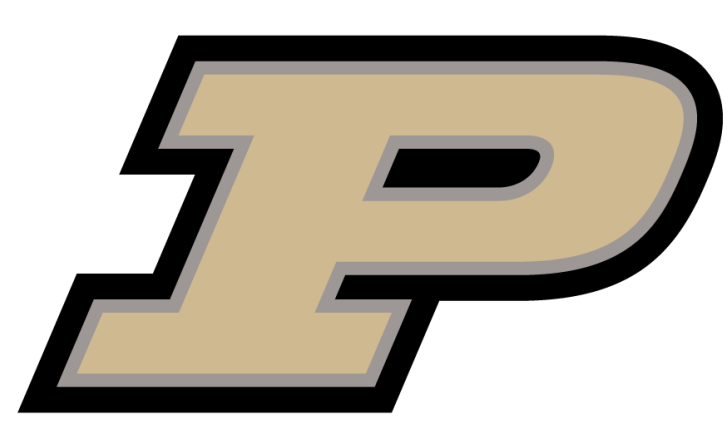


Engineering technology students' intercultural and human-centered design competency impact: Short-term South American study abroad

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INTRODUCTION

Intercultural (IC) and human-centered design (HCD) competence are valuable for careers in a variety of fields. This poster describes a short-term undergraduate study abroad program in South America (Peru and Chile) and the impact on Purdue Polytechnic Institute (PPI) students' IC and HCD competencies (a cluster of knowledges, understandings, skills, attitudes, values, and/or interests).

PROGRAM OVERVIEW

The program was organized and co-led by the authors and its total length was approximately five weeks prior going abroad, 17 days while abroad, and approximately one week after returning home. Scan the syllabus QR code for the learning outcomes and a detailed schedule.

Students completed individually assigned IC work via the AFS Global Competence Certificate (GCC) Program and HCD work via an instructor-created multidisciplinary team-based HCD project.



SYLLABUS



GCC WORK



HCD WORK

SCHEDULE (Abroad)

DATES	LOCATIONS	ACTIVITIES
May 9-14	Lima, Peru (Miraflores and Barranco)	<ul style="list-style-type: none"> IC Work HCD Work
May 14-17	Cusco Province, Peru	<ul style="list-style-type: none"> University Visits Company Visits City Tours
May 17-23	Valparaíso, Chile	<ul style="list-style-type: none"> Landmark Visits Cultural Tours
May 23-25	Santiago, Chile	<ul style="list-style-type: none"> Scavenger Hunts Guest Lectures



Alicorp Company Tour: Lima, Peru (Photo taken on Monday May 13)



Concon Dunes Tour: Valparaíso, Chile (Photo taken on Tuesday May 21)



City Tour: Lima, Peru (Photo taken on Monday May 11)



Machu Picchu Tour: Cusco, Peru (Photo taken on Wednesday May 15)

SAMPLE

The convenience sample (N=13) consisted of 10 students who identified as males and three as females (mean age of 22 years old). Seven identified their race as White, three as Asian, two as Black or African American, and one as Other. Group grade point average was 3.42/4.00 and grade classification included freshman (n=1), sophomores (n=2), juniors (n=2), and seniors (n=8).

Academic majors included Game Development (n=1), Computer & Information Technology (n=1), Aeronautical Engineering Technology (n=2), Electrical Engineering Technology (n=1), Industrial Engineering Technology (n=1), and Mechanical Engineering Technology (n=7).

IC ASSESSMENT

IC data comes from quantitative-based pre- and post-abroad third-party Intercultural Development Inventory® (IDI) surveys, qualitative-based student assigned GCC work, and program leader observations.

The 50-item online IDI is a widely used and effective cross-culturally valid IC development assessment tool. Core to the IDI is the Intercultural Development Continuum (IDC) which gives a numerical result for respondents which corresponds to an individual or group's Developmental Orientation (DO). The DO signifies the objective stage from which the participant operates when encountering cultural difference: denial (55-70), polarization (71-85), minimization (86-115), acceptance (116-130), and adaptation (131-145).

IDI RESULTS

A paired samples t-test was conducted to compare the group's pre-IDI (M=73.0, SD=9.3) and post-IDI (M=82.6, SD=15.4) DO mean scores. The results indicate a significant difference in pre- and post-abroad group DO scores, $t(12)=-2.294, p=0.04$. The effect size, as measured by Cohen's d, was $d=0.64$, indicating a medium/moderate effect.

Group's DO Stage Counts		
IDC Stage	Pre (%)	Post (%)
Denial	6 (46.2)	2 (15.4)
Polarization	6 (46.2)	7 (53.8)
Minimization	1 (7.7)	4 (30.8)
Acceptance	0	0
Adaption	0	0

Seven students (53.8%) progressed meaningfully (point increase >7) along the IDC. One student (7.7%) regressed along the IDC from polarization to denial.

HCD ASSESSMENT

HCD study data comes from quantitative-based pre- and post-abroad instructor-created HCD Discovery surveys (scan QR code), qualitative-based student assigned HCD work, and program leader observations.



HCD RESULTS

It was determined that the raw HCD survey data was incorrect due to several errors (e.g. incompleteness, inaccuracies) and a small sample size after cleaning. Two of three HCD phases (Inspiration and Ideation) were completed, and students delivered high quality work.

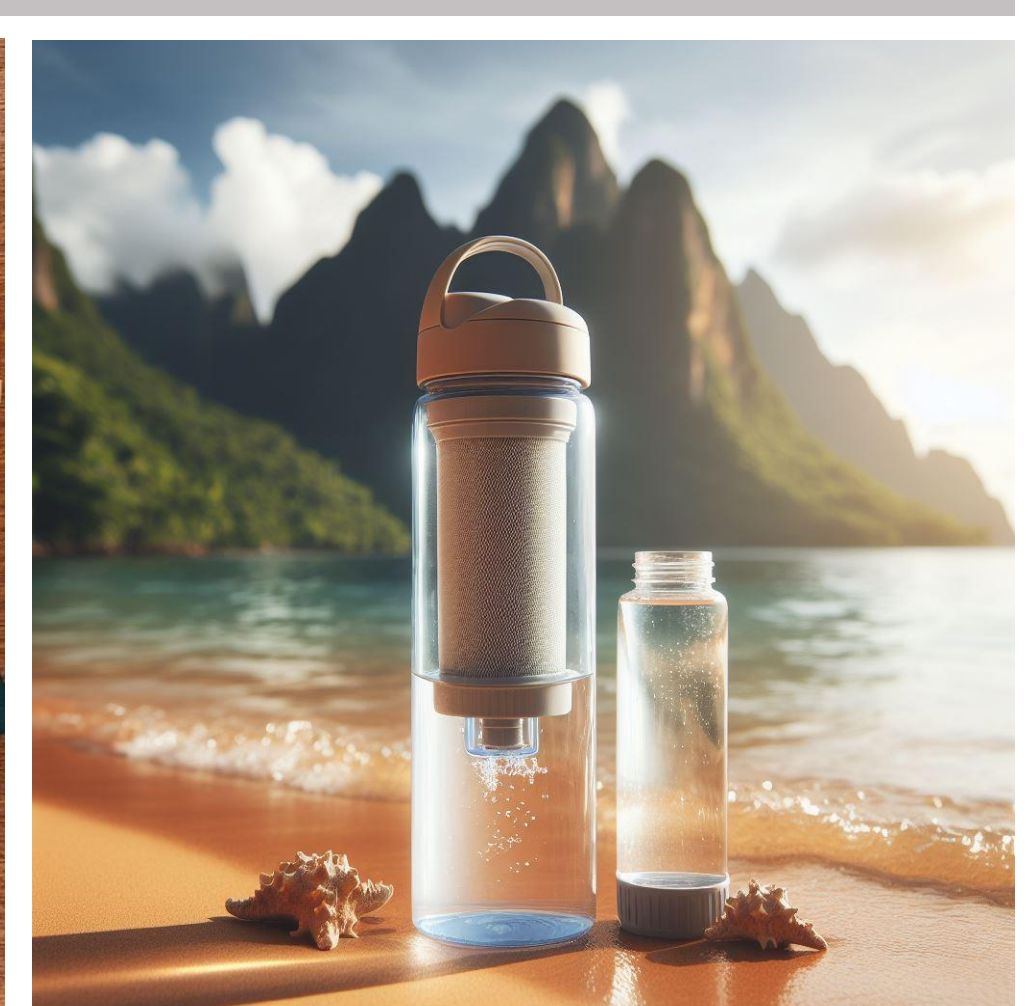
CONCLUSION

Generalizations should be limited due to the programs small/homogenous sample, duration, and locations. However, the utilization of the GCC and HCD curriculum does provide a framework for future studies.

Overall, PPI students' IC and HCD competencies were impacted in a positive manner after a short-term study abroad program in Peru and Chile.



HCD Inspiration Phase: Problem-Finding Journals



HCD Ideation Phase: AI-Generated Digital Conceptual Prototypes