

Assessing Access and Outcomes in Community College International Virtual Exchange

Melissa Whatley
School for International Training Graduate Institute

Suzanne LaVenture
Davidson-Davie Community College

Nadine Russell
Central Piedmont Community College

Executive Summary

The field of international education in the United States has recently turned its attention to addressing long-standing inequities in access to international programs and opportunities, wherein the typical participant is white, female, and from a higher socioeconomic status background (e.g., Lingo, 2019; Lucas, 2018; Whatley, 2017). To address these issues, international educators have recently touted the potential of virtual international exchange, often considered a more affordable alternative to study abroad, to ensure that learning opportunities are more equitably distributed, particularly among student populations that previous models of international education have underserved (e.g., Abdel-Kader, 2021; Whalen, 2020). The purpose of this study is to provide a comprehensive assessment of international virtual exchange programs at two community colleges. The research questions that guide this study are as follows:

1. Who accesses international virtual exchange programs at these two community colleges? Are virtual exchange participants' demographic (e.g., income status, racial/ethnic identity) and academic (e.g., credential program) characteristics systematically different from the characteristics of students who choose to participate in other international learning opportunities (e.g., study abroad, internationalized coursework) or those who do not participate in an international experience at all?
2. What is the impact of participation in an international virtual exchange program on select student outcomes (i.e., global perspective-taking, self-efficacy, and cultural humility)?

The data used to respond to these two research questions draw from two sources. First, the two community colleges participating in this study provided historical administrative data on student demographics, academic characteristics, and participation in international learning experiences, including virtual exchange and, for the purpose of comparison, participation in study abroad and internationalized curricular offerings. These data were analyzed descriptively to respond to the first research question. The second data source included survey data collected from virtual exchange participants and non-participants at the beginning and the end of the term during which virtual exchanges took place. The survey contained three measurement instruments corresponding to specific student outcomes, namely global perspective-taking, self-efficacy, and cultural humility. Survey data were analyzed using regression modeling, which provided a means of accounting for systematic differences between virtual exchange participants and non-participants, to respond to the second research question.

Regarding access to international education, this study's findings suggest that while participation in virtual exchange is higher than study abroad, internationalized coursework enrolls the highest number of students. Regarding student demographics, both virtual exchange and internationalized coursework appear to increase access to international education to male students. At the same time, virtual exchange participants are predominately white, with lower proportions of Black and Hispanic students participating, even compared to study abroad in the case of this latter group. Regarding student outcomes, this study's results suggest that the virtual exchange programs represented in this study, on average, do not promote global perspective-taking, self-efficacy, or cultural humility among participants.

The continued expansion of virtual exchange programs is likely in the near future, and additional work along the same lines as this study is needed to document the student populations

that virtual exchange programs reach as well as the outcomes of students who choose to participate not only in community colleges, but in other sectors and levels of education not represented in this study.

Introduction

The field of international education in the United States has recently turned its attention to addressing long-standing inequities in access to international programs and opportunities, wherein the typical participant in US study abroad, for example, is white, female, and from a higher socioeconomic status background (Lingo, 2019; Lucas, 2018; Luo & Jamieson-Drake, 2015; Salisbury et al., 2010; Simon & Ainsworth, 2012; Whatley, 2017). To address issues of inequitable access, international educators have recently touted the potential of virtual international exchange, often considered a more affordable alternative to study abroad, to ensure that opportunities are more equitably distributed, particularly among student populations that previous models of international education have traditionally underserved (e.g., Abdel-Kader, 2021; Whalen, 2020). However, virtual international exchange is a potential mechanism for addressing inequity in international education only to the extent that (1) a more diverse student population accesses these experiences, as compared to more traditional international experiences like study abroad, and (2) students experience improved outcomes, such as increases in global perspective-taking, related to virtual exchange participation. Given the recentness of the widespread adoption of virtual international education exchanges during the COVID-19 pandemic, we currently know very little about which students participate in these programs and what they gain from their participation. This study offers a first step in addressing these two gaps in our knowledge.

The purpose of this study is to provide a comprehensive assessment of international virtual exchange programs taking place at two community colleges in North Carolina, Central Piedmont Community College and Davidson-Davie Community College. This study's focus on community colleges in particular is key to informing questions around equity in international education given this sector's role in providing access to higher education in general, and international education specifically, through its open-access mission (González Canché, 2014; Whatley & Raby, 2020). That is, one might expect to find evidence of the potential democratizing function of virtual international exchange most prominently at community colleges.

The specific research questions that guide this study are as follows:

1. Who accesses international virtual exchange programs at these two community colleges? Are virtual exchange participants' demographic (e.g., income status, racial/ethnic identity) and academic (e.g., credential program) characteristics systematically different from the characteristics of students who choose to participate in other international learning opportunities (e.g., study abroad, internationalized coursework) or those who do not participate in an international experience at all?
2. What is the impact of participation in an international virtual exchange program on select student outcomes (i.e., global perspective-taking, self-efficacy, and cultural humility)?

This first research question addresses issues of access for student populations who are historically underrepresented in international learning opportunities. The second research question explores the relationship between participation in virtual international exchange and specific outcomes for community college students, thus speaking to the extent to which virtual

exchange opportunities result in specific benefits that one might expect to result from international education participation.

Literature Review

Conceptually, this study derives from an equity-driven lens, recently outlined for the study of the internationalization of higher education in George Mwangi and Yao (2020). This lens focuses attention on the inequitable origins and historical context of the internationalization of higher education and its role in the reproduction of long-standing hierarchies (George Mwangi & Yao, 2020; Stein et al., 2016). For example, traditional study abroad programs have often been the domain of white women from financially comfortable backgrounds. Consequently, this group of students has been able to reap the benefits of study abroad participation, to the exclusion of other student populations. From an equity-driven perspective, researchers are called to explore intentionally “how internationalization rationales (as well as processes, practices, and outcomes) are inherently connected to power, privilege, oppression, and advantage” (George Mwangi & Yao, 2020, p. 5). In other words, this perspective focuses attention on how international education—and its practices, in the case of this study—derive from and perpetuate an educational system that reproduces social inequalities.

Virtual international exchange, the focus of this study, is a relative newcomer to the array of international education opportunities put into practice with the intent of providing students with advantage and improved outcomes, such as a broadened global perspective or a greater sense of self-efficacy. However, study abroad, a practice that enables students to earn academic credit at their home institution while studying in a foreign country and perhaps the most prototypical international experience in US undergraduate education (Rumbley et al., 2012), has long held a reputation as an exclusive and elite educational activity (Contreras, 2015). This history is visible today in the characteristics of study abroad students, who are primarily women, white, and from upper and upper-middle-class socioeconomic backgrounds (IIE, 2020; Lingo, 2019; Luo & Jamieson-Drake, 2015; Whatley, 2017). However, recent research has suggested that these patterns of inequality may not be particularly prominent at community colleges specifically (Whatley, 2021), reflecting the open-access nature of many community college study abroad programs (Whatley & Raby, 2020). Internationalization of the community college curriculum represents another way in which these institutions aim to expand access to international education beyond traditional participating student populations (Malkan & Pisani, 2011). Raby (2007) defines internationalization of the community college curriculum as “efforts [that] infuse cross-cultural concepts, theories, and patterns of interrelationships into courses and academic programs” (p. 57). In this way, much like through virtual exchange participation, students are able to interact with the world beyond US borders without leaving their home campuses.

The connection between international education, especially study abroad, and improved student outcomes derives from study abroad’s potential as a high-impact educational practice that fosters increased student engagement (Brownell & Swaner, 2010; Kuh, 2008). Indeed, recent work has documented improved outcomes for students who study abroad in key areas explored in the current research, including global perspective-taking (e.g., Tarrant et al., 2014; Whatley et al., 2020) and self-efficacy (e.g., Petersdotter et al., 2017). An equity-focused lens calls attention to the inequitable access to international opportunities that many students experience as well as the potential outcomes of participating students. That is, even in contexts where students are able

to access international opportunities, there is no guarantee that they will experience similar outcomes, such as those explored in the current study, after completing their program. In other words, even if virtual exchange offers a means by which a greater diversity of students can access international education, access does not mean that students experience similar learning outcomes as a result.

Virtual exchange comprises part of a broader solution recently proposed for addressing international education's equity problem through the provision of an array of opportunities for students to engage internationally from their home campuses (Custer & Tuominen, 2017; Watkins & Smith, 2018). During the COVID-19 pandemic in particular, as virtual exchange has experienced increased popularity, international educators have proposed that virtual exchange is a tool that can be used to address the pervasive inequities present in current international education practice, particularly study abroad (e.g., Abdel-Kader, 2021; Whalen, 2020). This study addresses George Mwangi and Yao's (2020) call and provides the intentional, empirical exploration of the extent to which virtual exchange does, or does not, address inequities in international education. The first research question posed in this study is one of access and the results of this study speak to the extent to which students at the two community colleges involved in this research are able to access international experiences, comparing virtual exchange to other international opportunities, namely study abroad and internationalized coursework. The second research question inquires about student outcomes and analyses the extent to which students benefit from virtual exchange participation. Outcomes explored include two that have previously been shown to relate to study abroad participation, global perspective-taking and self-efficacy, and one that is relatively new to the international education literature: cultural humility. The results of this study provide both a critical evaluation of recent claims that virtual exchange is more equitable compared to other forms of internationalization practice as well as information regarding concrete steps that international educators can take to address inequities in current internationalization practice.

Method

Study Context

The two community colleges participating in this study represent two different contexts for international education. The first is a small college located in a rural setting while the second is a large, urban college. Both have offered formalized internationalized coursework for a number of years. Under normal circumstances, students at both colleges have access to a number of short-term faculty-led study abroad programs during both the regular academic year and summer terms.

Regarding virtual exchange specifically, students at Davidson-Davie Community College participated in a variety of opportunities in the spring and fall of 2021, the period during which this study took place. In both semesters, a small cohort of students participated in Global Solutions programs administered by IREX, a global development and education organization. In the spring, students participated in the ten-week Global Solutions Sustainability Challenge in partnership with students in Kurdistan, Iraq. The bi-national team learned about sustainability, empathy, and design thinking. Working together, they envisioned a product that would help each of their communities and formulated a business plan. The fall cohort also worked with students in Kurdistan but participated in six-week-long Global Solutions Conversations. This opportunity

followed a similar curriculum to the Global Solutions Sustainability Challenge but did not require meeting outside pre-arranged bi-national calls.

At this same college, during both semesters, students enrolled in a Public Speaking course and a Psychology course met bi-weekly with students at the Bonch State University of Telecommunications in St. Petersburg, Russia. Discussions between groups of students were based around common interests such as music, food, and social activities. Additionally, students enrolled in Spanish courses participated in Lingua Meeting, which required students to participate in six live 30-minute sessions per semester with a coach from a Spanish-speaking country. During these sessions, students discussed pre-arranged topics such as family, sports, and food. Lastly, several students in the college's Scholars of Global Distinction program, a program designed to provide students with opportunities to engage globally while earning a transcript notation, enrolled in "Global Perspectives through the Narratives of Ireland" – an interactive online class designed to provide a virtual study abroad experience.

Central Piedmont Community College offered international virtual exchange programs to students in both synchronous and asynchronous formats through collaboration with partners such as Study Abroad Association, EDU Africa, and the Stevens Initiative Global Solutions programs. Faculty in Humanities, History, and Business integrated the Study Abroad Association's 360-GLE Global Learning Experiences modules into their courses, requiring students to 'visit' countries via interactive videos. Humanities students could select from two options: 'The Grand Tour of Italy' or 'Around the World in Eight Weeks.' Assignments included scavenger hunts, discussion boards, quizzes, and presentations on the selected locations. Business students were required to select a country of interest and utilize the Virtual Global Education modules in conjunction with external research to create a formal business analysis. Based on their virtual interaction with the material and countries, students developed comparisons focused on innovation, technology, and entrepreneurship. Students were also able to join synchronous sessions with virtual tour guides during International Education Week during the fall 2021 term. History students were required to complete a tour from a list of selected countries. Upon completion of the "tour", students submitted a reflective paper based on question prompts from their instructor and shared feedback via an asynchronous group portal. An example reflection question that students responded to is: "Would you recommend this event/tour to another student for an educational cultural or global experience? Why or why not?"

Data

The data used to respond to the two aforementioned research questions draw from two sources. First, the two community colleges participating in this study provided historical administrative data on student demographics, academic characteristics, and participation in international learning experiences including virtual exchange and, for the purpose of comparison, participation in study abroad and internationalized curricular offerings, including entering student cohorts spanning the 2016-17 through the 2020-21 academic years. Although study abroad was not available at these two colleges during semesters that took place during the COVID-19 pandemic (starting with the summer 2020 term), both virtual exchange and internationalized coursework continued to be offered, thus justifying the inclusion of these terms in the dataset. However, it is important to keep in mind that study abroad opportunities were limited for approximately half of the students included in the dataset, starting with the 2018-19 entering cohort, which would have been in their second year of enrollment when the pandemic

began. In total, after excluding non-US residents¹ and students under the age of 18, the combined dataset representing students enrolled at both community colleges included data from 41,655 students.

The second data source included survey data collected from students attending these two community colleges during the spring 2021 and fall 2021 semesters. The survey was administered to students participating in virtual exchange during these two terms as well as groups of students not participating in virtual exchange, for comparison purposes. Effort was made to collect data from students enrolled in similar classes with the sole difference in groups being the inclusion of virtual exchange. For example, at one community college, the same history course was taught by the same instructor with some sections including a virtual exchange component while other sections did not. Students completed the survey at the beginning and at the end of the term that they participated in this study, thus allowing for an exploration of changes in students' responses to these measurement instruments over time. That is, the analyses presented below use students' survey responses at the beginning of the semester to account for baseline differences in virtual exchange participants and non-participants that may have been present even prior to participation in virtual exchange. In total, 76 students completed the survey at both the beginning and end of the term in a way that indicated that they were paying attention throughout the survey's administration. Thirty-two of these students (42%) participated in virtual exchange while 44 (58%) did not.

The survey contained three measurement instruments corresponding to specific student outcomes that may develop through participation in virtual exchange, namely global perspective-taking, self-efficacy, and the development of cultural humility. Global perspective-taking is defined as "the capacity and predisposition for a person to think with complexity, taking into account multiple perspectives, to form a unique sense of self that is value-based and authentic, and to relate to others with respect to openness, especially with those who are not like [them]" (Braskamp, 2014 cited in Research Institute for Studies in Education, 2017, p. 3) and was measured using the 32-item Global Perspective Inventory (Braskamp et al., 2009). This instrument measures global perspective-taking along three scales comprised of two subscales each: Cognitive (subscales: Knowing and Knowledge), Intrapersonal (subscales: Identity and Affect), and Interpersonal (subscales: Social Interaction and Social Responsibility). Definitions and sample items from these subscales are provided in Appendix A.

Self-efficacy is defined as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989, p. 408). In this study, self-efficacy was measured using the eight-item New General Self-efficacy scale (Chen et al., 2001).

Finally, cultural humility is an interpersonal form of humility (Davis et al., 2010), wherein "humble individuals are able to maintain an interpersonal stance that is other-oriented rather than self-focused, characterized by respect for others and a lack of superiority" (Hook et al., 2013, p. 354). We measured this construct using an unpublished scale (the Cultural Humility Self-Assessment Scale, CHS-A) consisting of nine items that is currently in the process of development. Scale definitions and sample items corresponding to both the self-efficacy and cultural humility scales can be found in Appendix A.

Analysis

¹ These students were removed from the dataset because key information, including their racial/ethnic identity, was lacking in the data collected at the two institutions participating in this study.

The first research question outlined previously was answered descriptively using the student-level administrative data just described. These analyses divide students into four groups based on their international experience participation: virtual exchange, study abroad, internationalized course-taking, and no experience. Demographic characteristics taken into consideration for this analysis include the student's age at entry to the community college, sex, racial/ethnic identity, and Pell recipient status. This analysis also considers the extent to which students in different credential programs (i.e., associate in arts, associate in science, applied associate in science, associate in general education, certificate, and diploma programs) accessed international learning opportunities.

The survey data described previously was used to respond to the second research question. In this case, we take advantage of the pre-test/post-test design of this component of our work and explore changes in students' measures of global perspective-taking, self-efficacy, and cultural humility that occurred over the term during which some of the students participated in virtual exchange. Specifically, regression models were estimated using students' scores on the second administration of the survey (Time 2) as the outcome variable and virtual exchange participation as the predictor of interest, all while accounting for students' scores on the three measurement instruments during the first administration (Time 1). This analytic approach allows us to isolate changes in students' scores that relate to virtual exchange because we are able to include a measure of differences in their scores prior to their participation. That is, a simple comparison of virtual exchange participant and non-participant scores at the end of the term might indicate that participants score higher on the self-efficacy scale, for example. However, this simple comparison does not account for the fact that participants' scores may not have been comparable at the beginning of the term. Our regression-based approach is able to incorporate students' pre-test scores into the analysis, thus considering these potential differences between groups in the analysis. We ran these regression analyses twice, once accounting only for students' pre-scores and virtual exchange participation and again including a number of additional student demographic and academic characteristics in analyses: whether the student had participated in study abroad, their gender and racial/ethnic identities, whether they received Pell funding, their current declared degree program, whether they self-reported a GPA of 3.1 or higher, and the community college that they attended. While these characteristics are not the focus of our analysis, including them accounts for other baseline differences in virtual exchange participants and non-participants that may help to explain changes in students' survey scores over time.

Findings

Administrative Data

Of the 41,655 students in the administrative dataset, 50.76% (N=21,145) did not participate in any of the global experiences included in this study (virtual exchange, study abroad, or internationalized coursework). Of the students who did engage in international education, the majority (49.14%, N=20,469) took internationalized coursework, while 1,039 (2.49%) students participated in virtual international exchange and 74 (0.18%) studied abroad. Again, it is important to keep in mind that the COVID-19 pandemic limited study abroad opportunity for many students in the dataset.

Table 1 below summarizes students' demographic information along with information about their first declared credential program (e.g., associate in arts, associate in science). This table disaggregates this information for virtual exchange, study abroad, and internationalized coursework participants as compared to students participating in none of these opportunities. In this table, if a student participated in two international education opportunities, both virtual exchange and internationalized coursework, for example, this student is included in both columns.

Table 1: Demographics and Credential Programs of Virtual Exchange, Study Abroad, and Internationalized Coursework Participants and Students with No International Education Experience

Characteristic	Virtual Exchange (N=1,039)	Study Abroad (N=74)	Internationalized Coursework (N=20,469)	No International Education Experience (N=21,145)
Average age	22.23 (sd=6.61)	22.53 (sd=8.12)	21.85 (sd=6.44)	24.90 (sd=8.85)
Female	59%	72%	53%	57%
Male	41%	27%	46%	43%
Unknown Sex	0%	1%	0%	0%
Am. Ind/AK Nat	1%	1%	1%	0%
Asian	3%	1%	4%	4%
Black	16%	14%	26%	30%
Nat. HI/Pac. Isl.	0%	0%	0%	0%
Hispanic	10%	18%	15%	13%
Multiple races	3%	3%	4%	3%
Unknown race	4%	11%	3%	4%
White	63%	53%	47%	45%
Pell recipient ¹	66%	49%	54%	37%
Assoc.-Arts	53%	32%	43%	18%
Assoc.-Science	23%	7%	7%	4%
Appl. A. Science	20%	54%	43%	62%
Assoc.-Gen. Ed.	1%	0%	0%	0%
Certificate	3%	7%	5%	13%
Diploma	1%	0%	2%	3%
No Degree	0%	0%	0%	0%

¹A student was classified as a Pell recipient if they received Pell funding in any term of their enrollment.

The information in Table 1 illustrates some key descriptive differences comparing across international education groups. Two of these comparisons involve all three international experiences (virtual exchange, study abroad, and internationalized coursework) as compared to students who choose not to participate. First, while international experience participants (of any kind) were on average between 21 and 23 years old when they entered the community college, students without global learning experiences are somewhat older, with an average age of around 25 years when they enrolled. Second, while Pell recipients comprise between 66% (virtual

exchange) and 49% (study abroad) of participants with international experiences, these students represent a lower percentage of students not participating in an international experience (37%).

Other interesting comparisons drawing from the data summarized Table 1 involve differences between international experience groups. For example, regarding students' racial/ethnic identities, Asian students were more often represented in both virtual exchange (3%) and internationalized coursework (3%) compared to study abroad (1%). Black students, on the other hand, were represented most prominently in internationalized coursework (26%) as compared to both virtual exchange (16%) and study abroad (14%). Hispanic-identifying students were represented most frequently in study abroad (18%) as compared to internationalized coursework (15%) and virtual exchange (10%). White students comprised large proportions of all four international education groups but were represented most prominently in virtual exchange (63%) and study abroad (53%). Regarding sex, study abroad enrolled a greater percentage of female students (72%), while females comprised slightly more than half of the virtual exchange (59%), internationalized coursework (53%), and no international experience (57%) groups.

Table 1 also illustrates patterns in international experience participation for students enrolled in different credential programs. For example, students who declared an Associate in Arts degree program when they enrolled at the community college comprised high proportions of all three international experience groups – 53% of virtual exchange participants, 32% of study abroad participants, and 43% of internationalized coursework enrollees. In contrast, only 18% of students in the no international experience group were working towards an Associate in Arts. Students in Associate in Science programs were also better-represented in all three international learning groups (comprising 23% of the virtual exchange group and 7% of both the study abroad and internationalized coursework groups) than they were in the no international experience group (4%). While students working towards an Applied Associate in Science comprised 20% of virtual exchange participants, 54% of study abroad participants, and 43% of globalized coursework enrollees, this student group was best represented in the no international experience group (62%). Finally, students in certificate and diploma programs were best represented in the no international experience group (13% and 3%, respectively) compared to any of the other international learning opportunity groups.

Survey Data

Complete regression models corresponding to our survey data can be found in Appendix B (the six subscales of the Global Perspective Inventory) and Appendix C (the New General Self-efficacy Scale and the Cultural Humility Self-assessment Scale). Table 2 summarizes these results for the virtual exchange indicator in particular (VE). Generally speaking, these analyses indicate that, for the 76 students for whom we had complete survey data, virtual exchange participation did not relate to the six global perspective inventory subscales, our measures of self-efficacy, or cultural humility at any standard level of significance ($p < .05$ or lower). The exception to this statement is the self-efficacy scale. When student characteristics were included in the regression model exploring the relationship between virtual exchange and self-efficacy (the second column for this outcome in Table 2), results suggested that after participating in virtual exchange, students' scores on this scale, which range from 0 (minimum self-efficacy) to a high of 40 (maximum self-efficacy), were around two points lower ($p < .05$).

Table 2: Regression Results Estimating the Relationship Between Virtual Exchange (VE) Participation and the Global Perspective Inventory (GPI) Subscales, New General Self-efficacy Scale, and Cultural Humility Scale

	GPI: Cognitive				GPI: Intrapersonal			
	Knowing		Knowledge		Identity		Affect	
VE	-0.434 (0.529)	-0.498 (0.596)	-0.284 (0.586)	-0.400 (0.652)	-0.576 (0.506)	-0.976+ (0.542)	-0.323 (0.412)	-0.407 (0.483)
Student Chars?	No	Yes	No	Yes	No	Yes	No	Yes
	GPI: Interpersonal				Self-efficacy		Cultural Humility	
	Social Responsibility		Social Interaction					
VE	-0.407 (0.476)	-0.579 (0.530)	-0.515 (0.420)	-0.558 (0.487)	-1.527+ (0.810)	-1.983* (0.853)	0.524 (0.454)	0.414 (0.507)
Student Chars?	No	Yes	No	Yes	No	Yes	No	Yes

Note. Standard errors in parentheses. Student characteristics (Student Chars) include whether the student had participated in study abroad, their gender and race/ethnicity identities, whether they received Pell funding, their current declared degree program, whether they self-reported a GPA of 3.1 or higher, and the community college that they attended. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Implications

This study's findings offer several implications that are relevant to institutions and organizations that support virtual exchange programming as well as international educators at higher education institutions, and specifically community colleges. Regarding access to international education, a key finding of this study relates to the number of students involved in each international education learning opportunity. Although virtual exchange has been offered as a means through which students who are unable or unwilling to travel internationally can access international experiences (Abdel-Kader, 2021; Whalen, 2020), the numbers reported in this study suggest that virtual exchange (N=1,039) is second to internationalization of the curriculum (N=20,469) efforts in terms of reaching the most students. Even if study abroad participation were double what is represented in the data here (N=148 instead of N=74), a scenario that might have happened had the COVID-19 pandemic not taken place, this would still be more than seven times that of study abroad participation. In other words, while virtual exchange does reach more students compared to study abroad, participation is not exceptionally high, at least at these two community colleges. Of course, this is not to say that virtual exchange cannot be implemented in a way that reaches larger numbers of students, but rather that, perhaps because of virtual exchange's relative newness, these programs are not currently offered in a way that involves large numbers of students. This finding may also reflect the difficulty in implementing virtual educational programming in general. That is, like virtual and hybrid learning in higher education more generally, virtual international exchange does not necessarily use fewer resources, including limited faculty time and expertise, compared to more traditional face-to-face (i.e., study abroad) learning.

Participation numbers aside, the administrative data analyzed in this study suggested ways in which virtual exchange participants differ from those who study abroad, those who

enroll in internationalized courses, and those who do not participate in international experiences at all. Both virtual exchange and internationalized coursework appear to increase access to international education opportunities especially for male-identifying students, with percentage distributions on par with those not engaging in international education. At the same time, virtual exchange participants were disproportionately white, with lower percentages of both Black and Hispanic students compared especially to internationalized coursework. Indeed, white students comprised a full 63% of virtual exchange participants, a large proportion compared even to study abroad, where white students comprised 53% of participants. Finally, all three international learning opportunities appeared to enroll significant percentages of low-income students, as evidenced by the high percentages of Pell recipients taking part in each one.

These findings offer a more nuanced approach to answering questions about whether virtual international exchange increases access to international education to currently and historically marginalized student groups. That is, these programs appear to increase access for male students and students from low-income backgrounds, all while reflecting continuing inequities in access along racial and ethnic lines. For marginalized racial and ethnic groups, findings may reflect sentiments among these student groups that international education, even when virtual, is not intended for them, a finding reflected in the study abroad literature (e.g., Brux & Fry, 2010; McClure et al., 2010). Specific, focused outreach to these groups along with their representation in marketing and informational materials could go a long way towards helping these students feel that international education generally, and virtual exchange specifically, offers an opportunity that both includes them and is relevant to their interests and goals. Finally, findings regarding a student's declared credential program suggest that virtual exchange at these two community colleges is primarily the domain of students in associate in arts and associate in science programs, credentials that are designed for transfer to the four-year sector. Additional attention focused on how students with other educational and career goals can participate in virtual exchange experiences is needed so that these programs can better serve students enrolled in credential pathways that are not focused on transfer to the four-year sector.

Although this study suggests several ways in which virtual international exchange does or does not provide access to international education, the results regarding student outcomes are quite clear. Evidence from this study suggests that virtual international exchange does not promote global perspective-taking, self-efficacy, or cultural humility among the students who participate. The only significant finding for virtual exchange in this study was a negative relationship with self-efficacy. This decrease in self-efficacy related to virtual exchange is potentially explained as a realization on the part of students that the world is larger and more complex than they had initially thought, thus causing students to doubt their own abilities. The general lack of significance for virtual exchange in our analyses has at least two potential explanations. First, the virtual exchange programs that these students participated in, which lasted at most a semester, were either simply not long enough or did not offer enough in-depth student engagement for students to develop in any meaningful way along the constructs included in our survey. A second possible explanation is that virtual international exchange is simply an international learning opportunity that is different from study abroad, and as a consequence it is unreasonable to expect that students will develop the same skills and competencies as a result of participating in these two different international education programs.

Future research is needed to explore these two possible explanations for our results corresponding to our second research question, which was concerned with student outcomes related to virtual exchange. Relatedly, it is also important for future research to explore the

possibility that certain virtual exchange programs may promote student development while others do not. That is, while the average virtual exchange participant in this study did not exhibit significant development along the constructs included in our survey instrument, this does not mean that students involved in specific virtual exchange programs did not exhibit significant gains. This study is limited in the small number of students in each specific program who chose to participate in our survey. Additional work with greater participation is needed to tease apart programmatic differences in student outcomes that are specific to particular virtual exchanges.

More generally speaking, an additional avenue for future research is the expansion of work similar to this study beyond the two colleges represented here. That is, while the results of this study are certainly applicable to these two colleges and similar institutions, more work is needed to explore aspects of access, equity, and outcomes in other sectors of higher education (e.g., regional comprehensive institutions, research universities) and at other levels of education (e.g., secondary education). The continued expansion of virtual exchange programs is likely in the near future, and work is needed to document the student populations that these programs are able to reach as well as the outcomes of students who choose to participate.

References

- Abdel-Kader, M. (2021, July). The viability of virtual exchange. *Inside Higher Ed*.
<https://www.insidehighered.com/views/2021/07/29/virtual-exchange-will-be-key-part-internationalizing-education-even-after-covid>
- Braskamp, L. A., Braskamp, D. C., & Merrill, K. (2009). Assessing progress in global learning and development of students with education abroad experiences. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 18, 101-118.
- Brownell, J. E., & Swaner, L. E. (2010). *Five high-impact practices: Research on learning outcomes, completion and quality*. Association of American Colleges and Universities.
- Brux, J., & Fry, B. (2010). Multicultural students in study abroad: Their interests, their issues, and their constraints. *Journal of Studies in International Education*, 14(5), 508-527.
- Chen, G., Gully, S.M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods*, 4(1), 62-83.
- Contreras Jr., E. (2015). *Rhetoric and reality in study abroad: The aims of overseas study for U.S. higher education in the twentieth century*. (Unpublished doctoral dissertation). Harvard Graduate School of Education, Cambridge, MA.
- Custer, L., & Tuominen, A. (2017). Bringing “internationalization at home” opportunities to community colleges: Design and assessment of an online exchange activity between US and Japanese students. *Teaching Sociology*, 45(4), 347-357.
- Davis, D.E., Worthington, E.L., & Hook, J.N. (2010). Humility: Review of measurement strategies and conceptualization as a personality judgment. *Journal of Positive Psychology*, 5, 243-252.
- George-Mwangi, C.A., & Yao, C.W. (2020). US higher education internationalization through an equity-driven lens. In L.W. Perna (Ed.), *Higher education: Handbook of theory and research* (pp. 1-62). Springer.
- González Canché, M. S. (2014). Is the community college a less expensive path toward a bachelor's degree? public 2-and 4-year colleges' impact on loan debt. *The Journal of Higher Education*, 85(5), 723-759.
- Hook, J. N., Davis, D. E., Owen, J., Worthington Jr, E. L., & Utsey, S. O. (2013). Cultural humility: Measuring openness to culturally diverse clients. *Journal of Counseling Psychology*, 60(3), 353-366.
- Institute of International Education (IIE). (2020). *Open Doors 2019: Report on international educational exchange*. Retrieved from <https://opendoorsdata.org/>
- Kuh, G. D. (2008). Excerpt from high-impact educational practices: What they are, who has access to them, and why they matter. *Association of American Colleges and Universities*, 14(3), 28-29.
- Lingo, M. D. (2019). Stratification in study abroad participation after accounting for student intent. *Research in Higher Education*, 60(8), 1142-1170.
- Lucas, J.M. (2018). There and back again: A study abroad journey with men. In H. Barclay Hamir & N. Gozik (Eds.), *Promoting inclusion in education abroad: A handbook of research and practice* (pp. 82-98). Sterling, VA: Stylus.
- Luo, J., & Jamieson-Drake, D. (2015). Predictors of study abroad intent, participation, and college outcomes. *Research in Higher Education*, 56(1), 29-56.
- Malkan, R., & Pisani, M.J. (2011). Internationalizing the community college experience. *Community College Journal of Research and Practice*, 35(11), 825-841.

- McClure, K. R., Szelényi, K., Niehaus, E., Anderson, A. A., & Reed, J. (2010). "We just don't have the possibility yet": US Latina/o narratives on study abroad. *Journal of Student Affairs Research and Practice*, 47(3), 363-382.
- Petersdotter, L., Niehoff, E., & Freund, P. A. (2017). International experience makes a difference: Effects of studying abroad on students' self-efficacy. *Personality and Individual Differences*, 107, 174-178.
- Raby, R.L., Rhodes, G.M., & Biscarra, A. (2014). Community college study abroad: Implications for student success. *Community College Journal of Research and Practice*, 38(2-3), 174-183.
- Redden, E. (2020, April). Study Abroad Faces a New Reality. *Inside Higher Ed*. <https://www.insidehighered.com/news/2020/04/28/study-abroad-field-faces-altered-reality-and-unknowns-about-when-regular-programs>
- Research Institute for Studies in Education (2017). *Global Perspective Inventory: Theoretical foundations and scale descriptions*. Iowa State University: Ames, IA.
- Rumbley, L., Altbach, P., & Reisberg, L. (2012). Internationalization within the higher education context. In D. Deardorff, H. de Wit, J.D. Heyl, & T. Adams (Eds.). *The SAGE Handbook of International Higher Education* (pp. 3-26). Sage.
- Salisbury, M.H., Paulsen, M.B., & Pascarella, E.T. (2010). To see the world or stay at home: Applying an integrated student choice model to explore the gender gap in the intent to study abroad. *Research in Higher Education*, 51(7), 615-640.
- Simon, J., & Ainsworth, J.W. (2012). Race and socioeconomic status differences in study abroad participation: The role of habitus, social networks, and cultural capital. *ISRN Education*, 2012.
- Stein, S., de Oliveira Andreotti, V., Bruce, J., & Susa, R. (2016). Towards different conversations about the internationalization of higher education/Vers des conversations différentes au sujet de l'internationalisation de l'enseignement supérieur. *Comparative and International Education*, 45(1), 1-18.
- Tarrant, M. A., Rubin, D. L., & Stoner, L. (2014). The added value of study abroad: Fostering a global citizenry. *Journal of Studies in International Education*, 18(2), 141-161.
- Watkins, H., & Smith, R. (2018). Thinking globally, working locally: Employability and internationalization at home. *Journal of Studies in International Education*, 22(3), 210-224.
- Whalen, B. (2020, April). Education abroad in a post-COVID-19 world. *Inside Higher Ed*. <https://www.insidehighered.com/views/2020/04/14/how-covid-19-will-change-education-abroad-american-students-opinion>
- Whatley, M. (2017). Financing study abroad: An exploration of the influence of financial factors on student study abroad patterns. *Journal of Studies in International Education*, 21(5), 431-449.
- Whatley, M. (2021). Community college study abroad: An event history analysis. *Community College Review*.
- Whatley, M., & Raby, R. L. (2020). Understanding Inclusion in Community College Education Abroad: An Investigation of Policies and Practices. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 32(1), 80-103.
- Whatley, M., Landon, A.C., Tarrant, M.A., & Rubin, D. (2020). Program design and the development of students' global perspectives in short-term study abroad. *Journal of Studies in International Education*, 49(2), 107-130.

Wood, R., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology*, 56, 407-415.

Appendix A: Measurement Instrument Definitions and Examples

Scale	Definition	Example Item(s)
Cognitive Knowing (GPI)	A student's "knowing and understanding of what is true and important to know", focusing especially on the complexity of knowledge and the contribution of multiple perspectives to what counts as knowledge (Research Institute for Studies in Education, 2017, 8)	I consider different cultural perspectives when evaluating global problems.
Cognitive Knowledge (GPI)	A student's understanding and awareness of different cultures and their impact on the social world	I am informed of current issues that impact international relations.
Intrapersonal Identity (GPI)	A student's awareness of and acceptance of their own identity and sense of purpose	I have a definite purpose in my life.
Intrapersonal Affect (GPI)	Respect for and acceptance of cultural differences, as well as emotional awareness	I am sensitive to those who are discriminated against.
Interpersonal Social Responsibility (GPI)	A student's interdependence and social concern for others	I put the needs of others above my own personal wants.
Interpersonal Social Interaction (GPI)	Engagement with those who are different along with cultural sensitivity	I frequently interact with people from a race/ethnic group different from my own.
New General Self-efficacy Scale	"Beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989, p. 408)	I will be able to achieve most of the goals I have set for myself. Compared to other people, I can do most tasks well.
Cultural Humility Self-assessment Scale	An interpersonal form of humility (Davis et al., 2010), wherein "humble individuals are able to maintain an interpersonal stance that is other-oriented rather than self-focused, characterized by respect for others and a lack of superiority" (Hook et al., 2013, p. 354).	Learning about other cultural backgrounds is an important step in communicating effectively.

Note. All Global Perspective Inventory (GPI) definitions and items taken from Research Institute Studies in Education (2017). Development of the New General Self-efficacy Scale is described in Chen et al. (2001).

Appendix B: Global Perspective Inventory Subscales Regression Results

	Cognitive Knowing	Cognitive Knowing	Cognitive Knowledge	Cognitive Knowledge	Intra-personal Identity	Intra-personal Identity	Intra-personal Affect	Intra-personal Affect	Social Responsibility	Social Responsibility	Social Interaction	Social Interaction
Virtual Exchange	-0.434 (0.529)	-0.498 (0.596)	-0.284 (0.586)	-0.400 (0.652)	-0.576 (0.506)	-0.976+ (0.542)	-0.323 (0.412)	-0.407 (0.483)	-0.407 (0.476)	-0.579 (0.530)	-0.515 (0.420)	-0.558 (0.487)
Outcome at T1	0.682*** (0.087)	0.650*** (0.103)	0.648*** (0.077)	0.608*** (0.084)	0.804*** (0.068)	0.759*** (0.073)	0.710*** (0.092)	0.723*** (0.109)	0.741*** (0.084)	0.703*** (0.091)	0.745*** (0.086)	0.753*** (0.098)
St. Abroad Part.		-0.266 (1.210)		-1.795 (1.301)		-1.344 (1.064)		-1.099 (0.957)		0.154 (1.054)		-0.247 (0.976)
Man		-0.489 (0.689)		0.590 (0.745)		0.589 (0.610)		0.074 (0.549)		-0.046 (0.599)		0.255 (0.555)
Other Gen. Identity		-0.480 (1.258)		-0.480 (1.350)		-1.821 (1.138)		-0.210 (1.029)		0.586 (1.108)		-0.925 (1.037)
Black		1.063 (1.174)		2.885* (1.258)		2.665* (1.044)		0.147 (0.953)		2.244* (1.041)		0.969 (0.948)
Latinx		-1.696 (1.073)		-0.582 (1.158)		-0.162 (0.959)		0.735 (0.865)		0.433 (0.956)		-0.531 (0.873)
Other. Race/Eth		0.246 (0.954)		-0.068 (1.017)		0.100 (0.849)		0.283 (0.773)		-0.129 (0.834)		-0.203 (0.772)
Pell		-0.222 (0.582)		0.036 (0.634)		-0.433 (0.525)		0.104 (0.478)		0.464 (0.516)		-0.074 (0.479)
Assoc. Science		-0.042 (0.741)		-0.491 (0.798)		-0.035 (0.677)		0.187 (0.595)		-0.130 (0.652)		0.168 (0.601)
Other Assoc.		-0.705 (0.782)		0.624 (0.848)		1.086 (0.703)		0.124 (0.637)		0.710 (0.696)		0.489 (0.644)
Other Credential		-0.006 (1.091)		0.412 (1.189)		1.335 (0.979)		0.513 (0.881)		-0.305 (0.967)		-0.081 (0.895)
GPA 3.1-4.0		0.107 (0.725)		0.524 (0.777)		1.345* (0.651)		0.416 (0.581)		0.905 (0.649)		-0.084 (0.586)

College #2		-0.671 (0.731)		-0.568 (0.796)		-0.538 (0.684)		-0.139 (0.595)		-0.508 (0.663)		-0.136 (0.602)
Constant	9.676*** (2.492)	11.128*** (2.819)	7.970*** (1.490)	8.295*** (1.726)	5.562** (1.679)	5.650** (1.814)	6.767** (2.053)	6.038* (2.428)	5.472** (1.704)	5.262** (1.827)	4.599*** (1.306)	4.485** (1.447)
N	76	76	76	76	76	76	76	76	76	76	76	76
R2	0.46	0.52	0.50	0.57	0.66	0.74	0.45	0.48	0.52	0.59	0.51	0.54

Standard errors are shown in parentheses. Reference categories are woman (for gender identity), white (for racial/ethnic identity), and associate in arts (for degree program). + p<.10, * p<.05, ** p<.01, *** p<.001

Appendix C: New Self-efficacy and Cultural Humility Self-assessment Scales Regression Results

	Self-efficacy	Self-efficacy	Cultural Humility	Cultural Humility
Virtual Exchange	-1.527+ (0.810)	-1.983* (0.853)	0.524 (0.454)	0.414 (0.507)
Outcome at T1	0.859*** (0.072)	0.770*** (0.076)	0.613*** (0.086)	0.563*** (0.091)
Study Abroad Participation		0.775 (1.665)		-0.460 (1.004)
Man		2.116* (0.945)		-1.289* (0.573)
Other Gender Identity		-3.324+ (1.830)		0.507 (1.061)
Black		3.905* (1.616)		0.075 (0.985)
Latinx		-0.326 (1.495)		-0.921 (0.907)
Other Racial/Ethnic Identity		-1.348 (1.317)		0.510 (0.802)
Pell		-1.487+ (0.816)		0.324 (0.494)
Associate in Science		0.579 (1.031)		-0.031 (0.625)

Other Associate Degree		0.944 (1.113)		-0.288 (0.666)
Credential Other than Associate		1.213 (1.530)		0.028 (0.926)
GPA 3.1-4.0		1.399 (1.017)		0.724 (0.622)
College #2		-1.010 (1.040)		0.297 (0.622)
Constant	6.589** (2.393)	8.465** (2.550)	16.758*** (3.715)	18.678*** (3.890)
N	76	76	76	76
R2	0.67	0.76	0.41	0.49