Research Article

Frontiers: The Interdisciplinary Journal of Study Abroad
© Caitlin O. Ferrarini
The work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.
Volume 38, Issue 3, pp. 138-174
DOI: 10.36366/frontiers.v38i3.1150
www.frontiersjournal.org

First-Generation Students Thrive in Online Global Learning: A Mixed-Methods Multi-Institutional Study

Caitlin O. Ferrarini[1]

Abstract

This multi-institutional study examines the potential of fully online community-based learning to foster global citizenship capacities in college students. One of the main findings of this mixed-methods analysis of pre/post survey data (n = 187) and interviews with alumni (n = 23) is that first-generation college students participating in an online community-based learning program during the COVID-19 pandemic self-reported greater gains in learning than their non-first-generation peers. This article delves deeper into these findings and provides several recommendations for teaching as well as practical resources that global educators can utilize in their own classrooms.

Abstract in Spanish

Este estudio multi-institucional examina el potencial del aprendizaje basado en la comunidad, en modalidad virtual, para impulsar capacidades para la ciudadanía global en la educación superior. Uno de los hallazgos principales de este análisis de métodos mixtos —basado en datos de sondeos pre y post (n = 187) y entrevistas con exalumnos (n = 23)— es que los estudiantes universitarios de primera generación que participaron en un programa virtual de aprendizaje basado en la comunidad durante la pandemia del COVID-19 tuvieron mayores logros que sus pares de otras generaciones. El artículo profundiza en estos

1 Worcester Polytechnic Institute, Worcester, United States of America

Corresponding Author: Caitlin Ferrarini, Caitlin.ferrarini@gmail.com

Date accepted: August 10th, 2026

hallazgos y ofrece algunas recomendaciones para docentes, así como recursos prácticos que educadores interesados en una perspectiva global de su actuación pedagógica pueden utilizar en sus aulas de clase.

Keywords

Global learning, community-based learning, global citizenship education, first-generation students

1. Introduction

According to UNICEF (2020), in June of 2020, pandemic school closures had forced more than one billion students worldwide out of school, due to not having access to a computer or the internet, among many other reasons. The COVID-19 pandemic put a magnifying glass on the importance of individuals understanding how global systems—health, economic, political—are increasingly interconnected, inequitable, and mediated by technology. Global citizenship education is one way to increase this understanding as well as encourage individuals to develop the capacities they need to be change agents in an increasingly interdependent and unequal world. While there are different views on the meaning of global citizenship education and what capacities are important for educators to foster in students, common goals include understanding globalization and interdependence, critical thinking, communication and collaboration with diverse people, empathy, shared values of human rights and justice, and belief in one's own ability to make a difference (Oxfam, 2015; Anderson et al., 2017; Reimers, 2020). Further, global citizenship education is increasingly recognized as important by international organizations, governments, and institutions of higher education worldwide (DeWit, 2016; United Nations, 2015). In fact, the United Nations (2015) Sustainable Development Goal 4: ensure inclusive and equitable quality education names one of the ways to meet this goal as: education for sustainable development and global citizenship. In the wake of the COVID-19 pandemic and rising global challenges such as rapid advances in AI, geopolitical conflict, and climate change, it is especially important to consider how global citizenship education can be part of the solution to a more equitable and prosperous future in an increasingly interconnected world.

While global citizenship education has big aspirational goals, for global citizenship education to be effective, educators must better understand what pedagogical strategies most effectively develop students' global citizenship capacities. Strategies applied to global citizenship education are often experiential and collaborative in nature such as community-based learning, study abroad, and project-based learning (Landorf et al., 2018; S. E. Stanlick, 2015). Amid COVID-19 school closures and halts to travel, many universities pivoted these types of programs to an online modality, creating a unique opportunity to understand if online collaborative learning can foster the knowledge, skills, and values associated with global citizenship.

According to the Institute of International Education (IIE) nearly 33,000 U.S. students participated in online global learning programs including remote internships, collaborative project-based learning, and video conversations during the 2020-2021 academic year (Open Doors, 2024). Despite the fact that many experiential and community-based education programs pivoted to online during COVID school closures, in a rush to resume "normal" in-person programs, there has not been a sufficient pause to better understand the impact of these programs on student learning. Thus, this study examines one strategy in global citizenship education which grew in popularity during COVID-19 school closures—online community-based learning. For this study, I define community-based learning drawing from the University of Colorado Boulder's Center for Community-Based Learning and Research (2023) and Kuh's (2008) research regarding high-impact practices as:

> Community-based learning is an educational strategy of experiential learning with community partner organizations. This work is based on reciprocal and mutually beneficial partnerships between educators, students, and community groups. Guided critical reflection is an essential component. One goal is to address community-identified needs and ultimately create positive social change. A benefit for educators is enhancing educational content. And the goal for students is preparation for citizenship, work, and life.

While universities sometimes use the term community-based learning directly, other common terms include service-learning, community-based global learning, volunteering, or internships with social impact. This study

utilizes the term community-based learning to refer to programs, courses, or literature that match the definition here, even if they utilize an alternative term.

Further, for global citizenship education to be effective, we must also better understand what pedagogical strategies impact learning for what types of students. Scholars have noted that there is relatively little research regarding outcomes for students of different demographic identities in online learning, community-based learning, and global citizenship education alike (Brownell & Swaner, 2010; Chittum et al., 2022; Hartman et al., 2020; Post et al., 2019; Waldner et al., 2010). As students have intersectional identities and varying life experiences, this type of research is challenging and faces the limitation of putting students into static categories (i.e. race/ethnicity, gender identity, first-generation). However, not disaggregating data by student demographics for analysis is a problem because it results in research and recommendations which benefit the majority student demographic the most.

Thus, this study seeks to better understand what aspects of the emerging pedagogical strategy of online community-based learning are most effective—and for whom—by exploring the following research questions:

1. How does participation in online community-based learning programs impact the development of global citizenship capacities (collaborative and civic) in U.S. college students?

2. How do demographic factors (i.e. first-generation status, race/ethnicity, gender, income) impact student learning?

These questions address the pressing need for the advancement of teaching and learning strategies that develop capacities diverse students need to navigate an increasingly interconnected and digitized global world. A key finding of the study explored in this article is that after participating in a fully online community-based learning program during the COVID-19 pandemic, first-generation college students reported greater learning gains compared to their non-first-generation peers. The Center for First-Generation Student Success, refers to first-generation students as those whose parents do not hold a bachelor's degree (Hinz et al., 2016), and is the definition I utilize in this study.

2. Literature Review

This review provides an overview of research on student learning outcomes and high-impact practices, such as community-based and global learning. It then transitions to analysis of literature regarding these practices in the online environment. Higher education researchers in the areas of community-based, global, and online learning alike have consistently identified a lack of research regarding how learning outcomes may differ across demographic groups, including first-generation students (Brownell & Swaner, 2010; Chittum et al., 2022; Deardorff, 2015; Hartman et al., 2020; Post et al., 2019; Waldner et al., 2010). Therefore, this literature review also highlights the limited scholarship about first-generation student learning outcomes in these three areas. As both the terms "first-generation" student and "high-impact practices" (Kuh, 2008) are most commonly used in the United States, this literature review focuses on U.S. student learning outcomes; however, some of the literature about online learning with global (i.e. virtual exchange) or community-based (i.e. e-service learning) components is from the European Union and Asia.

2.1. High-impact practices and student learning outcomes

The American Association of Colleges and Universities (Kuh, 2008) identify community-based and global learning as two research-based high-impact practices correlated with increased rates of retention, higher GPAs, and achievement of a variety of learning outcomes for college students. Research links participation in community-based learning which addresses a global aspect of citizenship education to enhancing students' global knowledge, intercultural communication, language skills, cultural adaptability, intercultural conflict resolution, civic efficacy, and commitment to global civic engagement (Gendle & Tapler, 2022; Kiely, 2004; Raykov & Taylor, 2018; Sherraden et al., 2008). Thus, a body of research in community-based learning that aims to develop a global aspect of citizenship education has found that student learning outcomes include intercultural communication as well as increased value and commitment to both local and global civic engagement.

While high-impact practices, are linked to positive student learning outcomes, limited research focuses specifically on first-generation students, and existing studies often group first-generation students with other underrepresented populations (i.e. students of color and non-traditionally aged

students). A few large-scale studies have found that first-generation students report greater academic and personal growth than their peers after participating in at least one high-impact practice (Finley & McNair, 2009; Kuh, 2008; Valentine et al., 2021). However, these differences in learning gains are marginal when both first-generation and non-first-generation students engage in two or more high-impact practices (Finley & McNair, 2009). Thus, research suggests that initial involvement in high-impact practices provides a learning boost for first-generation students, perhaps by providing an increased sense of belonging and motivation. A notable study which examines first-generation Latinx college students participating in a global learning program in Costa Rica found that students drew on and enhanced language and intercultural communication skills, increased their sense of global social justice, and deepened their bi-cultural identity (Wick et al., 2019). Thus, the limited research about learning outcomes of first-generation students engaging in high impact practices, like community-based and global learning, has found positive learning outcomes in academic, personal, collaborative, and civic realms.

2.2. Community-based and global learning : Online

A growing body of research focuses on the high-impact practices of community-based and global learning in the online modality, such as eService Learning and Virtual Exchange, and has been linked to enhancing various learning outcomes such as global understanding, technology-mediated intercultural communication, intercultural teamwork; language skills, empathy, collaborative writing, commitment to global social responsibility, and media literacy (Culcasi et al., 2022; Forward, 2021; Guth & Helm, 2011; Hauck, 2019; Ngai et al., 2023; O'Dowd, 2018; Poe, 2022; Porto, 2014; Rienties et al., 2022; Schwehm et al., 2017; Steckley & Steckley, 2022; Zhang et al., 2025). These collaborative forms of online global learning often involve synchronous online video collaboration with a community partner in another country. Prior to the COVID-19 pandemic, most of these studies were small-scale, often examining one class or cohort of students; however, the pandemic-driven shift to online programs has allowed for some larger studies of student learning outcomes. Researchers at East Carolina University looked at more than 3,000 students participating in virtual exchange, and found enhanced learning outcomes such as increased GPA, retention, and graduation rates compared to peers who did not participate in global learning experiences (Lee et al., 2022). And researchers

from a university in Hong Kong who examined more than 1,000 students taking an e-service learning course found increased digital communication and collaboration skills compared with peers who did not participate in this programming (Ngai et al., 2023). These large-scale studies provide added confidence that high-impact practices, like global and community-based learning, delivered in the online modality can lead to positive learning outcomes for students, particularly in the academic and collaborative realms.

Online learning is often promoted as a tool for increasing access to community-based and global learning for traditionally marginalized students (i.e. first-generation, low-income, and Students of Color) but research on their learning outcomes remains limited even when considering more recent large-scale studies. Research regarding learning outcomes of traditionally marginalized students in online learning tend to focus on grades and retention of these populations rather than holistic measures of learning (Fischer et al., 2020; Gardner & Leary, 2023; Ilett, 2019; Ives & Castillo-Montoya, 2020; Lee et al., 2022). For instance, Fischer et al. (2020) found no significant performance gap between first-generation and non-first-generation students participating in online learning, though success was measured solely by grades. And particularly relevant to this article, Lee et al.'s (2022) large-scale study referenced above, found that first-generation students participating in virtual exchange had greater increases in GPA than their non-first-generation peers. There is a need for research that goes beyond academic performance as the measure of first-generation student success in online learning.

Much like the literature regarding first-generation students in higher education more broadly, the literature regarding first-generation students in online learning programs largely focuses on challenges they face such as economic strain, family obligations, mental health, digital inequities, and lack of instructor and peer interaction (Barber et al., 2021; De La Cruz et al., 2021; Gardner & Leary, 2023; Ilett, 2019; Ives & Castillo-Montoya, 2020; Killham et al., 2022). A small but growing body of literature identifies strengths that first-generation students bring to the college learning environment such as persistence, resilience, optimism, problem-solving skills, and language skills (N. J. Garrison & Gardner, 2012; Hands, 2020; Wick et al., 2019). However, academic literature rarely explores how these assets translate to the online learning environment. An exception is Hands (2020), who poses that traits such as goal

orientation and resilience could support first-generation student success in the online learning environment; however, this theory lacks empirical evidence. This gap highlights the need for empirical research that not only acknowledges the challenges first-generation students face online but also investigates how their unique strengths can be leveraged for success in virtual learning environments.

Mentorship, especially by those with shared identities, has been commonly recommended as a way to support first-generation students in both the in-person and online-learning environments (Brinkman et al., 2013; Chavez, 2015; Killham et al., 2022). In the online learning context, Killham et. al (2022) found that students reported clear communication and supportive relationships with peers, faculty, and the university to be a main concern for Latina first-generation students during the shift to remote learning. Mentorship has been suggested as a way to foster a sense of belonging and confidence in all college students, but as especially key for first-generation students who often struggle with imposter syndrome, academic self-efficacy, and understanding the academic systems when adjusting to college (Ilett, 2019; Ives & Castillo-Montoya, 2020). However, some scholars critique the celebration of mentorship as prioritizing assimilation into dominant academic norms over valuing students' unique perspectives and experiences (Ives & Castillo-Montoya, 2020).

3. Methodology and research design

This mixed-methods study utilizes a found-problem sample of students from three institutions who changed their in-person community-based learning programs centered around global citizenship education to the fully online modality during COVID-19 school closures. Students worked with a range of community partners, for example, a non-profit working with migrants in Mexico and a healthcare clinic in Ghana. And common projects included things like organizing virtual conferences, creating digital archives, and applying for grants.

Found-problem research is purpose-driven research conducted on a naturally occurring phenomenon without researcher intervention (CFAR, 2013; S. E. Stanlick, 2015; S. Stanlick & Szmodis, 2022). The found problem in this study utilizes a dataset from The Global Engagement Survey (GES) (n=187) collected primarily during the summer of 2020 as well as Zoom interviews (n=23)

conducted with a subset of the survey respondents during the summer of 2023, which was one to three years after program completion. The interview sample was self-selecting; in that I contacted all participants who indicated on the post-survey that they were willing to be contacted by a researcher (n=65). Of the sixty-five potential students, 23 participated in a Zoom interview. Below I will detail the context of the survey sample, participant profile, and the research design.

3.1. Survey sample

3.1.1. The global engagement survey

The Global Engagement Survey (GES) is a pre-/post- mixed-methods tool that assesses student global learning as defined by the Association of American Colleges and Universities as "a critical analysis of and an engagement with complex, interdependent global systems and legacies (such as natural, physical, social, cultural, economic, and political) and their implications for people's lives and the earth's sustainability (Hovland, 2014). The survey draws on existing research in education abroad, civic engagement, and related fields and includes eight scales: openness to diversity, cultural adaptability, civic efficacy, political voice, conscious consumption, global civic responsibility, human rights beliefs, and critical reflection (Reynolds et al., 2015). There are 58 closed-ended Likert scale (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) and 17 responsive open-ended questions. See some example survey questions in table 1 below.

TABLE (1)
EXAMPLE GES SURVEY ITEMS

Global Citizenship Capacities	Survey Scales	Major themes of survey scales	Example survey item (Closed response options: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)
Collaborative	Openness to diversity	Values, mindsets, and actions related to communicating and collaborating with diverse people	Closed: When I am in a cultural space that is different from my home culture, I make efforts to adapt my language to include local language, sayings, or speech patterns.

			Open: What is an example of a time you have adapted your language or speech patterns to improve your culturally appropriate communication?
	Cultural adaptability		Closed: I have a hard time working with people who are different from me.
			Open: Could you describe a point when you had a hard time working with someone who was different than you?
Civic	Civic efficacy	Confidence in ability to contribute to the social good locally and globally	Closed: I feel I have the ability to make a difference in the global community.
			Open: How have your program experiences influenced your personal sense of your ability to make a difference, locally or globally?
	Global civic responsibility	Value of individual responsibility to a global community	Closed: My responsibility to people of other countries is as great as my responsibility to people of my own country.
			Open: NA
	Human rights beliefs	Value of government responsibility to a global community	Closed: I believe that governments have a responsibility to ensure that all of their citizens have basic human rights.
			Open: NA

Since 2015, over 11,000 students across 41 institutions have completed the GES (GES Annual Reports, 2026) and it has been used in quantitative, qualitative, and mixed-methods research published in several peer-reviewed journals (Gendle & Tapler, 2022; Hartman et al., 2020; Vandermaas-Peeler et al., 2018). Pre-/post- surveys are a useful tool to assess the impact of an instructional intervention, such as an academic course or an experiential learning program, and thus was an appropriate tool for this study. I analyzed completed matched

cases (students answered all questions on both the pre- and post-survey) to examine a potential change in global citizenship capacities directly after participation in an online community-based learning program.

3.1.2. Three programs

During pandemic school closures, three institutions utilized the GES to assess student learning in programs where the community-based interaction was fully online. Program one was an eight-week summer community-engaged learning experience facilitated by a community engagement center at a large and highly selective private research university located in the Northeast of the United States. Program two was an eight-week summer global citizenship fellowship program facilitated by a global citizenship center at a small and highly selective private liberal arts college located in the Mid-Atlantic region of the United States. Program three was a four-week virtual global-health internship facilitated by a non-profit organization located on the West Coast of the United States. The non-profit offers community-based global-health programs, such as internships or practicum experiences with ongoing partnerships abroad. Both Programs One and Two were funded (students received stipends for participating) and allowed students to work with community partners that the university had ongoing relationships with both domestically and internationally or propose to work with new organizations. Program three required an application fee, with scholarships available through the non-profit. A summary of the three programs is provided in Table 2.

TABLE (2)
SUMMARY OF THREE PROGRAMS

		Program 1	**Program 2**	**Program 3**
		Summer Community-engaged learning	**Summer global citizenship fellowship**	**Global health internship**
Institutional profile		University	University	Non-profit
		Community engagement center	Global citizenship center	
		Large	Small	
		Private	Private	

		Highly selective	Highly selective	
		Research	Liberal arts	
		Northeast	Mid Atlantic	West Coast
Online community-based learning program		Fully online	Fully online	Fully online
		Funded	Funded	Participant fees; scholarships awarded
		8 weeks	8 weeks	4 weeks
Community partnerships		Domestic and international	Domestic and international	International
		Ongoing or proposed by students	Ongoing or proposed by students	Ongoing
Surveys	n=187	n=94	n=24	n=69
Interviews	n=23	n=11	n=2	n=10

3.1.3. Participant profile

The majority of students in the sample identified as: traditional college age (81%), female (80%), Non-White (63%), US-born (80%), not first-generation to college (75%). Nearly half (44%) reported their combined parent income was more than $100,000 per year. Students in this sample chose to apply to participate in a community-based learning program, and when that program was transitioned into the online modality decided to continue to participate. Suggesting they had the time, space, interest, and resources to engage during the COVID-19 pandemic. As the sample is based on survey completion, it is missing students who decided not to participate due to the online change or those who dropped out. As the COVID-19 pandemic had a disproportionately negative impact on low-income individuals and People of Color, it is possible that low-income, first-generation, and Students of Color may have faced barriers to starting or completing the program such as needing to take on a job to support themselves or their family, lack of stable internet, lack of a quiet place to work, increased anxiety over the health of themselves and family working in high exposure jobs, or mental health impact of national events regarding violent racism. Additionally, students in this sample may also represent particularly

self-motivated and persistent individuals, as they completed the program despite many changes and challenges.

First-generation (n=40) and non-first-generation students (n=140) in the sample align in that they are both mostly of traditional college-age and female; however, compared with their non-first-generation peers, first-generation students in the sample were more likely to be non-White, born outside of the United States, and low-income. First-generation students also make up a particularly large portion of students who identified as Hispanic/Latino in the sample. Further, the one student in the data set who identified as "other gender identity" as well as the one student who identified as American Indian/Alaskan Native are both first-generation students. Thus, first-generation students brought diverse perspectives to the online community-based learning programs. The chart below compares first-generation and non-first-generation demographics in more detail.

TABLE (3)
FIRST-GEN AND NON FIRST-GEN KEY DEMOGRAPHICS

	Non First-Gen		**First-Gen**	
	n=140	**%**	**n=40**	**%**
Age				
Trad. college age (≤23)	113	81%	32	80%
Not trad. college age (≥24)	27	19%	8	20%
Gender identity				
Female	114	81%	31	78%
Male	26	19%	8	20%
Other gender identity	0	0%	1	3%
Race/ethnic identity				
African American/Black	14	10%	4	10%
American Indian/Alaskan Native	0	0	1	3%
Asian/Pacific Islander	37	26%	11	28%
Hispanic/Latino	5	4%	9	23%
White	59	42%	9	23%
Other racial/ethnic identity	25	18%	6	15%

Non-White	81	58%	31	78%
Country born				
Born in the US	114	81%	30	75%
Not born in the US	26	19%	10	25%
	Non First-Gen		**First-Gen**	
	n=140	**%**	**n=40**	**%**
Combined parent income				
<$25,000-$49,999	19	14%	19	48%
$50,000-$99,000	25	18%	8	20%
$100,000-$199,000	48	34%	7	18%
≥$200,000	27	19%	1	3%

3.2. Sequential explanatory mixed-methods

This study uses a sequential explanatory mixed-methods design which integrates quantitative and qualitative methods to gain a more comprehensive picture of the potential of online community-based learning as a global learning strategy (Creswell, 2014). Creswell's (2014) conception of the sequential explanatory mixed-methods, starts with quantitative data collection and analysis and then explores those results in more depth with qualitative data collection and analysis.

Phase 1 (Quantitative)

I analyzed quantitative GES data to assess a potential change changes learners' self-perceptions of global citizenship capacities before and after participation in an online community-based learning program. I utilized IBM SPSS Statistics (Version 24) to run statistical analysis (independent sample t-tests, one-way ANOVAs, and Pearson correlation coefficients) to observe the effect of key demographic factors on pre-/post- survey change scores, calculated as:

Pre-/post- change score=[post-survey score] – [pre-survey score]

Through the pre-/post- survey change score, I could observe a quantitative change in self-reported knowledge, values, mindsets, and motivation to participate in future global and civic engagement. Then I compared average change scores within different groups related to four demographic factors

(gender identity, racial/ethnic identity, first-generation to college status, and parent income) that may influence student learning. An alpha level of .05 was used for all comparisons. Below is a summary of the statistical tests performed.

TABLE (4)
QUANTITATIVE ANALYSIS OF KEY DEMOGRAPHIC FACTORS

Independent Variable	Dependent Variable	Groups	Statistical Test
Gender Identity	Pre/post-change score	Male Female	Independent sample t-test
Racial/ethnic identity		White Non-White	
First-generation		Yes No	
Racial/ethnic Identity		African American or Black Asian or Pacific Islander Hispanic or Latino White Other racial identity	One-way ANOVA
Parent income	NA	NA	Pearson correlation coefficient

**Note: One student identified as "other gender identity" and one student identified as American Indian or Alaskan Native. Statistical analysis cannot be performed with a group of one; however, qualitative data is included in the analysis.*

Phase 2 (Qualitative)

To deepen understanding of the quantitative findings, I analyzed open-ended survey responses and interviews using the data coding cloud-based platform Dedoose. Of the 23 interviews 4 students (17% of interviewees) identified as first-generation. This interview sample closely reflects the total data set of which first-generation students represented 21% (n=40 of 187). I generated the initial code list using one round of in vivo coding, a strategy in which the (Saldaña, 2009) researcher uses the participants' literal words to generate a code list of anything that stands out in the manuscript resulting in a code list that reflects the participants everyday lives instead of academic or professional terms assigned by the researcher (Saldaña, 2009). I used this strategy in order to stay as true as possible to the meaning and intent of the

participants' words. I then employed additional rounds of theoretical coding to group codes into themes. I also used the strategy of analytic memoing after each round of coding to consolidate and organize themes as well as reflect on my own subjectivities and what I might be missing in the data (Glesne, 2011; Peshkin, 1988). This approach allowed for a thoughtful and careful analysis of the qualitative survey and interview data.

3.3. Researcher positionality

I believe critical self-reflection is essential to both education and research, and I tried to embody the practice throughout this study. I bring my own intersectional identities and biases, including being cisgender female, Irish-Italian American, White, straight, feminist, justice-oriented, mother, yogi, and global educator. My dominant positions, like White and straight, hold power and privilege which can both shape and limit how I interpret others' experiences. At the same time, my background as a female researcher and global educator gives me useful perspectives and motivates me to look carefully for evidence of both positive and negative impacts on student learning. While I cannot control my positionalities, as these are always changing depending on who I am interacting with, I can make choices as a researcher about my own mindset and actions when collecting and analyzing data. To stay aware of my assumptions, I used cultural humility (Tervalon & Murray-Garcia, 1998), reflexivity (Glesne, 2011), and memoing (Peshkin, 1988) during analysis and writing so I could better notice what I might be misinterpreting or missing.

4. Results and analysis

4.1. Quantitative analysis

Statistical analysis revealed that after participating in an online community-based learning program, first-generation students reported greater learning gains compared to their non-first-generation peers. Statistical analysis did not reveal a strong statistically significant difference in learning gains for any of the other demographic factors examined (gender identity, racial/ethnic identity, and parent income).

4.1.1. Statistically significant difference: First-generation students

Independent sample t-tests were performed to compare mean change scores on the 8 GES scales between first-generation (N=40) and non-first-

generation (N=140) students. Statistically significant differences (p≤ .039) were found on 7 of the 8 scales (highlighted in gray in the chart below): openness to diversity, cultural adaptability, civic efficacy, conscious consumption, political voice, global civic responsibility, and critical reflection. On 7 of the 8 scales, the post-survey score increased from the pre-survey for both first-generation and non-first-generation students. However, first-generation students reported a greater increase than non-first-generation students. No significant difference was found on the human rights beliefs scale (p=.214), which had the highest pre-survey mean score (4.67); thus, there is not much room for students to increase on the post-survey, and this is likely the reason there is no statistically significant difference on this scale.

TABLE (5)
INDEPENDENT T-TEST RESULTS : FIRST-GEN AND NON FIRST-GEN STUDENTS

	Openness to Diversity	**Cultural Adaptability**	**Civic Efficacy**	**Political Voice**	**Conscious Consumption**	**Global Civic Responsibility**	**Critical Reflection**	**Human Rights Beliefs**
Non-First Gen Mean Change Score	0.14	0.08	0.25	0.25	0.20	0.19	0.12	0.0018
Non-First Gen SD	0.365	0.361	0.452	0.620	0.340	0.478	0.313	0.355
First Gen Mean Change Score	0.38	0.29	0.59	0.48	0.36	0.42	0.29	0.08
First Gen SD	0.389	0.381	0.461	0.593	0.406	0.511	0.386	0.198
p	≤.001	0.002	≤.001	0.039	0.013	0.01	0.003	0.214

Notably, the p value for the t-test on these 7 scales were all well below the confidence interval (p ≤.05) with the highest p value being p=.039 (political voice) and the lowest p value being p≤.001 (openness to diversity and civic efficacy), indicating strong confidence that differences were not due to chance. As this study utilizes an explanatory mixed-methods design (Creswell, 2014), this quantitative finding will be explored further through qualitative survey and interview data below.

4.1.2. Statistically significant weak correlation: Parent income

A Pearson correlation coefficient with a 95% confidence interval revealed a statistically significant but weak negative correlation between parent income and the mean change score on the human rights belief scale, r (180)= -.22, p=.003. Thus, as parent income decreased, the pre-/post- change score increased for this one scale. This suggests that lower parent income was associated with greater learning gains on this scale. Since the correlation was weak and limited to one of eight scales, it was not explored further through qualitative data. However, socioeconomic status more generally, as a common intersectional identity of first-generation students, is addressed in the qualitative analysis below.

4.1.3. No statistically significant difference: Gender or racial identity

An independent sample t-test found no statistically significant differences in mean change scores on any of the 8 GES scales between students who identify as male (N=34) and female (N=150) where $p \geq .285$ for all tests. One student in the dataset identified as "other gender identity" but this case was not included in the analysis due to the small N.

Similarly, statistical analysis did not reveal significant differences in learning gains related to racial/ethnic identity. An independent sample t-test showed no statistically significant differences in mean change scores on any of the 8 GES scales between students who identify as White (N=68) and do not identify as White (N=117) where $p \geq .151$ for all tests. Students who do not identify as White identify as: African American/Black, Asian or Pacific Islander, American Indian/Alaskan Native, Hispanic/Latino, or Other racial identity (includes bi or multi-racial). Additionally, a one-way ANOVA did not reveal statistically significant differences between mean change scores across racial/ethnic identity groups on any of the GES scales where $p \geq .067$ for all tests. Groups included: African American/Black (N=18), Asian Pacific Islander (N=51), Hispanic/Latino (N=15), White (N=68), and Other racial/ethnic identity including bi and multi-racial (N=32).

Several factors may explain the lack of statistically significant differences by gender or race/ethnicity in this study. One plausible reason I did not observe a significant difference in mean change scores according to gender or race is that the n for males and for each racial/ethnic group is small. Perhaps a higher n would lead to more statistical power. Another plausible reason that

a statistically significant result did not reveal itself related to gender or race is that 71% of the students in the sample identify as liberal or far left. Especially in world with strong polarization in politics, it is possible that student values, mindsets, and motivations for future action were already similar; therefore, different demographics did not reveal significantly different results.

4.2. Qualitative analysis

Qualitative survey and interview data help explain why first-generation students reported significantly greater learning gains compared to their non-first-generation peers. The initial findings presented are based on responses from 40 survey and 4 interview participants who identified as first-generation. The key finding explored here is that first-generation students brought many lived experiences and skills to the online global learning program, such as approaching the program with a curious and open mindset, which may have led to greater learning gains.

4.2.1. Approach the unfamiliar learning environment with a curious and open mindset.

First-generation students in the data set displayed a strong sense of a curious and open mindset when approaching the unfamiliar learning environment of online community-based learning. In participating in online community-based learning during the COVID-19 crisis, students had to deal with a lot of ambiguity in their academic program and in the wider world. Many students thought they would be participating in an in-person community-based learning experience, and this was quickly changed to an online modality. The online community-based learning experience was new for students, universities, and community partners alike. Therefore, it is very likely that students did not fully understand their exact role or the norms of communication right away. Students also had to deal with uncertainty about their own health and the health of their loved ones during the pandemic. First-generation students, who were more likely to be low-income than their non-first-generation peers in this study, may have also faced uncertainty about their own or their family's financial situation at the time. Thus, initial evidence shows that first-generation students were better able to deal with the ambiguity of participating in an unfamiliar and perhaps uncomfortable learning environment—that of online community-based learning—than their non-first-generation peers.

Analysis of interview data shows a clear difference in the way first-generation and non-first-generation students viewed the online program, with many non-first-generation college students conveying that they saw the online program primarily as preparation for future in-person learning experiences like study abroad, internships, volunteerism, or community-based learning. These students viewed the in-person experience as "real" and the online as an ok alternative given the circumstances of not being able to travel or have in-person contact during the pandemic. It was common for non-first-generation students to state things like "If this was an actual program, I would have probably been traveling around India and the survey that I ended up creating would have gone out far earlier" or "Whereas, the online one [community-based learning program]. You know, I kind of forget it. Sometimes, I forget I did that." These responses suggest that non-first-generation students often perceived the online program as a temporary substitute rather than a meaningful learning experience, which contrasts greatly with the perceived value first-generation students described.

In fact, no first-generation students in the interview sample expressed the view that the program was an ok alternative to the "real experience." Instead interview data revealed that first-generation students overwhelmingly viewed the online community-based learning program as a great opportunity saying things like "I pray that such opportunities could be available for other people because it was beneficial for me. I would love to do more of this, and it exposed me to a lot of knowledge and skills" and "I was thankful for it. Though, it wasn't what I expected in terms of like doing an internship." Thus, first-generation students showed more openness to engage in a learning experience that was not what they expected.

It is possible that non-first-generation to college students, the vast majority of whom were of traditional college age, had fixed ideas from their family and friends about what their college experience was supposed to look like—internship in their sophomore year, study abroad in their junior year, apply to medical school in their senior year. One non-first-generation student said the only reason they participated in the online community-based learning program was that the competitive summer internships in their field of Architecture did not happen during the pandemic. Whereas first-generation college students who did not have such a set script about their education were

thus less stuck in ideas about "how things are supposed to be" and more willing to engage with openness and curiosity to something new, like online community-based learning.

Research in the field of positive psychology shows that people who display mindsets such as openness and curiosity are better able to explore, take risks, and trust others; therefore, openness and curiosity are agents of personal growth and learning (Kashdan & Silvia, 2009; McCrae, 1996; Neff et al., 2007; Seligman & Csikszentmihalyi, 2000). Thus, approaching the unfamiliar and perhaps uncomfortable experience of online community-based learning with an open and curious mindset may have spurred greater learning for first-generation students compared to their non-first-generation peers.

4.2.2. First-generation students bring cultural wealth

Qualitative data demonstrates that first-generation students in the sample, who are more likely than non-first generation students to be non-White, born outside of the United States, low-income, and include unique perspectives in this data set (i.e. non-binary gender identity and American Indian or Alaskan Native identity), came into the online community-based learning experience with lived experiences that they drew on in the online community-based learning program (Santana et al., 2023; Yosso, 2005). Mindsets such as openness to new experiences and intrinsic motivation for experiential learning may have provided knowledge and skills needed to sustain motivation despite uncertainty and barriers during the online community-based learning program. Further, lived experiences of intercultural collaboration and resisting systems of oppression in their own lives may have given first-generation students a more realistic understanding about what it means to be a global citizen and contribute to social change than their non-first-generation peers.

Thus, first-generation students knowingly or unconsciously, brought lived experiences or cultural wealth to the online community-based learning experience. Tara Yosso's (2005) theory of community cultural wealth is a concept within critical race theory that values the strengths students of color have learned from their families and communities to resist oppression and then bring into the educational experience. This asset-based theory challenges deficit theorizing, such as traditional Bourdieuean cultural capital theory, which suggests that people of color are at a social and academic disadvantage because they lack cultural capital as defined by White middle-class values (education,

language, social networks, and money) (Bourdieu & Passeron, 1990). Yosso names six forms of cultural capital that Students of Color bring to the educational experience: aspirational, navigational, social, linguistic, familial, and resistant. While race and ethnicity are central elements of cultural wealth, Yosso says that culture also includes intersecting identities like gender, immigration status, and sexuality. Influenced by the theory of community cultural wealth, I apply an asset-based lens to examine learning of a group that is marginalized in higher education—first-generation students. In the following sections, I identify some of the lived experiences that first-generation students brought into the online community-based learning program and facilitated their learning.

Intrinsic motivation: Persistence in the face of barriers

One first-generation student in the interview sample described a "yearning for" learning from diverse people and experiential knowledge as her motivation for participating in the online community-based learning program. This first-generation student who identified as female, White, and traditional college-age said:

> I come from a first-generation, low-income background. And I came from a pretty diverse community and going into college, there wasn't that much diversity in my school. And so it was something that I was kind of yearning for.

This student provides insight into how first-generation students on predominately White elite campuses may find comfort and belonging through community-based learning and global learning experiences where they can interact with people of diverse socioeconomic backgrounds, races, etc. She went on to describe why she values learning from diverse perspectives and how she might apply this to her future career as a medical doctor:

> I wanted to learn more about people who have lives that are different than me because I know what it's like to feel not understood in different ways. And I wanted to be able to understand, especially if I'm going to work with people directly for the rest of my life…I definitely think I pursued a lot of what I did just so that I wouldn't be ignorant to what someone is going through.

This student describes how her own experiences with marginalization or "knowing what it's like to feel not understood" as first-generation and low-income provide an entry point for wanting to learn about other ways of thinking

and doing things. Further, this student describes how she came into her college experience already valuing the experiential knowledge of those outside of the university, saying:

> I was a Spanish major at first at school. I loved learning like the language, but I felt like I was missing something. It was definitely the actual interaction aspect. So I think proximity is definitely what drew me to travel to all the different places.

Through lived experiences of growing up low-income and in a self-described "diverse community", this student came into the college experience already valuing learning from diverse and marginalized perspectives as well as experiential knowledge. And she was not deterred from participating in the community-based learning program, which was with a Bolivian health clinic when it turned to the online modality. Moreover, she found the experience to be very meaningful and described sharing with her family at home learning about the language, and even sharing food from a cooking class. Thus, this first-generation student displayed intrinsic motivation or, "yearning for" experiential learning like community-based learning and travel abroad.

This intrinsic motivation to participate in community-based learning may have helped this student sustain commitment when the program pivoted to the uncertain online modality or when she faced barriers, like balancing family and work responsibilities with her education. Research in psychology shows that people who are intrinsically motivated want to achieve their goals in order to gain new knowledge and skills, and are more likely to take risks and follow through on goals in the face of challenges. While those who are extrinsically motivated want to achieve their goals in order to gain the approval of others, and are less willing to challenge themselves or risk failure (Neff et al., 2007; Yeager & Dweck, 2012). The student quoted in the paragraph above persisted despite several barriers. She was one of the few students who reported they were working full-time at a hospital while she also participated in five hours-per-day synchronous session for the online community-based learning program. She said she made an arrangement with the mentor who led the program that once per week she would join the session late and once per week watched the recording of the synchronous session. Thus, this initial evidence, while limited, suggests that first-generation students, due to their lived experiences of interacting with diverse people, may be more likely to be

intrinsically motivated to participate in community-based learning experiences, including in the online modality, than their non-first-generation peers, and thus better able to sustain motivation in the face of uncertainty or barriers.

Linguistic capital: Lived experience of bridging cultures

First-generation students in this sample show evidence of displaying linguistic capital (Yosso, 2005) or the linguistic and cross-cultural communication skills that many Students of Color possess and bring to educational experiences, including community-based learning (Santana et al., 2023). This could mean literally speaking another language and may also refer to more subtle cross-cultural communication skills like storytelling. The first-generation identity of students often intersects with other identities and they are more likely to be Students of Color as well as first-generation Americans (or the children of immigrants). A first-generation college student, who is also a first-generation American and identifies as Asian/Pacific Islander, described the linguistic capital she learned through the experience of being a bridge between two cultures (that of their parents and the US):

> Being a first-generation American, there are often ideas that I might need to explain to my family members that they do not understand about the culture here or to my friends that they do not understand about my culture if there is the potential for a clash of ideas.

Thus, this student has a lifetime of practicing intercultural collaboration, which she brought to the online community-based learning experience. Similarly, another first-generation student whose parents were born in South Korea described embodying linguistic wealth by adjusting her speech (speaking slowly and repeating when needed) when speaking with those for whom English is not their primary language:

> When I speak with individuals whose primary language is not English, I always make sure to speak slowly and to take pauses. In addition, I'm always happy to repeat myself if they wanted to hear what I said a second time. As my parents are not native English speakers, I can understand their frustration to some extent, especially when I saw firsthand how my parents struggled to speak their mind with a language they hardly knew.

This student says that this linguistic wealth of adjusting her speech came more easily as a first-generation American with parents who speak English as a Second Language. This first-generation student came into the community-based learning experience with empathy and skills needed to communicate with non-native English speakers. Students who have family and friends in other countries have likely been building personal relationships with them in the online modality for many years. Perhaps this linguistic wealth gave first-generation students, particularly those who were also first-generation American, confidence in communicating and building cross-cultural relationships even in the online modality, resulting in greater motivation to continue to participate in future global social action than their non-first-generation peers.

Resistant capital

First-generation students in this sample show evidence of displaying resistant capital (Yosso, 2005) or the knowledge and skills gained through facing discrimination and resisting inequitable systems. First-generation students have successfully resisted discrimination in at least one system that marginalizes them—the higher education admissions process. As many first-generation students are also low-income and Students of Color, they have likely been resisting discrimination in systems such as education, healthcare, and law their entire lives. Some first-generation students said that due to lived experiences of marginalization, they were already thinking about systemic inequalities as well as how they can take action to address those inequities before taking part in the online community-based learning program, as this student reported:

> Being a first-generation low-income college student, I feel that my education has given me the opportunity to be exposed and equipped to think critically about existing systemic inequalities and how I can be a part of making a difference.

This student describes how personal experiences of marginalization as a first-generation and low-income student motivate them to be involved in social change. They also move beyond motivation, and further say that these identities contribute to their confidence in taking action or confidence in "how I can be part of making a difference." Therefore, first-generation students who came into

the online community-based learning program with resistant capital may have had a more realistic idea about the complexity of social change as well as greater confidence in their ability to continue to be involved in resisting systems of oppression in the future than non-first-generation students.

4.2.3. The role of mentorship: A sense of belonging and a space for reflection

It is important to note that while most first-generation students in the interview sample reported an openness and curiosity to the unfamiliar learning environment and reported learning gains, one first-generation student reported "no significant learning" after the program. This student said that they had very little guidance from mentors at the community-partner organization saying, "I didn't really have a supervisor. It was just like a point of contact for me with the organization." For both in-person and online learning programs, mentorship has been suggested as a way to instill a sense of belonging and confidence in first-generation students who often struggle with imposter syndrome and understanding academic systems (Gardner & Leary, 2023; Ilett, 2019; Ives & Castillo-Montoya, 2020). Further, fostering a sense of belonging and support, or social presence, is one of the main ways that online learning researchers pose can reduce feelings of social isolation that are common in online learning (Garrison et al., 1999; Liu et al., 2009; Means et al., 2014). Thus, I propose that mentorship plays an especially important role for first-generation students in the online learning environment where feelings of isolation may be heightened due to both the modality of learning and the identity of students.

This same first-generation student went on to say that in the online modality, they were not working with anyone else, like peers, thus lacking mentorship meant they were also missing a space for reflection and thus learning:

> If you're not able to get a second pair of eyes on things your work can really suffer…If I talk through a project with somebody else, it makes it harder for me to process and understand and take lessons away from it.

This student saw a space for reflection as key to their own learning, which is central to community-based learning and experiential learning theories (Dewey, 1938; Kuh, 2008). Thus, the limited evidence here suggests that community partners acting as mentors are a vital piece of the learning process

because they also serve as the primary space for reflection during the learning experience.

4.2.4. Summary and significance of the findings

Analysis revealed a statistically significant self-reported learning gain for first-generation students compared to their non-first-generation peers on 7 of the 8 survey scales after participating in an online community-based learning program. Analysis did not reveal a strong statistically significant learning gain for any of the other demographic factors examined (gender identity, racial/ethnic identity, and parent income). Disaggregating data by key demographics for analysis has been called for by scholars in online learning, community-based learning, and global citizenship education (Brownell & Swaner, 2010; Chittum et al., 2022, Deardorff, 2015; Hartman et al., 2020; Post- et al., 2019; Waldner et al., 2010) and led to important findings related to first-generation students, which could otherwise not be seen in the total data set.

Qualitative analysis of both survey and interview data suggests that first-generation students, who are more likely to be non-White, born outside of the United States, and low-income than non-first-generation students in this sample, brought lived experiences that facilitated their learning. Influenced by Yosso's (2005) theory of community cultural wealth, this analysis finds that many first-generation students brought strengths, such as a lifetime of practicing intercultural collaboration and resisting systems of oppression in their own lives, to the online community-based learning experience, which may have facilitated greater learning gains for this group than for their non-first-generation peers. Further, first-generation students in this study were more likely to display a strong sense of openness and curiosity when approaching the unfamiliar environment of online community-based learning than their non-first-generation peers, which may have been a way to sustain motivation despite uncertainty and barriers that came with participating in an unfamiliar learning experience in the middle of a global pandemic, and thus facilitated greater learning gains. Initial evidence suggests that the role of mentorship is of heightened importance for first-generation students in online community-based learning programs as a way to lessen feelings of isolation which may be enhanced by the first-generation identity and online modality. While much of the literature in higher education regarding first-generation students focuses on challenges and how to support this group (Barber et al., 2021; De La Cruz et al.,

2021; Gardner & Leary, 2023; Killham et al., 2022), this research contributes an asset-based approach to analysis.

5. Implications and recommendations for teaching

The goal of this purpose-driven research is to improve student global and civic learning for all students. Thus, I provide three recommendations along with practical resources educators can implement in their own global learning classrooms.

5.1. Guide students to sustain uncertainty

In the wake of COVID, and with rapidly developing technology like artificial intelligence and virtual reality, all students need to be able to sustain uncertainty both inside and outside of the classroom. Thus, I provide several recommendations to guide students to sustain uncertainty.

5.1.1. Guide students to reflect on their strengths

First-generation students in this study were more likely than their non-first-generation peers to draw on their lived experiences and display an open and curious approach to the unfamiliar experience of online community-based learning, which I pose facilitated greater learning gains for this group. Thus, I suggest that educators utilize asset-based theories, such as Tara Yosso's theory of community cultural wealth (2005) to guide students to think about how their past lived experiences can be assets. Two resources that can be used to guide student reflection include the University of North Texas' cultural wealth wheel and Worcester Polytechnic Institute's asset-mapping exercise (Gurley, 2019; Stoddard & Pfeifer, 2025). Providing concrete language and a framework for students to think about their assets is necessary as students may not be consciously aware of how their lived experiences can be strengths, this is especially true of students who are traditionally marginalized in higher education (i.e. first-generation students or Students of Color) because they have often been told that their lived experiences are deficits their whole lives. Thus, reflecting on the strengths students bring to the learning experience would be useful for all students, but is especially important for students who are traditionally marginalized in higher education, as they could draw on these strengths when faced with difficult and uncertain situations.

5.1.2. Foster growth mindset through mindfulness

Research in the area of positive psychology has found that mindsets of openness and curiosity over fear of failure fosters greater growth and learning (Kashdan & Silvia, 2009; Neff et al., 2007; Seligman & Csikszentmihalyi, 2000). Thus, fostering a growth mindset over perfectionism in students could help them to deal with the discomforts and uncertainties of intercultural collaboration or online collaboration. While intercultural collaboration and online collaboration can be difficult, and it can also be enjoyable. And educators can guide students to intentionally reflect on the joy that exists within uncomfortable and ambiguous experiences. Research in positive psychology suggests that teaching mindfulness exercises, such as meditation or mindful walking in nature, can help individuals sustain discomfort and recognize joy amidst uncertainty (Neff et al., 2007). Based on these findings, I have developed a resource that global educators interested in this strategy can utilize in their own classrooms, Mindfulness exercises to prepare for community-based global learning (will link here after blind review). I pose that teaching students mindfulness exercises may help them to sustain discomforts and identify joy in educational and life experiences that are new and uncertain.

5.1.3. Provide multiple mentorship opportunities

In this study, mentorship from partner community members was found to facilitate a change in student learning and future actions. Initial evidence also suggests that mentorship was of heightened importance for first-generation students in the online environment, where feelings of isolation and marginalization, which are already common in first-generation students, were heightened. Thus, I suggest that mentorship should occur in various formats in community-based learning and is especially vital for students traditionally marginalized in higher education. Mentorship from those with similar identities has been posed as having a greater impact on first-generation students and Students of Color in both online and in-person environments (Brinkman et al., 2013; Chavez, 2015; Killham et al., 2022), and is a strategy I suggest.

I also pose that alumni could act as mentors by responding to journal prompts or having one-on-one discussions with current students as a way for both students to engage in more consistent ongoing reflection and meaning-making with others as well as for alumni to continue to think about their own learning and actions after program completion. Opportunities for continued

reflection for alumni are also important if a change in actions is the goal. In fact, many alumni said they enjoyed participating in the interview because it gave them the space to reflect on their learning and actions for the first time since they completed the online community-based learning program.

5.2. Consider online collaboration as a critical global citizenship capacity

Traditionally global online collaborative learning, such as virtual exchange or COIL programs, have been promoted as safe spaces to prepare students for future in-person intercultural collaboration (Rubin, 2017), which I argue devalues the interactions taking place in the online environment as important and "real." Many alumni in this sample, especially those who were non-first-generation students, expressed a perception of their online community-based learning program as not "an actual program" and lacked a critical understanding of online collaboration. A small but growing number of scholars in online learning have been calling for increasing students' critical understanding of online collaboration, or how technology impacts online collaboration including attention to power and privilege (Bringle & Clayton, 2020; Hauck, 2019; Morris & Stommel, 2018). As a resource, the European Union Erasmus+ program SLIDE project (Service-learning as a strategy to promote inclusion, diversity, and digital empowerment) offers a free massive open online course (MOOC) that includes critical reflection regarding online collaboration for educators and students (SLIDE, 2024). In a world in which much of students' future collaborations—whether it be in their professional, personal, or civic lives—will be in an online or hybrid format, educators must consider online collaboration a crucial global citizenship capacity and design learning experiences that take advantage of the online modality.

6. Limitations and recommendations for future research

A limitation of this study is the sample size of first-generation students for the survey (n=40) and interviews (n=4). While strong, the findings presented here are initial and should be explored further with larger datasets to include greater demographic diversity. Further, all data collected in this study is self-reported by students, which is subject to social-desirability bias, or the

phenomena of respondents answering untruthfully in order to present themselves in a favorable light to their professors or institutions (Holden & Passey, 2009). Prior research on this issue in college student surveys is mixed—some have found social-desirability bias in self-report surveys (Bowman & Hill, 2011; Ferrari et al., 2009) and other studies report no social desirability bias (Ferrari et al., 2005; Miller, 2012). In this analysis, I regarded students' self-reported responses to be honest evaluations of themselves. However, future large-scale research should examine how social-desirability bias affects self-report student surveys, especially as a lot of educational research regarding student learning relies on surveys. Finally, this research looks at the perspective of students only and does not examine the perspective of other stakeholders such as community-partner organizations or faculty and staff facilitating global citizenship education programming. Partner-community perspectives in online community-based learning is a much-needed area of future research.

This study found value in disaggregating data by demographics to reveal meaningful differences in learning outcomes for students of different demographic identities—particular to this study, first-generation students self-reported greater learning gains than their non-first-generation peers. I suggest that researchers should be aware of the power involved in disaggregating data by student demographics. This process necessarily requires us to put people into categories and there will always be limitations to the decisions we make. All students have intersecting identities and diverse life experiences that cannot be captured by one category such as “first-generation.” However, if we do not disaggregate the data, the results and recommendations of our studies will always reflect non-inclusive universalization, which means they will be based on the majority and leave out those who are traditionally marginalized in higher education (Nkomo, 1992). I believe that researchers sometimes have a fear of criticism about how they disaggregate data that leads them to not engage in this type of analysis, and contributes to what scholars have cited as a dire lack of educational research regarding outcomes for students of different demographic identities in online learning, community-based learning, and global citizenship education alike (Brownell & Swaner, 2010; Chittum et al., 2022; Hartman et al., 2020; Post et al., 2019; Waldner et al., 2010). Thus, when disaggregating data by student demographics, I suggest that if researchers make decisions carefully and explain them transparently, important learnings can be uncovered to then inform the development of inclusive and critical pedagogy.

Ethical approval

Ethical approval of this study was obtained for the University of Massachusetts Institutional Review Board (ref. 3374).

Declaration of competing Interest

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability statement

The data that support the findings of this study involve student participants and are not publicly available due to privacy considerations. Requests to access the data may be directed to the corresponding author, who will consider them on a case-by-case basis subject to ethical and institutional guidelines.

References

Anderson, K., Bhattacharya, J., Ruprecht, L., Chavatzia, T., Leicht, A., Bah, C., & Crone, D. (2017). Measuring Global Citizenship Education: A Collection of Practices and Tools. *Center for Universal Education, Brookings Institution & UNESCO.* https://learningportal. iiep. unesco. org/en/library/measuring-global-citizenship-education-acollection-of-practices-and-tools.

Barber, P. H., Shapiro, C., Jacobs, M. S., Avilez, L., Brenner, K. I., Cabral, C., Cebreros, M., Cosentino, E., Cross, C., Gonzalez, M.L., Lumada, K.T., Menjivar, A.T., Narvaez, J., Olmeda, B., Phelan, R., Purdy, D., Salam, S., Serrano, L., Velasco, … E.Z., Levis-Fitzgerald, M. (2021). Disparities in remote Learning faced by first-generation and underrepresented minority students during COVID-19: Insights and opportunities from a remote research experience. Journal of Microbiology & Biology Education, 22(1). https://doi.org/10.1128/jmbe.v22i1.2457

Bourdieu, P., & Passeron, J.-C. (1990). *Reproduction in education, society and culture* (Vol. 4). Sage Publications. https://uk.sagepub.com/en-gb/eur/reproduction-in-education-society-and-culture/book203162

Bowman, N. A., & Hill, P. L. (2011). Measuring how college affects students: Social desirability and other potential biases in college student self-reported gains. *New Directions for Institutional Research, 2011(150), 73–85*. https://doi.org/10.1002/ir.390

Bringle, R. G., & Clayton, P. H. (2020). Integrating service learning and digital technologies: Examining the challenge and the promise. *RIED. Revista Iberoamericana de Educación a Distancia*, 23(1). https://doi.org/10.5944/ried.23.1.25386

Brinkman, S., Gibson, K., & Presnell, J. (2013). When the helicopters are silent: The information seeking strategies of first- generation college students. *Association of College and Research Libraries.*

https://alair.ala.org/bitstream/handle/11213/18145/BrinkmanGibsonPresnell_When.pdf?sequence=1&isAllowed=y

Brownell, J. E., & Swaner, L. E. (2010). Five high-impact practices: Research on learning outcomes, completion, and quality. *American Association of Colleges and Universities*. https://www.aacu.org/publication/five-high-impact-practices-research-on-learning-outcomes-completion-and-quality

CFAR. (2013, July 9). *Found Pilots*. CFAR. https://www.cfar.com/found-pilots/

Chavez, M. A. (2015). Community college journeys of hispanic ESL women. *Community College Journal of Research and Practice*, *39*(3), 207–221. https://doi.org/10.1080/10668926.2013.795506

Chittum, J. R., Enke, K. A. E., & Finley, A. P. (2022). The effects of community-based and civic engagement in higher education: What we know and questions that remain. *American Association of Colleges and Universities.*

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed). SAGE Publications.

Culcasi, I., Russo, C., & Cinque, M. (2022). E-service-learning in higher education: Modelization of technological interactions and measurement of soft skills development. *Journal of Higher Education Outreach and Engagement*, *26*(3), Article 3. https://openjournals.libs.uga.edu/jheoe/article/view/2653

De La Cruz, M., Brenda, G., Pace, L., & Ramos, S. (2021). First generation college students in a virtual world: Challenges and opportunities. *International Journal of Education and Human Developments*, *7*(1).

Deardorff, D. (2015). *Demystifying Outcomes Assessment for International Educators*. Stylus.

DeWit, H. (2016). Internationalisation and the role of online intercultural exchange. In R. O'Dowd & T. Lewis (Eds.), *Online intercultural exchange: Policy, pedagogy, practice*, *4*, 69-82. Routledge.

Digital empowerment for HEI teachers – SLIDE. (2024). SLIDE: Service-Learning as a Pedagogy to Promote Inclusion, Diversity & Digital Empowerment. https://www.slide-erasmus.eu/index.php/pr2-digital-empowerment-training-hei-teachers/

Ferrari, J. R., Bristow, M., & Cowman, S. E. (2005). Looking good or being good? The role of social desirability tendencies in student perceptions of institutional mission and values. *College Student Journal*, *39*(1), 7–14.

Ferrari, J. R., McCarthy, B. J., & Milner, L. A. (2009). Involved and focused? Students' perceptions of institutional identity, personal goal orientation and levels of campus engagement. *College Student Journa*l, *43*(3), 886–897.

Ferrarini, C. (2023). Cross-border community-based learning as a strategy in diversity and multicultural teacher preparation: A comparative case study. *Metropolitan Universities*, *34*(4), 44-63. https://doi.org/10.18060/26762

Finley, A., & McNair, T. (2009). Assessing underserved students' engagement in high-impact practices. *Association of American Colleges and Universities.*

Fischer, C., Xu, D., Rodriguez, F., Denaro, K., & Warschauer, M. (2020). Effects of course modality in summer session: Enrollment patterns and student performance in face-to-face and online classes. *The Internet and Higher Education, 45*, 100710. https://doi.org/10.1016/j.iheduc.2019.100710

Forward, M. L. (2021). Virtual engagement—Real-world impact: How Students are Working with Communities across the Globe Despite the Pandemic. *Liberal Education*, *107(3),* n3.. https://www.aacu.org/liberaleducation/articles/virtual-engagement-real-world-impact

Gardner, K., & Leary, H. (2023). Online learning for first-generation and underrepresented minoritized students: A literature review using a model of student engagement. *Online Learning*, *27*(1), 263-291. https://doi.org/10.24059/olj.v27i1.3392

Garrison, N. J., & Gardner, D. S. (2012, November 15). *Assets First Generation College Students Bring to the Higher Education Setting*. Association for the Study of Higher Education (ASHE) Annual Conference.

Garrison, R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The internet and higher education*, *2*(2-3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Gendle, M. W., & Tapler, A. (2022). Utility of the global engagement survey (GES) to quantitatively evaluate a unique undergraduate community-based global learning program. *Journal of Community Engagement and Higher Education*, *14(*3), 29–38.

GES annual reports. (2026, Sept 16). Community-Based Global Learning Collaborative. https://www.cbglcollab.org/ges-pubs-present-1

Glesne, C. (2011). *Becoming qualitative researchers: An introduction* (4th ed.). Pearson.

Gurley, A. (2019, February 28*). Cultural wealth wheel*. University of North Texas Digital Library. https://digital.library.unt.edu/ark:/67531/metadc1464202/

Guth, S., & Helm, F. (2011). Developing multiliteracies in ELT through telecollaboration. *ELT Journal, 66*, 42–51. https://doi.org/10.1093/elt/ccr027

Hands, A. S. (2020). Tapping into the assets of first-generation students during times of transition. *Information and Learning Sciences*, *121*(7/8), 611–618. https://doi.org/10.1108/ILS-04-2020-0065

Hartman, E., Reynolds, N. P., Ferrarini, C., Messmore, N., Evans, S., Al-Ebrahim, B., & Brown, J. M. (2020). Coloniality-decoloniality and critical global citizenship: Identity, belonging, and education abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 32(1), Article 1. https://doi.org/10.36366/frontiers.v32i1.433

Hauck, M. (2019). Virtual exchange for (critical) digital literacy skills development. *European Journal of Language Policy*, *11*(2), 187–210. https://doi.org/10.3828/ejlp.2019.12

Hinz, S. E., Whitley, S. E., Fugate, M., Reyes, D. M., & Ellis, R. A. (2016). First-generation college graduates' transition to graduate school and employment. *Center for First-Generation Student Success.*

Holden, R. R., & Passey, J. (2009). Social desirability. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior*. Guilford Publications.

Hovland, K. (2014). Global learning: Defining, designing, demonstrating. *Association of American Colleges and Universities*, 1..

Ilett, D. (2019). A critical review of LIS literature on first-generation students. *portal: Libraries and the Academy*, *19*(1), 177–196.

Institute of International Education (n.d.). *Open Doors 2024 Fast Facts*. https://opendoorsdata.org/fact_sheets/fast-facts/

Ives, J., & Castillo-Montoya, M. (2020). First-generation college students as academic learners: A systematic review. *Review of Educational Research*, *90*(2), 139–178. https://doi.org/10.3102/0034654319899707

Kashdan, T., & Silvia, P. (2009). Curiosity and interest: The benefits of thriving on novelty and challenge. In Lopez, S.L. & Snyder, C.R. (Eds.) *The Oxford Handbook of Positive Psychology* (2nd ed., pp. 367–375). Oxford university press. https://doi.org/10.1093/oxfordhb/9780195187243.013.0034

Kiely, R. (2004). A chameleon with a complex: Searching for transformation in international service-learning. *Michigan Journal of Community Service Learning*, *10*(2), 5-20.

Killham, J. E., Estanga, L., Ekpe, L., & Mejia, B. (2022). The strength of a tigress: An examination of Latina first-generation college students' tenacity during the rapid shift to remote learning. *Journal of Research on Technology in Education*, *54*, 1–20. https://doi.org/10.1080/15391523.2021.1962450

Kuh, G. D. (2008). High-Impact educational practices. *Association of American Colleges and Universities. 10*(4), 30-31.

Landorf, H., Doscher, S., & Jaffus, H. (2018). Making global learning universal. *Stylus*.

Lee, J., Leibowitz, J., Rezek, J., Millea, M., Millea, M., & Saffo, G. (2022). Impact of International Virtual Exchange on Student Success. *Journal of International Students*, 12(S3), 77–95. https://doi.org/10.32674/jis.v12iS3.4593

Liu, S., Gomez, J., & Yen, C.-J. (2009). Community college online course retention and final grade: Predictability of social presence. *Journal of Interactive Online Learning*, 8(2). https://digitalcommons.odu.edu/efl_fac_pubs/10

McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin, 120*(3), 323–337. https://doi.org/10.1037/0033-2909.120.3.323

Means, B., Bakia, M., & Murphy, R. (2014*). Learning online: What research tells us about whether, when and how.* (Vol 3.) Routledge.

Miller, A. L. (2012). Investigating social desirability bias in student self report surveys. *Educational Research Quarterly*, 36.1, 30–47.

Morris, S. M., & Stommel, J. (2018). *An urgency of teachers: The work of critical digital pedagogy*. Hybrid Pedagogy Inc. https://urgencyofteachers.com/

Neff, K. D., Rude, S. S., & Kirkpatrick, K. L. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality, 41*(4), 908–916. https://doi.org/10.1016/j.jrp.2006.08.002

Ngai, G., Lau, K.-H., & Kwan, K.-P. (2023). A Large-Scale Study of Students' E-Service-Learning Experiences and Outcomes During the Pandemic. *The Journal of Experiential Education, 47*(1), 29-52. https://doi.org/10.1177/10538259231171852

Nkomo, S. M. (1992). The emperor has no clothes: Rewriting "race in organizations." *The Academy of Management Review*, *17*(3), 487–513. https://doi.org/10.2307/258720

O'Dowd, R. (2018). From telecollaboration to virtual exchange: State-of-the-art and the role of UNICollaboration in moving forward. *Journal of Virtual Exchange*, *1*, 1–23. https://doi.org/10.14705/rpnet.2018.jve.1

Oxfam (2015). *Global citizenship in the classroom: A guide for teachers.* https://www.oxfam.org.uk/education/who-we-are/global-citizenship-guides/

Peshkin, A. (1988). In search of subjectivity-One's own. *Educational Researcher, 17*(7), 17–21. https://doi.org/10.3102/0013189X017007017

Poe, J. (2022). Advancing global citizenship of underrepresented and hypersegregated U.S. students in higher education through virtual exchange. *Journal of International Students, 12*(S3) 38-56., Article S3. https://doi.org/10.32674/jis.v12iS3.4634

Porto, M. (2014). Intercultural citizenship education in an EFL online project in Argentina. *Language and Intercultural Communication, 14*(2), 245–261. https://doi.org/10.1080/14708477.2014.890625

Post, L. S., Guo, P., Saab, N., & Admiraal, W. (2019). Effects of remote labs on cognitive, behavioral, and affective learning outcomes in higher education. *Computers & Education, 140*, 103596. https://doi.org/10.1016/j.compedu.2019.103596

Raykov, M., & Taylor, A. (2018). *Beyond learning for earning: The long-term outcomes of course-based and immersion service learning.* University of British Colombia Faculty Research and Publications. https://doi.org/10.14288/1.0371600

Reimers, F. M. (2020). *Educating students to improve the world*. Springer. https://doi.org/10.1007/978-981-15-3887-2

Reynolds, N., Toms, C., & Hartman, E. (2015). The beauty of global citizenship; The problem of measurement. In B. Oomen, E. Park, M. Sklad, & J. Friedman (Eds.), *In Going Glocal: The theory, practice, evaluation, and experience of education for global citizenship.* https://www.academia.edu/21275662/

Rienties, B., Lewis, T., O'Dowd, R., Rets, I., & Rogaten, J. (2022). The impact of virtual exchange on TPACK and foreign language competence: Reviewing a large-scale implementation across 23 virtual exchanges. *Computer Assisted Language Learning, 35*(3), 577–603. https://doi.org/10.1080/09588221.2020.1737546

Rubin, J. (2017). *Embedding collaborative online international learning (COIL) at higher education institutions*.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Sage.

Santana, C., Risam, R., Garcia-Guevara, A., Krupczynski, J., Lynch, C., Reiff, J., Vincent, C., & Ward, E. (2023). *Anti-racist community engagement: Principles and practices.* Campus Compact. https://digital.casalini.it/9781945459320

Schwehm, J. S., Lasker-Scott, T., & Elufiede, O. (2017). A comparison of learning outcomes for adult students in on-site and online service-learning. *Online Journal of Distance Learning Administration*, *20*(1).

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5–14. https://doi.org/10.1037/0003-066X.55.1.5

Sherraden, M. S., Lough, B., & McBride, A. M. (2008). Effects of international volunteering and service: Individual and institutional predictors. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations, 19*(4), 395–421. https://doi.org/10.1007/s11266-008-9072-x

Stanlick, S. E. (2015). *Quality and directionality of global citizenship identity development in the context of online and offline reflections during an introductory global citizenship course* [Doctoral dissertation, Lehigh University] Lehigh University Graduate Publications. https://asa.lib.lehigh.edu/Record/10612976

Stanlick, S., & Szmodis, W. (Eds.). (2022). *Perspectives on lifelong learning and global citizenship: Beyond the classroom*. Springer.

Steckley, M., & Steckley, J. (2022). E-volunteering as international experiential learning: Student and community perspectives. *Canadian Journal of Development Studies, 43*(2), 237–258. https://doi.org/10.1080/02255189.2021.1952856

Stoddard, E., & Pfeifer, J. (2025). *SWEET Center Asset Mapping Exercise.* Worcester Polytechnic Institute. https://www.wpi.edu/sites/default/files/2023-04/SWEET%20Center%20Asset%20Mapping%20Exercise.pdf

Tervalon, M., & Murray-Garcia, J. (1998). Cultural humility versus cultural competence: A critical distinction in defining physician training outcomes in multicultural education. Journal of Health Care for the Poor and Underserved, 9(2), 117–125.

UNICEF. (2020). *Unequal access to remote schooling amid COVID-19 threatens to deepen global learning crisis.* Retrieved June, 2020, from https://www.unicef.org/press-releases/unequal-access-remote-schooling-amid-covid-19-threatens-deepen-global-learning

United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. https://sdgs.un.org/2030agenda

University of Colorado Boulder. (2023). *What is community-based learning?* Retrieved March 22, 2023, from https://www.colorado.edu/center/teaching-learning/programs-services/campus-teaching-and-learning-initiatives-partnerships/community-engaged-teaching

Valentine, J., Yang, H., & Price, D. (2021). High-impact practices and gains in student learning: Evidence from Georgis, Montana, and Wisconsin. *Lumina Issue Paper*. Lumina Foundation.

Vandermaas-Peeler, M., Duncan-Bendix, J., & Biehl, M. S. (2018). "I have a better sense of how interconnected the world is": Student perceptions of learning and global engagement during study abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad, 30*(2), 117–135. https://doi.org/10.36366/frontiers.v30i2.416

Waldner, L., McGorry, S., & Widener, M. (2010). Extreme e-service learning (XE-SL): E-service learning in the 100% online course. *MERLOT Journal of Online Learning and Teaching, 6*(4), 13.

What is community-based learning? (n.d.). University of Colorado Boulder. https://www.colorado.edu/cuengage/about-us/what-community-based-learning

Wick, D., Willis, T. Y., Rivera, J., Lueker, E., & Hernandez, M. (2019). Assets-based learning abroad: First-generation Latinx college students leveraging and increasing community cultural wealth in Costa Rica. *Frontiers: The Interdisciplinary Journal of Study Abroad, 31*(2), 63–85. https://doi.org/10.36366/frontiers.v31i2.455

Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist, 47*(4), 302–314. https://doi.org/10.1080/00461520.2012.722805

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education, 8*(1), 69–91. https://doi.org/10.1080/1361332052000341006

Zhang, H., Wu, J., Li, Y., Cotter, D., Zhou, X., & Huang, X. (2025). The impact of virtual exchange on college students in the US and China. *Social Sciences, 14(*281). https://doi.org/10.3390/socsci14050281

Author Biography

Caitlin O. Ferrarini, Ph.D., is an Assistant Teaching Professor in the Global School at Worcester Polytechnic Institute. She teaches a social science research methods course and advises students on project-based learning programs abroad. Caitlin is passionate about better understanding and improving student global and civic learning through research and practice. Her research interests include: global citizenship education; digital pedagogy; online learning; long-term student learning outcomes; community impact.