PRACTICE

Engaging the Youth Environmental Alliance in Higher Education to Achieve the Sustainable Development Goals

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Abstract

The authors present a new approach to show how interdisciplinary collaborations among a group of institutions can provide a unique opportunity for students to engage across the science-policy nexus using the framework of the Sustainable Development Goals and the United Nations Framework Convention on Climate Change. Through collaboration across seven higher education institutions in the United States and Australia, virtual student research teams worked together across disciplines such as economics, ecology, and other earth and social sciences to address research questions centered on sustainable development goals. The teams presented their findings in person to diplomats and delegates at the 2019 United Nations Conference of the Parties meeting in Madrid, which also had strong qualitative impacts on their perceptions of international science-policy interfaces.

Environmental issues associated with international sustainability are multi-scaled, transdisciplinary, and interconnected, yet few programs at individual academic institutions have the breadth of expertise to incorporate all these challenges simultaneously into the undergraduate or graduate education experience (Bowser et al. 2020). Undergraduate students studying life, geophysical, and environmental sciences often learn from their courses about the myriad ways in which humans impact the environmental systems they study. The impulse of many students is to "do something" about these issues, yet the typical science curriculum does not provide them with the tools and skills necessary to address environmental concerns and associated policies at local, regional, and global scales (O'Malley 2019). As student interests in sustainability increase, it is important to also provide them with the tools needed to pursue careers that contribute to and encourage environmentally targeted solutions while crossing multiple sectors (e.g., academia, business, government, nongovernmental organizations, and civil society; Fenn et al. 2010).

Past research shows that students benefit the most in interdisciplinary training when they collaborate with peers and are directly engaged in tangible actions, including the dynamic science-policy nexus (Archer 2011; Halliwell and Bowser 2019). In addition, the benefits of peer teamwork have been identified as tools to engage a broader student demographic; create spaces of belonging; and build student scholarly identity, self-efficacy, and confidence. Student members of multicultural, multi-institutional teams often report such sentiments of belonging and science identity associated with maintaining a common purpose

and scientific agenda among a team of peers (Armstrong et al. 2007; Bowser et al. 2014; Fenn et al. 2010; Freeman, Anderman, and Jensen 2007; Halliwell and Bowser 2019; Walton and Cohen 2011). These outcomes potentially contribute to higher retention rates of students in under-represented groups in science fields (Bowser et al. 2012; Cid and Bowser 2015; Walton and Cohen 2011).

Collaborations in both virtual and in-person settings are common in the professional and scientific workplace to enable the study of multiscale phenomena across local and global scales (Atkins et al. 2003). International part-nerships and team research have dramatically increased among researchers and faculty as the accessibility of smart devices, applications, and workspaces used to create col-laborative networks has increased. Such collaborations, however, are less common for students in academia. Stu-dents are often less likely to have opportunities to both learn from and contribute to experiences working with peers from different countries or ethnic, racial, or cultural backgrounds.

Universities have begun to incorporate the United Nations Sustainable Development Goals (SDGs; see Table 1 for a subset of goals) and the United Nations Framework Con-vention on Climate Change (UNFCCC) as a pedagogi-cal structure for science-policy courses, campus climate initiatives, research projects, and modeling scenarios (Beynaghi et al. 2016; Salvia et al. 2019). The Brundtland Commission (1987) first defined sustainable development as efforts that "[meet] the needs of the present without compromising the ability of future generations to meet their own needs." The 1992 Rio Earth Summit was con-sidered one of the first formal international gatherings to present climate science and society goals as key intercon-nected elements for structuring and advancing actions and goals toward sustainable development as articulated by the commission. Two decades later, in 2012, at the Rio+20 Summit—also held in Rio de Janeiro—the UN presented the 17 SDGs, designed as enhanced successors to the Millennium Development Goals (MDGs; Kumar, Kumar, and Vivekadhish 2016; United Nations 2012). The previous eight MDGs had encouraged increased health, environmental sustainability measures, and access to primary education and technology worldwide but also came with limitations involving accountability, causes of inequities, and the interconnectedness and implementa-tion of goals (Bue and Klasen 2013; Fehling, Nelson, and Venkatapuram 2013).

In 2012, the UN Conference on Sustainable Development (Rio+20 Summit) crystallized connections between social equity and environmental sustainability as international strategies. "The Future We Want," a negotiated outcome document of the summit, first described SDGs as next-generation priorities (UNGA 2012). With the adoption of the SDG framework by the UN General Assembly in 2014, international negotiation bodies and funding mecha-nisms have since used the strengthened goals and targets for research direction and actions (UNFCCC n.d.). Key elements necessary to achieve SDGs include holistically assessing and addressing underlying causes of inequities and inequalities (Lusseau and Mancini 2019). This can be modeled by encouraging and integrating equity-centered, community-tailored approaches, as outlined throughout UNFCCC proceedings and the advancement and imple-mentation of the SDGs (Ferrer et al. 2021).

There have been some large-scale initiatives to involve students in SDG-related environmental work, such as the UN Environment Programme's "Green Nudges" program, but many of these efforts focus on a single campus and its internal efforts or research projects within a university or discipline (Abbonizio and Ho 2020; Fleacă, Fleacă, and Maiduc 2018). The authors are unaware of previous SDG-guided efforts on college or university campuses that have involved project-based collaborative learning initiatives that encourage students to become international, interdis-ciplinary change agents themselves.

Because of the need for greater solution-oriented training at the science-policy interface, the authors launched the Youth Environment Alliance in Higher Education (YEAH) in 2019 as a multi-institution research coordination net-work, with the goal of providing students with real-world experience in collaborative, evidence-based approaches to global sustainability by incorporating the SDG framework into higher education programs (YEAH 2020).

Youth Environmental Alliance in Higher Education

The SDGs, introduced in 2014 as a global framework including both social and environmental targets, provide a robust road map for training the next generation of leaders (Hess and Maki 2019) but require creative and innovative solutions developed across the boundaries of disciplines, countries, and sectors (Adger et al. 2013; Crate 2011; Gardiner 2006; Paul 2008). Yet within the academy many students are unaware of the SDGs and how this framework impacts international negotiations. Many also are unaware of ways in which a diverse range of stakeholders, includ-ing scientists, contribute SDG-relevant findings to inform policy content and processes. Despite the high profile of UN international science teams such as the Intergovern-mental Panel on Climate Change (IPCC), the Intergovern-mental Science-Policy Platform on Biodiversity and Eco-system Services (IPBES), and additional predominantly virtual groups, the intersections of policy, science, and sustainability remain opaque to most students studying environmental sciences.

In 2019, YEAH piloted a virtual learning experience with seven institutions based in a variety of science disciplines,

including ecosystem science, biological sciences, chemistry, atmospheric sciences, and social sciences. Educators, professors, and mentors participating in the 2019 YEAH pilot were from Colorado State University, Clark University, Michigan Technological University, Colorado College, Boston University, Monash University, and Scripps Institution of Oceanography at the University of California–San Diego (Scripps at UC San Diego). Using structured virtual

TABLE 1. Overview of Student SDG Teams and Projects

Team structure	SDG	SDG target	Study topics
-Team Lead: Scripps at UC San Diego -3 Undergraduates -4 Graduates	2 ZERO HUNGER	2-4: Sustainable food production and resilient agricultural practices	Composting, food security & zero-waste efforts on US campuses
-Team Lead: Colorado State University -2 Undergraduates -2 Graduates	5 GENDER EQUALITY	5-5: Ensure full participation in leadership and decision-making	Women leaders on US campuses need more support
-Team Lead: Clark University -4 Undergraduates -2 Graduates	6 CLEAN WATER AND SANITATION	6-6: protect and restore water-related ecosystems	Watershed restoration in the Great Lakes region, US
-Team Lead: Michigan Tech University -2 Undergraduates -4 Graduates	7 AFFORDABLE AND CLEAN ENERGY	7-A: promote access to research, technology, and investments in clean energy	Economic feasibility of renewables on US university campuses
-Team Lead: Colorado State University -2 Undergraduates -1 Graduate	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9-4: upgrade all industries and infrastructures for sustainability	Innovative building efforts on US campuses
-Team Lead: Michigan Tech University -2 Undergraduates -4 Graduates	11 SUSTAINABLE CITIES AND COMMUNITIES	11-7: provide access to safe and inclusive green and public spaces	Sustainable housing efforts on Michigan Tech campus
-Team Lead: Colorado State University -4 Undergraduates -2 Graduates	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12-5: substantially reduce waste generation	Sustainability perceptions of college campuses
-Team Lead: Colorado State University -4 Undergraduates -1 Graduate	13 CLIMATE ACTION	13-2: integrate climate change measures into policies and planning	Mountain ecosystems and adaptations on a global scale

Note: SDG = UN Sustainable Development Goals. The student team structure includes team-selected SDGs and SDG targets, and study topics presented during UNFCCC COP25 proceedings (Breidenbach et al. 2019; Carver et al. 2019; Colorado State University et al. 2019; Osborne et al. 2019; Stone et al. 2019).

FIGURE 1. Framework for the YEAH Network
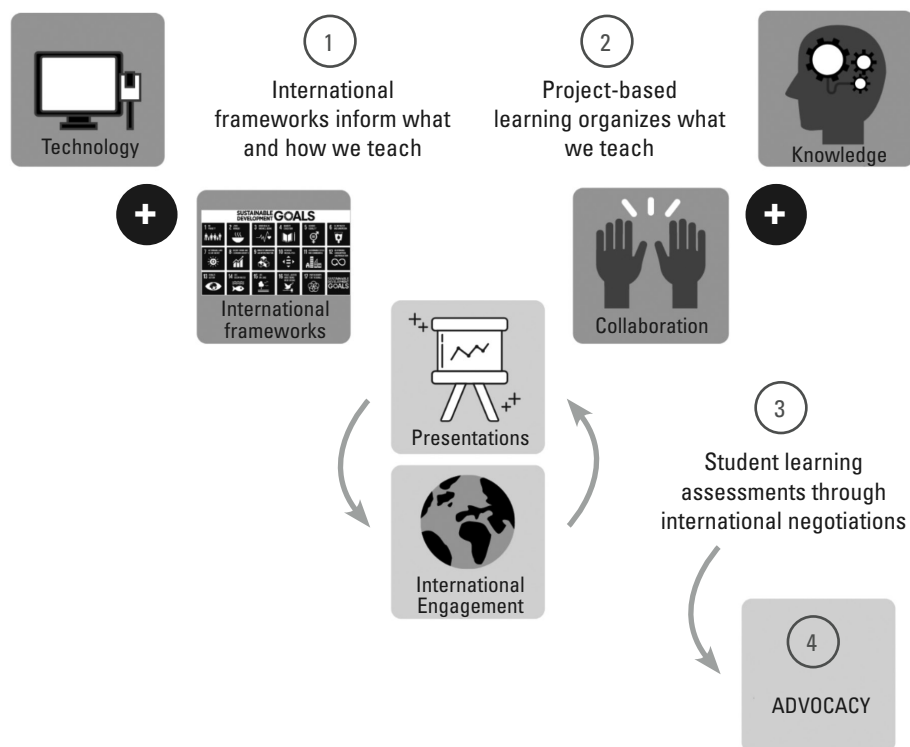
teams, mixed delivery, and engaging learning approaches, YEAH piloted an innovative teaching environment in 2020 guided by international frameworks including the SDGs and technological tools that informed classroom teaching. YEAH organized this environment to encourage collaborative team efforts that involved knowledge sharing across disciplines and institutions and encouraged both instructor-student and peer learning. Team efforts were assessed based upon student presentations at the 25th UNFCCC Conference of the Parties (COP25) in Madrid and the practical application of acquired knowledge and tools to support professional experiences in international climate negotiation settings. Last, collaborations and firsthand UN experiences translated into long-term climate and environmental advocacy efforts through individual and team-based translations of frameworks, classroom lessons, and experiences (see Figure 1; Brewer and Smith 2011).

Methods

YEAH was structured to bring hybrid approaches (combined virtual and in-person teams of students) to curriculum and project-based learning opportunities. This structure was designed to lead to final products presented at the COP25 meeting at the end of each academic semester. Figure 2 represents the overall structure of YEAH, including the steering committee that directed resources and assessments and the YEAH fellows, who were selected

graduate and undergraduate students devoted to learning and academic research associated with international environmental issues. The YEAH course structure consisted of classroom instruction (primarily through online platforms), virtual team projects, and modules based on international negotiations and the SDGs. The common learning objectives across YEAH courses included: (1) linking cultural connections, sustainability, economics, development, and natural resources topics with international negotiations on climate issues; (2) developing team projects with students from participating institutions by working remotely and in person on international environmental topics; (3) understanding the processes of the UNFCCC; (4) articulating interdisciplinary (or cross-disciplinary) science topics to an international audience consisting of policy makers and stakeholders; (5) demonstrating understanding of the negotiation process, the Paris Agreement, and associated negotiations; and (6) participating in interinstitutional teams at the UNFCCC COP25 in Madrid.

Classroom instruction coupled with team-based learning composed the core concepts aimed at enhancing potential student-focused outcomes, such as improved teamwork capabilities (including the ability to engage with diverse stakeholders outside science), confidence, international perspectives, and a sense of belonging within one's educational field. These outcomes support students during international negotiation experiences and during further efforts
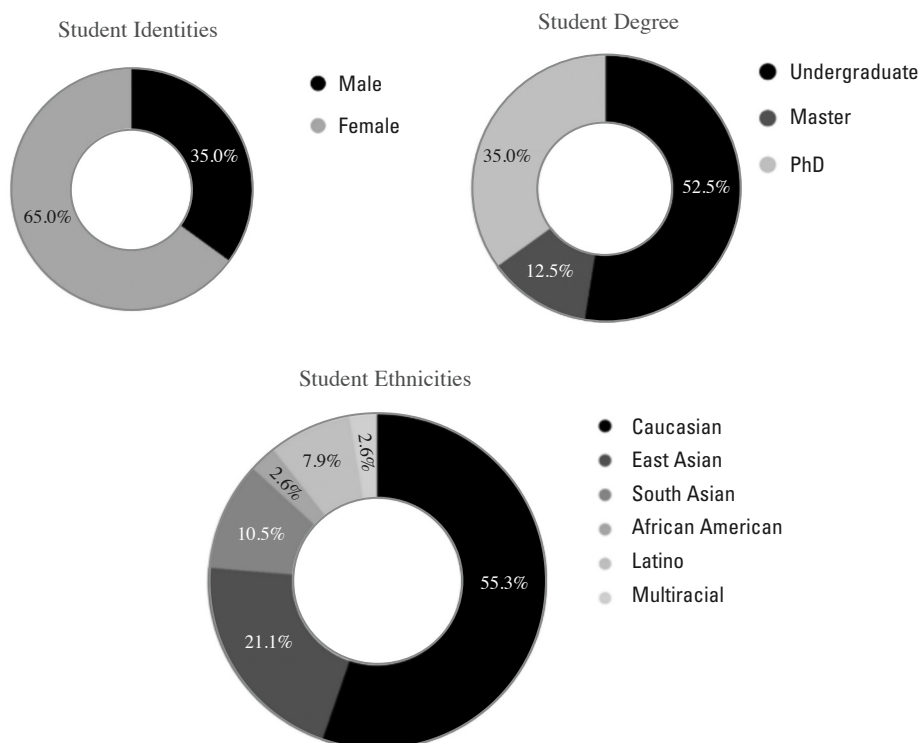
FIGURE 2. Internal YEAH Network Structure
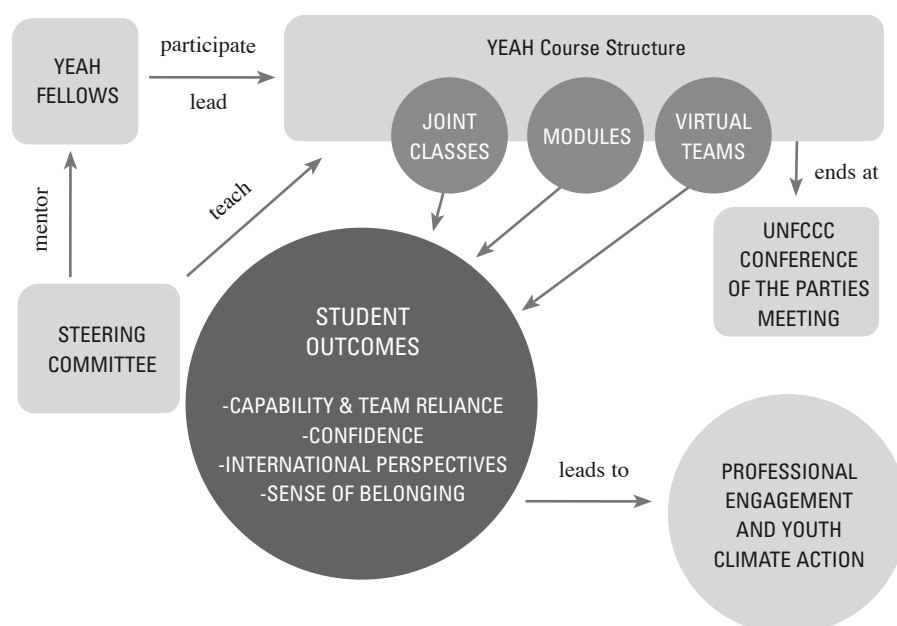
emphasizing climate action. The hybrid one-semester class included fourth-year undergraduate, master's, and PhD students representing a wide range of interests, including environmental sciences and sustainability, environmental policy, energy policy, atmospheric sciences, environmental planning, and anthropology. Most participating institutions targeted undergraduates when listing the course, resulting in 52.5 percent of course participants identifying as undergraduates, 12.5 percent as master's students, and 35 percent as PhD students (see Figure 3). The notable inclusion of graduate students is indicative of a demand for graduate student learning opportunities within the climate policy professional sphere.

The lead institution for each class meeting facilitated the virtual weekly meeting with the other students (47 students from seven institutions), guest speakers, and faculty using Zoom and shared slides. The course syllabus included an overview of the UNFCCC structure and function, international scientific reports (e.g., IPBES 2019; IPCC 2019), and policy negotiation topics and strategies. Students self-selected into nine multi-institutional, cross-disciplinary SDG teams, each of which developed and researched its own case studies centered on interconnected and individual SDGs. Student teams coordinated their group meetings, working deadlines, and final presentations. Instructors supplied educational materials and training during lectures, provided feedback as students gathered and analyzed information and created team presentations, and helped facilitate opportunities for students to present at COP25 events well-suited for individual projects.

Each team project included an undergraduate moderator and/or graduate student mentor, some of whom had prior experiences in the science-policy realm or had previously participated in a COP. Student moderators and peer mentors helped with research development, group meeting structure and timelines, final presentations, and preparations for the Conference of the Parties, including contextualizing the science with a wider policy lens, suitable for an audience of stakeholders from all areas of government and industry. However, the work of each team was network-based rather than hierarchical, with each group following the principle of "common but differentiated responsibilities." All teams completed the semester with professional presentations and press conferences at COP25 in Madrid.

Prior to the start of YEAH course instruction, participating instructors conducted a preliminary assessment centered on student interpretation and comprehension of course content (e.g., climate change science and policy, SDG framework). Also included were topics focusing on skills and tools necessary to grow and succeed as boundary spanners (or knowledge brokers) between science, various audiences (e.g., university campuses, local constituents, youths, decision makers, researchers, and media representatives), and policy (e.g., at international negotiations). Student learning outcomes were tracked using a qualitative evaluation survey that posed questions involving students' pre- and post-course experiences. The survey was designed to help gauge student perceptions of their team project outcomes as well as the knowledge they acquired during the online course, and the expectations

FIGURE 3. YEAH 2019 Student Demographics

Student Identities

Student Degree

- Male
- Female

35.0%
65.0%

- Undergraduate
- Master
- PhD

35.0%
52.5%
12.5%

Student Ethnicities

- Caucasian
- East Asian
- South Asian
- African American
- Latino
- Multiracial

2.6%
7.9%
2.6%
10.5%
55.3%
21.1%

Note: In this analysis, 4+1-degree program students were characterized as undergraduates and included in the same category as traditional undergraduate students. *n* = 47.

they had for the conference and final presentation. Additionally, to evaluate perceptions of the SDG framework in higher education settings within a broader population, an anonymous climate action survey was administered to participating students, researchers, and others present at COP25. All survey data were analyzed using the Statistical Package for the Social Sciences (SPSS). Post-course reflective statements were solicited from selected students who had demonstrated strong leadership within their team throughout the semester and during COP25.

Results

Forty-seven students from seven institutions participated during COP25, presenting at two official side events (speaking platforms for admitted observers to share knowledge across organizations) and seven press conferences. In addition, students created booth exhibits on their case study research, gave interviews to the press, participated in SDG-specific meetings of nongovernmental organizations, observed formal UNFCCC negotiations, and networked with international peers and organizations. Last, students collaborated on official statements on behalf of research and independent nongovernmental organizations and shared their notes and experiences during daily UNFCCC-wide youth and research constituency debriefs.

Based on student feedback and engagement, the successful completion and dissemination of student presentations, and long-term partnerships initiated during COP25, outcomes of the YEAH pilot exceeded all expectations. Examples of case study projects that achieved learning objective 6 (i.e., participation in interinstitutional teams at COP25) included the study of composting on college campuses, campus renewable energy, and economic sustainability of institutional resources (see Table 1; Breidenbach et al. 2019; Carver et al. 2019; Colorado State University et al. 2019; Osborne et al. 2019; Stone et al. 2019).

YEAH demonstrated an innovative approach to creating cross-institution virtual modules to train students in international scientific diplomacy using multidisciplinary and multicultural teams. Qualitative results from student collaborations using the YEAH hybrid approach demonstrated that the project-based learning framework led to improved understanding of multidisciplinary topics and increased student prowess in communicating science topics to stakeholders at an international scale. Further, application of this framework resulted in broadened participation at the Conference of the Parties among women and underrepresented minorities from different institutions, improved well-being and sense of belonging among

underrepresented students participating in international discussions and activities, and an enhanced understanding of the science-policy nexus and the role of science in policy negotiations (Ng 2020; see Table 2). Based on the pre- versus post-experience assessments from students who attended the international negotiations in person, student understanding and articulation of climate science and policy efforts changed. For instance, out of those that completed the pre- versus post-experience assessment, students conveyed interest in continuing their participation in international environmental policy and attending future United Nations meetings on post-experience surveys and in focus groups. As revealed in Figure 4 (A and B), "engagement" was more prominent in the post-experience survey. One student stated that the experience of the pilot project was "mind blowing," and another expressed that they wanted "to share the experience with colleagues back on campus to get more involved in climate actions." Students expressed stronger motivations for activism efforts after their conference experience. In addition, the well-being of students improved as a result of explicit efforts to promote a sense of belonging through team-building activities that occurred both virtually and in person.

Discussion

The Sustainable Development Goals are a widely accepted international framework that is directly applied to academic instruction for students in science disciplines. By using the SDGs as scaffolding for project-based learning in a hybrid class, students in the YEAH network learned critical thinking skills and peer teamwork and gained a unique perspective on multicultural and multi-stakeholder audiences. The SDGs provided a common language that immediately linked the student's own projects to the wider conversations and negotiations taking place in United Nations environmental negotiations, such as the annual Framework Convention on Climate Change Conference of the Parties (COP). The universal nature of the SDGs, with well-defined metrics and targets, also increased the ability to design projects across academic levels (from undergraduate to graduate). The fact that student team projects and presentations incorporated the SDG icons, targets, and goals also created a common language for students to discuss their efforts with international negotiators, diplomats, researchers, and peers.

The YEAH project-based course has become a foundation for using the SDGs within the classroom for a growing group of institutions. Eleven institutions are now members of YEAH, with six classes projected to participate in the course in the upcoming year. Students involved in YEAH have increased their ability to participate in international negotiations centered around sustainable development. Although none of the students came into YEAH with a comprehensive understanding of the SDGs, all successfully utilized the SDG framework, translated SDGs and SDG targets to their science disciplines, and provided personal suggestions for future climate action. Moreover, students developed a sense of ownership and agency throughout the team project development stages and the final presentations, emphasizing the willpower and capacity with which these students formulated their own solutions to SDG targets.

Multicultural, international, and cross-institutional virtual and in-person teams such as those fostered through YEAH are becoming increasingly common in various research fields and are necessary to holistically understand and address climate change, environmental concerns, and additional issues that have societal impact. Additionally, previous studies have demonstrated the importance of emphasizing linkages between scientific research and the societal good to attract more diverse student cohorts into science disciplines (Armstrong et al. 2007; Halliwell and Bowser 2019; Stoepler and Bowser 2018). Furthermore, studies have shown that interdisciplinary and cross-sector work that prioritizes collaboration is becoming fundamental for succeeding in sustainability professions (Brown, Deletic, and Wong 2015). This study's cross-institution and cross-discipline teams introduced diverse students to science disciplines as well as social and policy disciplines and provided them with a critical sense of belonging to both a team and an international network with many diverse voices. The YEAH project provided tools and skill-strengthening experiences to increase students' understanding, proficiencies, and confidence as collaborators within an international setting and as communicators with a diverse range of stakeholders with the goal of addressing complex problems that cannot be solved by one country or discipline alone.

The impact of COVID-19 on international gatherings in 2020, including UN negotiations, was profound. As 2019 and 2020 were pilot years for YEAH, more data are needed to potentially reaffirm the impact that international negotiation participation can have on students when negotiations resume in 2021. Although the participation of students from the 2019 YEAH cohort in future climate negotiations is uncertain given changes to virtual formats and restricted gatherings post-COVID, qualitative survey responses suggest that students left the experience with an elevated understanding of the negotiation process and the complexities of global climate policy and consensus and with a deeper desire to take action with other youth across the world.

Conclusions

Policy negotiators will continue to face challenges as the world grapples with global pandemics, root causes of inequities, technological advancements, and changes in political regimes that may not be well captured or addressed within current climate agreements. Nevertheless, the

TABLE 2. Qualitative Examples of Student Learning Gains Highlighted by Pre- and Post-Experience Surveys and Focus Groups

Learning gain example	Pre-YEAH experience	Post-YEAH experience (immediate)	Post-YEAH experience (six months)
Understanding of multidisciplinary topics	"I anticipate learning about the multiple key sectors that are working toward climate change mitigation and the various approaches that they are taking. As a civil engineer, my learning focus will be on water resources management approaches and impacts to water resources due to climate change." —Male graduate student, US	"A lot was learnt, the main for me is the role of stakeholders, citizens and communities in adapting and mitigating climate emergency." —Male graduate student, US	"I love that action is produced by people all around the world, it's very multidisciplinary and collaborative. So, I admire that we're producing science that isn't coming from one place, or one type of people." —Female undergraduate student, US "I see a shift in science, and there are more and more interdisciplinary groups, people from other sectors of sciences and other countries working together. And that's something that is widely recognized now that there's a need to work [across disciplines]." —Female undergraduate student, US "In terms of what I was expecting from [the Conference of the Parties], I did expect to see interdisciplinarity and, in fact, I was really excited to say that was [there]. I definitely wanted to see how this works in practice." —Female graduate student, Australia
Science communication skills	"I do not expect to have a direct impact [on the meetings], but indirectly through side event presentations, conversations, and media outreach. I think contributing to the collective youth voice will help others hear and become familiarized with youth perspectives on key negotiation issues." —Female graduate student, US	"I hope that I could influence the outcomes of this meeting by reminding the negotiators that our future is in their hands and we care deeply about protecting our future and our planet." —Female graduate student, US	
Broadened participation	[negotiations need] "More communication with people from different cultures." —Male undergraduate student, US	"The ability to engage with so many different people across the world felt really valuable." —Male undergraduate student, US	"Youth engagement is absolutely crucial. We are the future generation. We are the future experts. We are the future policymakers. We are the future leaders. We have a voice and I feel our voice was taken seriously at [the Conference of the Parties] and I also feel that there is a shift in respect for youth, as the younger generations become more and more educated in these topics in the age of information." —Female graduate student, Australia "On a personal side, it was great. I mean, Greta [Thunberg] was there. And we also went to different protests [in Madrid to demand climate action]. And [that] was an amazing experience." —Female undergraduate student, US

(table continues)

TABLE 2. (cont.)

Learning gain example	Pre-YEAH experience	Post-YEAH experience (immediate)	Post-YEAH experience (six months)
Sense of belonging	"I feel that as a youth I had more of an observer role in this process over-all, so that I can bring back what I learned to my peers at school and at home." —Female undergraduate student, US	"The youth can be more engaged by allowing more discussions on scientific research from universi-ties across the world. This is where more youth can be co-opted." —Female undergraduate student, US	
Understanding of the science-policy nexus and science's role	"Hopefully some hope and pas-sion—reinvigorating others that these goals are attainable if we can all work together! Little less lofty, but just a different perspective towards environmental policy—since this is my first [Conference of the Parties], I want to convey all my 'unknowns' to the negotiators to encourage transparency in their policy." —Female graduate student, Australia	"By raising awareness and speak-ing to leaders through our action and presence, I expected to make it clear that we need change—now!—by connecting our demand for change to scientific research, I expected to increase our credibility and influence the perceptions held by those who make decisions." —Female graduate student, Australia	"Personally, [it was valuable] just to be exposed to how [the Conference of the Parties] works, you know, to go in." —Female graduate student, Australia "Science's role can't be understated. It's the very bedrock upon which [the Conference of the Parties] need[s] to operate so that they were all working from, you know, a shared set of facts. So I think the role of discussing, you know, mitigation and adaptation sci-ence outside of the main negotiations is really important." —Female graduate student, Australia "Just having that at a personal level experience, it's something that you can apply in your professional life. And you're going to ask a profession-al to react different[ly] to these differ-ent stakes writing in the [Conference of the Parties]." —Female undergraduate student, Australia

issues faced by the planet—that negotiators discuss and students seek to address through action—affect everyone. The need for collaborative, virtual efforts has proved to be especially true considering the recent COVID-19 pandem-ic, which has left many students feeling alienated, anxious, and frustrated (Bowser et al. 2020). The time to act on cli-mate change, promote students' desires to become climate advocates through their academic studies, and educate the next generation of leaders with an international and interdisciplinary understanding of climate policy is long overdue. The ongoing pandemic has reemphasized human interconnections on a global scale and the implications these connections have for potential future environmental challenges. Students have feelings of uncertainty, unease, and frustration about environmental policy actions on local to global scales but are determined to contribute to actions that are purpose-driven, equity-based, and impact-ful. To increase their effectiveness and impact in future careers, students will need to develop skills necessary to

build and maintain complex collaborations across bound-aries of country, discipline, and sector. Further, the need for youth who are scientifically and politically literate, willing and eager to participate, and able to advocate for future generations is evident. Other examples of collabora-tive, hands-on programs that have similar aims as YEAH include the SEEDS program of the Ecological Society of America (ESA; ESA 2021) and the future leaders fel-lowship program of the Aldo Leopold Foundation (Aldo Leopold Foundation 2021). Firsthand exposure to diverse perspectives on climate change impacts faced worldwide through these programs is likely to embolden students to act in their own chosen spheres of influence. Climate negotiations emphasize that the world is a network of interrelated people and places with problems that will only continue to grow without action. Strengthened skills and confidence in the shared realm of science, policy, and society will serve students well in future collaborations with other youth advocates and researchers of various

FIGURE 4.

A. Word Cloud of Learning Outcomes Pre-COP Experience

B. Word Cloud of Learning Outcomes Post-COP Experience

disciplines and during interactions with decision makers and community members. Ultimately, youth teams can play an important role in enhancing and achieving SDG 2030 and other future targets and in tackling the climate crisis using next-generation technology, international frameworks, and transboundary, equity-centered approaches.

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