

11 Sustainability across the Curriculum

A Multilingual and Intercultural Approach

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What Is CLAC?

The Cultures and Languages Across the Curriculum framework espouses an innovative approach to integrating the study and use of foreign languages in departments across institutions, outside language departments. CLAC's philosophy is grounded in pedagogical movements that include various 'across the curriculum' efforts, as well as high-impact practices that encourage meaningful engagement and applied learning (CLAC Consortium, 2019). CLAC programs have existed in US institutions of higher education for nearly 40 years. With financial support from US Department of Education grants in the 1980s, these curricular initiatives—baptized as Foreign Languages Across the Curriculum (FLAC) programs—were designed to increase opportunities for students to use languages other than English in their courses of study. Later termed Languages Across the Curriculum (LAC), the purpose was to give students with intermediate levels of proficiency the opportunity to use their skills outside of conventional contexts. Today's programs generally fall under the nomenclature of CLAC, which reflects a renewed emphasis on culture (e.g. University of Utah 2013, Duke University 2014, University of Denver 2015). Once a small organization composed primarily of its founding members, the CLAC Consortium has doubled in size over the last 15 years, adding nine new institutional members in the past six years to include a total of 28 institutions. As Reisinger (2018, p. 18) notes,

CLAC's growth dovetails with the MLA's oft-cited 2007 report that called for a shift in the practices of teaching languages in post-secondary institutions. In its recommendations for attracting students from outside traditional fields, for instance, the report cites CLAC directly, suggesting that 'a credit-bearing discussion module taught in the target language can be added with the support of programs such as foreign languages across the curriculum'.

(Geisler et al., 2007, p. 239)

CLAC programs embrace the bold idea that languages other than English can and should be used throughout the curriculum instead of being confined to the ‘foreign language classroom’ or ‘the language department.’ As Zilmer writes (2018, p. 10),

CLAC is committed to the concept that inclusion of other languages and cultures in content area studies provides access to knowledge, skills, and cognition that are not available by any other means. CLAC is content area learning that is accessed through the inextricable combination of language, culture, and cognition.

In this vein, CLAC practitioners and their programs draw on students’ language abilities to add intercultural perspectives to a broad set of content areas (history, global health, environmental studies, etc.), whether these students are heritage speakers who grew up speaking the second language (L2), native speakers who are international students on our campuses, or language learners who began their language studies when they arrived at their institution. Rather than replacing traditional language learning, CLAC’s integrative learning programs build on students’ abilities by creating opportunities and motivation for continued use and development of linguistic and cultural proficiencies. This approach aligns with the global learning goals espoused by many institutions of higher education (Hovland, 2014), and in particular the authors’ own, which recently articulated its strategic plan to include strengthening its “capacity to address global challenges for communities across the world” (Duke Strategic Plan).

CLAC imagines a campus where multiple languages are spoken across varied disciplines, bringing new, global research perspectives to projects often approached through materials produced uniquely in English. A sociology class on immigration that is taught in English, for instance, can become a transformative learning experience for students when paired with a CLAC section in Spanish; in this curricular environment, international students and heritage speakers work alongside language learners to interview Central Americans who have crossed borders and navigated US immigration policies. Likewise, a course in global health is enriched when paired with a CLAC tutorial in Mandarin that explores China’s approaches to public health, reframing what might otherwise be deemed ‘alternative medicine.’ These efforts to value a diversity of voices and perspectives help to internationalize disciplines such as health, policy, and sustainability, creating opportunities for students and faculty to engage in perspective-shifting as they develop communicative competencies (Reisinger et al., 2015).

At the authors’ institution, the CLAC program has fostered deep interdisciplinary connections between language studies and the schools of Global Health, Public Policy, and Environmental Sciences by pairing core courses within these schools with tutorials that work with complementary content in languages other than English. The program was founded in 2014 and has

since offered 45 tutorials taught in nine different languages to over 460 students. While each CLAC tutorial is shaped by its core field, all classes are defined by the following four pillars:

- meaningful engagement with local and global populations
- exploration of culturally-specific solutions to real-world issues
- development of discourse competence for subject-specific use
- critical reflection about how language and culture impact worldview

CLAC tutorials are designed as half-credit courses, lending themselves to dynamic and flexible pedagogies that can respond to developing curricular needs or leverage nascent interdisciplinary collaborations. They have forged important community connections with local organizations, become full-credit courses, and spawned larger research and study away projects. In this way, CLAC serves as an incubator for innovative pedagogies that connect students with real-world issues in both local and global communities.

In this chapter, we focus on three CLAC tutorials housed within Duke University's Nicholas School of the Environment that were designed for high-intermediate and advanced-level learners and speakers of French, Mandarin Chinese, and Spanish. These tutorials were created in conjunction with a gateway course in the environmental studies major (ENVIRON 201). Each CLAC tutorial met weekly for 75 minutes and was structured around an in-depth engagement with case studies that link the essential topics in sustainability presented in ENVIRON 201 to the study of language and culture. The tutorials were overseen by the CLAC director and taught concurrently by a French language instructor, a Mandarin Chinese language instructor, and a Spanish native speaker content specialist (all four authors of this chapter). With this approach, we aim to foreground the essential role that linguistic and cultural competence play in sustainability education.

Developing Voices in the Environment

As comprehensive undergraduate programs in sustainability have become more widespread and popular in recent years, sustainability educators have elaborated a core set of competencies designed to serve as a framework for program design and educational outcomes (Clark, 2016; Wiek et al., 2011). These key competencies recognize the interdisciplinary nature of the field and provide reference points for articulating the broad goals of a discipline that aims to help students develop the knowledge, skills, and attitudes to become “future problem solvers, change agents, and transition managers” (Wiek et al., 2011, p. 204). Significant synergies exist amongst a number of these key competencies and the four pillars of the CLAC framework outlined above. Indeed, CLAC methodologies provide a venue in which to center the myriad voices involved in responsible, equitable change and transition toward more sustainable communities. For example, *systems-thinking* competence (defined

as “an intimate understanding of the inner fabric and dynamics of complex social-ecological systems” (Wiek et al., 2011, p. 207)) and *interpersonal* competence (defined as “the capacity to understand, compare, and critically evaluate different positions, perspectives, and preferences” (Wiek et al., 2011, p. 211)) inform both sustainability education in the environmental sciences and the work and goals of CLAC tutorials that highlight the necessity of engaging respectfully and appropriately with stakeholders that represent diverse perspectives, priorities, and needs. Furthermore, Clark’s (2016) concept of *collective action* competence, or “the capability of a group of people to direct their behavior toward a common goal based on a collective literacy... and a collective need” can help to underscore both the cultural specificity of sustainability actions undertaken by communities at a local level and the intersections of collective actions on a broader scale (p. 560).

Integrating Environmental Science and Policy (ENVIRON 201) is the gateway course for students pursuing a major in Environmental Sciences & Policy, and as such, it attracts students relatively early in their formal coursework towards the major. The course is designed to foster the development of key sustainability competencies as students are introduced to the complex interactions between natural and social systems in relation to the environment. ENVIRON 201 is constructed around four core modules, each representing a ‘wicked problem’ in environmental science. Wicked problems are environmental problems that are difficult or impossible to solve due to the number of stakeholders involved and their often-conflicting positions, and the absence of a single, definitive solution that applies in all cases and places (DeFries & Nagendra, 2017; Rittel, 1973). Students in ENVIRON 201 explore four such wicked problems—environmental justice, climate change and wildfires, hydro politics, and biodiversity—that are at once global in scale and tightly linked to specific political, environmental, and social factors at a local level. Given the natural overlaps between the scope and framework of ENVIRON 201 and CLAC methodologies more broadly, in Fall 2020, the authors embarked on the pilot phase of pairing this gateway course with a cluster of CLAC tutorials offered in Mandarin Chinese, French, and Spanish entitled ‘Voices in the Environment.’

In designing these CLAC tutorials to align with the modular structure of the ENVIRON 201 course, our group of faculty leveraged the interdisciplinary nature of our fields to develop a basic structure and instructional goals for these tutorials that were well-adapted to our language learners’ linguistic and cultural proficiency, as well as their previous familiarity with sustainability-related topics. One author’s expertise in CLAC theory and interdisciplinary course design provided the foundation of the tutorials’ structures. Another author’s disciplinary knowledge of environmental science ensured the relevance of the language- and culture-specific work with ‘wicked problems.’ Two authors’ expertise in language pedagogy provided sound pedagogical grounding for effective student engagement with the course content. Finally, frequent input from the instructor of the ENVIRON 201 core course allowed

the alignment of contents of the CLAC tutorials and the gateway course. The result of this collaborative process was an instructional model founded on three components: (1) Case studies as a means to engage with diverse voices and perspectives, (2) project-based inquiry, and (3) community engagement.

The three CLAC tutorials adopted a common set of learning outcomes that both described appropriate linguistic outcomes for intermediate-high level students and took inspiration from the Global Learning benchmarks detailed in the Association of American Colleges & Universities' (AAC&U) VALUE (Valid Assessment of Learning in Undergraduate Education) rubrics.¹ These included the ability to: (1) Identify environmental challenges in China, Latin America, the Caribbean, or Francophone regions; (2) discuss with relative ease, confidence, and complexity topics related to the themes of the course; (3) prepare and deliver short written and oral presentations on sustainability-related topics; (4) articulate an awareness of ways in which geography, history, language, and culture underpin the understandings of and reactions to sustainability-related issues in these regions; and (5) apply this awareness to create public-facing documents that are thematically-relevant and culturally-appropriate. Enrollment in the gateway environmental science course was encouraged but not required, and though the tutorials were scheduled with concurrent enrollment in mind, only a handful of students enrolled in both a CLAC tutorial and the ENVIRON 201 course. As the semester began, most students indicated having a keen personal interest in sustainability, and some had done previous sustainability-related coursework, though very few students were pursuing a major in environmental studies or a related field.

Case Studies

Given this student profile, we explored each of ENVIRON 201's four core modules via one to two case studies designed to both provide an introduction to fundamental facts and concepts related to each wicked problem, and to ground the specific linguistic and cultural factors at play.² Each module began with a guiding question or questions related to the topic at hand. Thematic materials produced in the target language were sourced from a variety of text types and stakeholder voices and included, for example, documentary videos and interviews, social media posts, newspaper articles, government reports, published case studies and policy briefs, and NGO websites. The faculty provided a series of comprehension and reflection questions to guide students' engagement with the materials in each thematic unit and to provide appropriate linguistic and lexical scaffolding. As they engaged with these materials, students collaborated asynchronously prior to our weekly sessions to create lists of fundamental concepts and terminology, adding to an evolving sustainability lexicon. During weekly synchronous discussions, students synthesized their knowledge by identifying stakeholders' positions and perspectives, analyzed the linguistic and cultural factors at work in each case, and even brainstormed potential solutions to environmental concerns.

Though each of the three CLAC tutorials explored the same four wicked problems, the specificity of our various thematic modules emphasized the importance of exploring these questions from local perspectives. For example, our collective exploration of a broad question such as ‘How do history, language and culture inform environmental justice?’ led to related but unique considerations in each of our linguistic contexts. In the French CLAC tutorial, for instance, students and instructor worked together to assemble a collection of documents related to the environmental and public health impacts of the use of the pesticide Kepone in banana cultivation in Guadeloupe and Martinique. Working with news segments, government reports, activists’ social media presences, and press kit documents from Jessica Oublié’s documentary graphic novel *Tropiques toxiques*, students explored how the region’s colonial past continues to impact local populations and environmental policy, and discussed responses that would address the problem from both environmental and equity standpoints. Public health and the environment also intersected in the Mandarin Chinese CLAC tutorial’s environmental justice module, which focused on cancer villages in rural China. These discussions centered the voices and positions of a variety of stakeholders, from villagers and local enterprises to NGOs, health experts, and the government, to trace the roots of the problem and brainstorm interventions and solutions. In the Spanish CLAC tutorial, students worked with news articles and government reports on asbestos use in Colombia to understand the reasons that prevented the government from banning the use of this carcinogenic mineral fiber. By exploring the disproportionate effect on automotive repair shop workers who are exposed to asbestos fiber and interacting with a local expert who had documented hundreds of exposures, students learned that a multidisciplinary approach to the problem is necessary to formulate efficient policies that protect workers’ rights. Table 11.1 provides a brief summary of the linguistically- and culturally-specific themes that were explored in the three tutorials for each of ENVIRON 201’s ‘wicked problems.’

Project-Based Inquiry

Project-based language learning facilitates “academic discourse socialization, decision-making, critical thinking, and collaborative work skills while providing deep engagement with subject matter content through the use of language as medium” (Beckett et al., 2019, p. 8), and is therefore particularly well-suited to the CLAC model. In composing these modules, faculty modeled the type of reflective engagement with diverse perspectives and sources that students would need to demonstrate in each of the two projects that formed the basis of our assessment model. For their first project, completed at the midterm, pairs of students worked to identify a sustainability topic within one of the four core modules, and to prepare, in consultation with their instructor, a case study of their own related to this topic via a collection of texts and guiding questions. Students then presented their case studies to their classmates

Table 11.1 Thematic materials related to each of the four ‘wicked problems’

<i>ENVIRON 201</i> ‘wicked problems’	<i>French tutorial themes</i>	<i>Chinese tutorial themes</i>	<i>Spanish tutorial themes</i>
Environmental justice	Agricultural pesticide use and human health impacts in Guadeloupe and Martinique	Cancer villages; environment activism and activists in China	Asbestos in automotive friction products; environmental compliance of artisanal gold mining in Colombia
Climate change and wildfires	The impact of climate change on the wine industry in France; climate change and the Congo River Basin	Climate change and flood risks in the Yangtze River Delta; the impact of climate change and food security in China	Protection of Colombian paramos; Amazon Jungle: political fires?
Hydropolitics	Alternative energy—HydroQuébec and hydropower; nuclear energy in France	Three Gorges Dam and hydropower in China; drinking water crisis in China	Strategic investment for Paraguay’s sustainable development; Costa Rica’s adoption of renewable resources
Biodiversity	Biodiversity in the Democratic Republic of Congo and Cameroon	Panda conservation and biodiversity in Southwest China; biodiversity conservation and ecological tourism in ethnic minority populated areas	Latin America as a biodiversity hotspot; ecotourism in the Galapagos Island; collective local payments for ecosystem services in Mexico

and led the resulting discussion. In preparing a session on nuclear energy in France, for example, students analyzed the language and messaging of both pro-nuclear associations and anti-nuclear activists. This work also highlighted the ‘wickedness’ of nuclear energy in France, as the students emphasized environmental justice concerns at work in current discussions of the impact of nuclear waste storage and debated solutions with their impact on ecosystems and local communities in mind. These projects allowed students to make concrete connections between the content of the CLAC tutorial and their academic interests, with many students choosing to approach a ‘wicked problem’ that intersected with major fields of study or even prior internship experience.

For instance, one student's internship work for an organization devoted to endangered species awareness led her to develop a case study project tracing the links between deforestation, biodiversity, and zoonotic disease.

The second project asked students to identify an environmental problem relevant to a specific community in the Mandarin-, Spanish-, or French-speaking world, this time in order to create a two-part public service campaign to address the problem. Work began midway through the semester with an in-class examination of authentic public service announcements (PSAs), paying particular attention to the form and linguistic features and conventions of the genre. Students then researched their topic and workshopped their initial ideas and messaging with feedback from their instructor and peers and, where possible, from members of the target community. The final results, consisting of both a print PSA poster and a short audio or video spot, were presented first within students' respective CLAC courses and then to students in the other two CLAC tutorials during a culminating joint session. Students also shared their final work, accompanied by English transcription and explanatory text, with students enrolled in the ENVIRON 201 course.

Students gravitated toward final project topics that resonated strongly with previous experiences in their chosen region, or academic or personal interest. They reported enjoying the opportunity to collaborate with classmates and to take an active role in determining the content covered in their respective tutorials. As they prepared their final PSAs, they weighed considerations of audience, tone, platform, and the cultural relevance of their messaging alongside questions of how to communicate complex environmental concerns in a way that is broadly accessible. Presenting their work to the other CLAC sections allowed them to articulate the culturally- and linguistically-specific elements of their environmental PSAs, and to explore the ways in which the sustainability concerns referenced in their work paralleled, or diverged from, those from other parts of the world.

Community-Engaged Learning

In addition to listening to other cultures through engaging with diverse perspectives and voices in the course materials, opportunities were created for students to engage directly with these voices. It was also crucial to create space to center the professional expertise and on-the-ground experiences of experts, especially in domains where instructors' own content knowledge was lacking. To that end, each CLAC course included several visits, conducted in the target language, from invited guest speakers who underscored the tangible connections that exist between the local community of our university and the broader, global communities. To prepare for these visits, students first worked with relevant materials proposed by the guest speakers in order to acquire a basic familiarity with the topic at hand. Each session began with a brief presentation from the guest speaker, followed by a period of general Q&A and discussion.

The online nature of our Fall 2020 semester facilitated our work with guest speakers, some of whom joined our classes from out-of-state or abroad. In the Mandarin CLAC class, for example, synchronous online class sessions welcomed guest lectures from a research scientist in water security from NASA's Goddard Space Flight Center and an environmental scientist based at Duke Kunshan University in China. Other more local connections foregrounded the links between Durham and sustainability initiatives in Francophone Africa and Latin America. French CLAC students learned from the extensive on-the-ground experience shared by the founder of an NGO based in Durham that supports environmental and social justice issues in his home region of the Congo Basin, where the connection of the economic, environmental, and ethical pillars of sustainability, as well as the complex interactions of linguistic and cultural diversity, play out on both a local and global scale. The Spanish CLAC tutorial incorporated a series of invited talks highlighting the work of female environmental scientists on campus working with communities across Latin America to solve transcendental environmental management problems, such as rural community engagement in the renegotiation of Paraguay's Itaipu dam or ecosystem payments in Mexico, via community-based solutions. Students' community engagement also drew upon the connections forged via a multi-year collaboration with the Fundación Ayuda por Colombia, a Columbian NGO that serves vulnerable children and adolescents. At the heart of this collaboration is an exchange with a small group of children at the Fundación. To initiate the exchange, each child sent in a question related to the environment (for example, 'What is the source of the water we drink?') and was paired with one CLAC student. The instructor worked with students to connect the questions with one of the tutorial's modules and to identify the best way to answer the question, taking into consideration the children's ages and the particularities of their local environment. The students then recorded a 5-minute video response to the question, using compelling images, simplified Spanish terminology, and age-appropriate explanations that invited the children to take an active stand in responding to environmental problems (Virguez, 2021).

Student Perceptions of the CLAC Tutorials

Though the CLAC initiative has existed at the authors' university for a number of years, including two previous iterations of the Spanish 'Voices in the Environment' tutorial, Fall 2020 marked the first semester in which this curricular model included sustainability-related tutorials across multiple languages and in conjunction with the ENVIRON 201 course. The authors' approach to this multilingual interdisciplinary collaboration was therefore exploratory in nature, designed to gauge student interest in sustainability-related coursework in the target language, to understand students' perceptions of their own linguistic and content-knowledge gains, and to assess students' global learning. To that end, the authors, in collaboration with faculty from other universities

within the CLAC Consortium, developed brief pre- and post-surveys based on the AAC&U's Global Learning VALUE rubrics. In total, 23 students enrolled in the three CLAC tutorials (seven in the Chinese, six in French, and ten in Spanish), and while the sample size was small, their feedback, gathered via anonymous post-semester surveys, provided valuable insights to inform next steps for future iterations of these offerings.

An initial survey administered during the first week of the semester shed light on students' motivation for enrolling in a tutorial. Responses revealed a heterogeneous group of students. A majority of respondents were either currently taking or had previously taken an Environmental Studies course, but only three of the 15 total respondents were pursuing an Environmental Studies major. Indeed, a majority indicated that it was the language-based, rather than the discipline-specific, content that was their primary motivator for enrolling in a CLAC tutorial. Thus, as the semester concluded, we sought to better understand students' perceptions of the impact these tutorials had on their learning. How did the opportunity to continue their study of the target language and culture through the lens of sustainability contribute to their perceptions of their developing language proficiency? How did this work impact their understanding of sustainability topics both broadly and in culturally- and linguistically-specific contexts? Finally, how did they perceive the impact their semester-long exploration of language and sustainability had on their ability to engage critically with diverse perspectives functioning within complex, interrelated systems? To that end, students were invited to complete an anonymous survey that asked them to reflect upon their experience in the CLAC tutorials. Though the survey size was again small—12 of the 23 students responded—when considered holistically, it provides useful insight into student perceptions of this pilot initiative and a fruitful basis from which to consider future language and sustainability work.

Student Perceived Gains in the Target Language

The development of interpretive, interpersonal, and presentational language skills in reading, speaking, and writing is a crucial component of the discourse competence that is at the heart of CLAC pedagogies, as well as the interpersonal competence that is foundational to sustainability education. As mentioned above, the language-based component of the CLAC tutorials was the driving factor in students' motivation for enrolling. Thus, to gauge students' impressions of the impact the CLAC tutorials had on their language proficiency, students were first asked to reflect upon their perceived growth in these modes of communication.³ The majority of respondents reported either substantial or moderate perceived growth in using the L2 across all three modes, with the most significant gains in presentational speaking, presentational writing, and interpersonal writing skills (see Table 11.2). These gains are notable, especially when we consider that tutorials met only 14 times over the course of the semester.

The goal of this study was to gain a holistic understanding of overall gains across all tutorials, so we did not intend to break results down by language. Still, the particular language of the tutorial may help explain why a quarter of respondents reported little perceived growth in interpersonal speaking, interpretive listening, and interpretive reading skills. Two of the three students who responded in this manner were enrolled in the Chinese tutorial, a language in which it takes more time to make substantial linguistic gains, especially when compared to French or Spanish. While some students did not perceive significant gains in their language proficiency, they did note a commitment to learning languages and to incorporating them in their fields of interest. Two students commented:

This course reaffirmed my commitment to strengthening my Chinese skills and to look for jobs in the Chinese clean energy space.

Table 11.2 Student perceived gains in target language

#	Question <i>How much growth do you think you've made in the following areas?</i>	Substantial %N	Moderate %N	A little %N	Very little to none %N	Total N				
1	I can have a conversation with a native speaker about course content <i>(interpersonal speaking)</i>	33.33	4	41.67	5	25.00	3	0.00	0	12
2	I can deliver an oral presentation in class about course content <i>(presentational speaking)</i>	66.67	8	33.33	4	0.00	0	0.00	0	12
3	I can listen to a presentation or watch a video about course content without subtitles <i>(interpretive listening)</i>	33.33	4	41.67	5	25.00	3	0.00	0	12
4	I can read and comprehend a newspaper article or short article about course content <i>(interpretive reading)</i>	16.67	2	58.33	7	25.00	3	0.00	0	12
5	I can write a report or short paper about course content <i>(presentational writing)</i>	41.67	5	41.67	5	8.33	1	8.33	1	12
6	I can exchange ideas and opinions about topics covered in the course via email or text <i>(interpretive writing)</i>	50.00	6	41.67	5	8.33	1	0.00	0	12

This course has broken me out of my comfort zone with the language that I'm studying by forcing me to apply it in a way that I never had before. It has opened my eyes to the possibility of integrating my interest in language with my love and passion for the environment.

Students' Perceived Gains in the Course Content

As previously mentioned, the language tutorials were designed to complement the core ENVIRON 201 course, though enrollment in ENVIRON 201 was not required. During the Fall 2020 semester, only two students enrolled concurrently in both ENVIRON 201 and a corresponding CLAC tutorial. Nevertheless, since aligning the tutorials' content with that of the ENVIRON 201 core course was a central curricular design aspect, student feedback on the perceived gains in their understanding of sustainability-related content was vital to the authors' understanding of the success of this pilot phase of this project. To that end, students were asked to indicate their perception of the ways in which their work in a CLAC tutorial enhanced their understanding of core sustainability concepts within the context of the target cultures (see Table 11.3). Nearly all students thought that working in/through another language improved "a lot" or "a great deal" their ability to identify major environmental challenges related to the culture/s of their CLAC tutorials and helped them develop a culturally-specific understanding of the effect of environmental problems on local populations. Similarly, all student respondents felt that the CLAC tutorials improved their understanding of environmental studies content. More importantly, they deepened their understanding of how language and culture impact people's views about global environment issues. Through case studies, project-based inquiry, and community engagement,

Table 11.3 Student perceived gains in discipline-specific content

#	Question	<i>A great deal</i>	<i>A lot</i>	<i>A little</i>	<i>Not at all</i>	Total
	<i>Did working in/through another language...</i>	% <i>N</i>	% <i>N</i>	% <i>N</i>	% <i>N</i>	<i>N</i>
1	Improve your understanding of the content in the core discipline?	41.67 5	50.00 6	8.33 1	0.00 0	12
2	Improve your ability to identify major environmental challenges related to the culture/s of your CLAC course?	66.67 8	33.33 4	0.00 0	0.00 0	12
3	Help you develop a culturally-specific understanding of the effect of environmental problems on local populations?	58.33 7	41.67 5	0.00 0	0.00 0	12

students identified environmental challenges in a specific culture and analyzed how language and culture play a role in environmental issues in other cultures. As one respondent elaborated:

The CLAC course opened my eyes to how environmental studies share similarities, but also unique differences across cultures that affect the knowledge, research, and response to addressing key environmental challenges. It also emphasized the importance of considering the role language plays in prioritizing and communicating certain environmental issues—and which communities are most able to address these. This amplified my interest in study abroad that combines community-based research with studying French to gain new perspectives from different people about how the environment affects their well-being.

Students' Perceived Gains in Global Learning Skills

Over the course of the semester, the aforementioned AAC&U's Global Learning skills informed the instructors' approaches to working with the tutorials' content. Students had been introduced to the ways in which the six targeted global learning skills—(1) global self-awareness, (2) perspective taking, (3) cultural diversity, (4) personal and social responsibility, (5) understanding global systems, and (6) applying knowledge to contemporary global contexts—tied into the thematic units at the beginning of the semester, and they received feedback related to these skills on their midterm and final projects. Thus, to understand students' perceived gains related to these skills at the end of the semester, the authors returned the AAC&U's Global Learning VALUE rubric framework (AAC&U, 2014; Rhodes, 2010). The survey question indicated in Table 11.4 framed the six global learning skills as can-do statements.

All respondents believed that they made some growth in all global learning skills, though the extent of this growth varied noticeably. For example, while more than half of respondents perceived substantial growth in their ability to learn respectfully about cultural diversity (question 3), three-fourths of students indicated little to moderate growth in their perspective-taking ability (question 2), their understanding of the relationships between local and global communities (question 1), and their ability to apply knowledge and skills in real life situations (question 6). These results may point to, on the one hand, the difficulty inherent in gauging one's own progress in conceptual skills like perspective-taking, which are harder to quantify than language proficiency and content knowledge. They also indicate that, in future iterations of these tutorials, students need more opportunities to intentionally consider the local and global intersections of these 'wicked problems,' perhaps via more structured reflection, expanded interactions with guest speakers, or even expanded opportunities for community engagement.

Additionally, while even modest perceived gains suggest that CLAC courses can have the potential to develop students' global learning skills from

Table 11.4 Student perceived gains in global learning skills

#	Question <i>How much growth do you think you've made in the following areas?</i>	Substantial		Moderate		A little		Very little to none		Total <i>N</i>
		%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	
1	I can understand the interrelationships between myself, my local community, and global communities <i>(global learning skill: global self-awareness)</i>	33.33	4	50.00	6	16.67	2	0.00	0	12
2	I can engage and learn from perspectives and experiences different from mine and understand how my place in the world both informs and limits my knowledge <i>(global learning skill: perspective taking)</i>	25.00	3	58.33	7	16.67	2	0.00	0	12
3	I can stay curious to learn respectfully about the cultural diversity of other people and recognize the origins and influences of my cultural heritage <i>(global learning skill: cultural diversity)</i>	58.33	7	33.33	4	8.33	1	0.00	0	12
4	I can recognize my responsibilities to society—locally, nationally, and globally. <i>(global learning skill: personal and social responsibility)</i>	50.00	6	33.33	4	16.67	2	0.00	0	12
5	I can understand complex and overlapping worldwide systems—natural systems and human systems. <i>(global learning skill: understanding global systems)</i>	50.00	6	41.67	5	8.33	1	0.00	0	12
6	I can apply knowledge and skills gained to real-life problem-solving, alone and with others. <i>(global learning skill: applying knowledge to contemporary global contexts)</i>	25.00	3	58.33	7	16.67	2	0.00	0	12

Can-do statements adapted from the AAC&U's (2014) Global Learning VALUE rubric.

both a language and sustainability education perspective by internationalizing the post-secondary curriculum (Bettencourt, 2011; Klee, 2009; Reisinger et al., 2015), a single CLAC tutorial should not be considered an end point, but rather as one component of what could become additional language-and-content courses, or even curricular clusters. These expanded course offerings could provide students further opportunities to explore sustainability problems from a multilingual perspective.

In response to a final question that asked students to reflect upon the impact their CLAC tutorial had on their future course selection, a large majority of students reported that the tutorial made them very or somewhat likely to take a content course in the core discipline (83.3%), to enroll in an additional language course (100%), to participate in a study abroad program or a service-learning course in the future (83.3%), and even to major or minor in the language (91.6%). Furthermore, 92% of students said that they would be very likely to recommend a/this CLAC course to another student. These responses suggest that in addition to providing students unique opportunities to explore sustainability topics via the lens of other languages and cultures, CLAC tutorials such as these have the potential to increase student interest in continuing their study of the language itself by presenting students with a curricular option that falls outside the literature-focused courses that have traditionally made up advanced-level language study.

CLAC Courses: Challenges and Opportunities

The design and implementation of this pilot cluster of language tutorials was immensely rewarding but was not without its challenges. One initial challenge, related to the community engagement component of the tutorials, arose due to the online environment made necessary by the COVID-19 pandemic. Given both the need to socially distance and the fact that students were in multiple locations and time zones, it was not possible to implement the kinds of community-based activities (such as volunteer work in schools, field trips, or activities related to the local environment) that would be a natural fit for this type of course. While both ENVIRON 201 and CLAC students were able to come together on one occasion to create an environmentally-themed community mural, the majority of our engagement had to be managed in an online environment via weekly Zoom discussions and guest speaker interactions.

Another initial challenge was the Chinese and French instructors' lack of expertise in environmental studies. To address this, they worked closely with the Spanish environmental scientist, meeting frequently throughout the semester to exchange ideas about course material selections and curricular activities and to reflect upon teaching strategies. They also met regularly with the instructor of ENVIRON 201, herself an environmental scientist specializing in post-secondary sustainability education, to align course pacing, brainstorm effective approaches to the content, and suggest complementary approaches to students' project-based activities. The interventions of invited

speakers in each of the tutorials provided further opportunities for students and instructors alike to benefit from expertise in diverse fields within sustainability. This collaborative response to perceived gaps in content knowledge reflects many of the current best practices in the field of sustainability education and the fundamentally transdisciplinary nature of sustainability more generally (Evans, 2015).

Indeed, interdepartmental collaboration and enthusiasm is key to the successful implementation of a project such as this. For practitioners interested in creating similar programs, the authors recommend identifying potential interdepartmental partnerships that align with the university's strategic goals. While all disciplines can benefit from expanded international perspectives in their core courses, successful CLAC initiatives draw on existing faculty expertise and student academic interests. Fruitful potential partnerships can arise, for example, by identifying faculty who are conducting research in international arenas, and the disciplines with which students most frequently pair a language double major in (e.g. at the authors' institution, majors such as Global Health or Public Policy are often paired with language majors). Students and faculty both gain synergistic benefits from these connections. The teamwork element of course creation also enhances faculty collaboration and professional development. Finally, establishing connections with communities should play a central role in course design and implementation, in order to address the 'glocal' and social dimensions of sustainability.

Conclusion

The development of new programmatic content exploring sustainability-related problems should be examined from multidisciplinary and multicultural perspectives. As demonstrated through the CLAC tutorials, the opportunity to offer a holistic, multilingual understanding of global challenges represents a valuable contribution to students' engagement with and increased proficiency in both linguistic and sustainability content. Teaching them how to navigate between multiple threads of knowledge and then synthesize these threads around a central idea fosters skills in identifying core trends and common patterns while establishing connections within them. By exploring environmental wicked problems from an interdisciplinary and culturally- and linguistically-informed perspective, students are able to consider new connections between sustainability-related challenges, their courses of study, and their study of language.

Notes

- 1 The Association of American Colleges & Universities' VALUE rubrics are a collection of rubrics tailored to 16 essential learning outcomes. These rubrics—which address intellectual and practical skills, personal and social responsibility, and integrative and applied learning—are intended to assess student learning cumulatively over the course of an entire college career. They

are also an effective tool for defining learning objectives at the course level. Defined as “engagement with complex, interdependent global systems... and their implications for people’s lives and the earth’s sustainability,” the benchmarks outlined in the Global Learning rubric were a logical choice for this pilot phase of the project given their significant overlaps with CLAC’s four methodological pillars (AAC&U, 2014).

- 2 While instructors endeavored to incorporate published case studies whenever possible, in instances where a published case study was either not available or inaccessible for students’ proficiency level, instructor and students worked together to co-curate working case studies based on authentic materials representing a variety of perspectives on a given issue.
- 3 For more information on the interpretive, interpersonal, and presentational modes of communication, as well as proficiency-level performance descriptors for each mode, see the American Council on the Teaching of Foreign Language’s (2012) Performance descriptors for language learners.

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