

Final Report Disciplinary Communication Grant

Title: Environmental Studies Writing: Innovations in Numeracy and Co-Authored Writing

Department: Environmental Studies

Course: ENVS 100/L Ecology and Society

Amount: \$16,000

Period: 2018-19 Academic year

Participants: Dr. Stacy Philpott (Professor), Dr. Emily Murai (Lecturer), Dr. Gregory S Gilbert (Professor), John Armstrong (GSR)

This DCG grant enabled us to successfully transform the structure of the core course in the Environmental Studies major, ENVS 100/L Ecology and Society. The course had been taught as a 5-unit lecture and 3-unit writing lab for many years. We aimed to flip the course to focus more on active learning by adopting a structure with a 3-unit lecture course and a 5-unit writing- and numeracy-intensive laboratory component. All environmental studies department majors are required to complete ENVS 100/L to enter the major and take upper-division courses in the majors.

The proposed goals of our transformation project were to (1) revise the lecture component of ENVS 100/L so that more class time can be spent on writing instruction, (2) doubling the amount of time students spend in lab sections to improve writing instruction and incorporate numeracy skills, and (3) incorporating group writing assignments in the class while at the same time developing an innovative pedagogical toolkit and workshops to train ENVS graduate students (and faculty) how to teach co-authorship.

1. We will revise the lecture component of ENVS 100/L so that more class time can be spent on writing instruction.

This transition was successfully completed, with a 3-unit lecture component that includes two 65-minute lectures per week. The lectures focus on big-picture ideas that reach across the major (research paradigms in Ecology, Environmental Policy, Political Ecology); structural guidance in arguing from evidence based on scholarly literature; reading strategies for academic and scientific texts; the genre norms of each writing assignment; academic integrity and plagiarism; APA citation, formatting and prose-style; guidelines for writing clearly and concisely; departmental resources; guidance on successful projects writing collaboratively; and guests on student success, careers, exit options, internships, and other opportunities. The lectures are thus a mix of support for the work they will do in the laboratory component and broader engagement to help create a community and elaborate departmental expectations and opportunities.

While the first iteration of the redesigned lectures were done live in winter and spring of 2019, COVID led us to a further modification of putting together pre-recorded lectures (sometimes drawing on recordings of original the live lectures) for students to access asynchronously in the spring of 2020 and winter-spring 2021. Most lectures are accompanied by readings. Students complete a weekly quiz (drawing from a question

bank) on the lectures and readings; they can take the quizzes multiple times, earning their top score for a quiz.

When taught in-person, the course also included an in-class field learning project called the “Grand Transect,” where all the students in the class simultaneously spread out, in small groups, along the 8-km transect from the northern reaches of the Campus Natural Reserve through to south campus and then on to the Coastal Campus. They collected environmental data on weather, habitat, plant diversity, wildlife activity, and aggregated the data they collected. The students formed hypotheses that could be tested about ecological variation along that environmental gradient and use the data in lab for analysis. Besides an opportunity to learn techniques in collecting ecological data (mapping, quadrats, transects, time-point observation, image analysis) this project also helped students develop a sense of the broader kinds of habitats on campus. We hope to resume implementing the Grand Transect when we return to in-person teaching. In addition, the grant helped us to create a series of recorded faculty videos where departmental faculty (nearly all the ladder-rank faculty) talk about their paths, their roles in the department, and their research. Each video is accompanied by a reading from the professor’s academic research. Students complete a quiz on the videos and readings. This component is entirely asynchronous, even when the class is taught in-person, and is intended to make it easier for incoming students to approach faculty whose research they are interested in and they may be interested in working with.

2. We will double the amount of time students spend in lab sections to improve writing instruction and incorporate numeracy skills. We accomplished this transformation to a 5-unit lab that meets twice a week for 95-min active-learning sections per week. Through this grant we created three scaffolded Portfolios, as well as a scaffolded Numeracy assignment. The portfolios include (1) Critical claims: analysis of how arguments are supported with citations from published literature, (2) Literature Review: using peer-reviewed and gray literature to make supported arguments about an environmental topic, (3) Group policy memo: working as a group to design and craft a policy memo to address a specific environmental problem. The first two provide training in finding and reading scholarly literature, appropriately integrating and citing scholarly literature and visual data, drafting and producing scholarly writing projects and engaging in the process of peer-reviewing. The third provides a scaffolded project to create a clearly written, public-facing document as a group.

The Numeracy Assignment builds on heavily scaffolded exercises (including lecture materials) in using spreadsheets, creating graphical hypotheses, choosing, conducting, and interpreting statistical tests, graphic presentation of quantitative data, and writing about statistical results. Our goals are to have students master key writing and numeracy practices through structured learning activities.

Together, the lab sections provide ample time for guided, active learning in both literacy and numeracy that are core to the environmental studies major.

3. We will incorporate group writing assignments in the class and will also develop an innovative pedagogical toolkit and workshops to train ENVS graduate students how to teach co-authorship.

As described in the second point, the third portfolio is a highly scaffolded group writing project. It requires incorporating components from natural and social sciences into a policy memo that addresses a real world environmental problem. Using a set of resources on group writing collected and adapted by the GSR John Armstrong, teaching assistants work closely with the groups to guide them in the needed interdisciplinary collaborative process, learning collaborative writing skills and increasing meta-cognitive awareness of group dynamics in the process.

While we originally envisioned working with CITL to further develop this collaborative-writing module as a stand-alone pedagogical tool-kit, our attention shifted to how to make all the components work through a fully remote course, and we have not moved forward with that element.

Resources

Course documents is available through these three Google Docs

1. [ENVS 100 Syllabus](#)
2. [ENVS 100 Lecture and Lab Schedules](#)
3. [ENVS 100 Assignments and Portfolios](#)
4. [ENVS Style Guide](#)
5. [ENVS Numeracy Resources](#)

Assessment of our work.

We have now taught this revised course several times, in both in-person and remote circumstances. Lecturer Emily Murai has served as the writing instructor for each iteration, teaching with Professors Philpott, Gilbert, or Fairbairn, and once as the standalone instructor in the spring of 2021. We have done significant debriefing and revisions of the course after each iteration, and student evaluations (both informal surveys and SETs) have been strongly positive—students articulate that they are learning valuable skills they will use in their upper-division coursework and into their careers, and feel well-supported in the course. We have also shared materials adapted for the course (the APA citation guide, resources on numeracy) with other ENVS faculty, so that they may integrate these materials into their courses. We think the course transformations have been highly successful, and the SETs reflect this—not always the case in a demanding, writing- and numeracy- heavy, required course.