Making Undergraduate Research Work: Creating Infrastructure and Scaffolding for Multiple Pedagogical Scenarios

Undergraduate research is well-known to be a high-impact educational experience (Kuh 2008). It is an oft-stated truism that linguistics research is particularly accessible to undergraduates because, as the saying goes, “language is everywhere”, and technical barriers are often lower than in other fields. However, as the call for papers explicitly notes, most linguistics graduates will not pursue academic careers in linguistics. In this context, we must ask what makes an undergraduate research experience (URE) pedagogically valuable, and how do we, as academics, foster such experiences?

We propose to lead a colloquium and panel discussion on UREs in linguistics, with a specific focus on institutions or programs that primarily, if not exclusively, serve undergraduate students. The colloquium will feature five 20-minute talks, followed by a 30-minute Q&A and panel discussion. The authors come from a diverse set of program and institution types, and are at different stages of their careers, but all share a focus on implementing meaningful and pedagogically valuable UREs from a student-centered perspective, thereby setting up students for future success far beyond academia.

The practical realities of implementing UREs are subject to institutional constraints, which can be particularly true at institutions that do not have a significant research priority or else that conversely emphasize/focus resources on graduate programming. As such, each talk will necessarily provide the relevant pedagogical context, discussing how these constraints have shaped the form of UREs at their institution. Beyond such practicalities, each author emphasizes a different aspect of the pedagogical value of UREs: student ownership of projects in an all-undergraduate research lab (Bjorndahl); centering research on student collaborations (Geissler); peer-like research collaboration and work in digital humanities (Hildebrandt); program infrastructure to build research skills (Hogoboom); and scaffolding an equity-minded course sequence leading to a research capstone (Temkin Martinez).

Individual Abstracts

Scaffolding independence in an all-undergraduate research lab

Christina Bjorndahl, Carnegie Mellon University

Short abstract (337 characters): This presentation discusses building an undergraduate-driven linguistics research lab in which students have significant autonomy over the research process and their projects. Lab structure is focussed on both scholarship and professional development, thereby providing students with transferable skills outside of the research setting.

Abstract (298):

Many research labs use undergraduate research assistants on existing projects, often for laborious tasks such as acoustic segmentation. While valuable, students benefit most from research when they have ownership of the project and engage with multiple stages of the research process.

CMU is an R1, private institution, but there has not been a tradition of undergraduate linguistic research until recently. By leveraging university infrastructure and creating RAship courses for credit, we have increased opportunities for students to engage in research, beyond the CARE model of Bjorndahl & Gibson (2022). In this presentation, however, I focus on how I am building a lab community that facilitates student ownership of projects—and the corresponding general pedagogical benefits—in my all-undergraduate research lab, the *Phonetics/Phonology Interface and Typology (Ph^2IT) Lab*.

First, research projects run the gamut from entirely PI-led to entirely student-led, with students matched to projects that complement their additional majors (standard at CMU), or are encouraged to devise their own projects. Further, they are guided to adopt additional responsibilities as they become more fluent in the projects and research practices more generally. Greater autonomy and responsibility has resulted in students rising to take on challenges and teach themselves how to solve problems that naturally arise.

Second, students attend a mandatory weekly lab meeting, during which students give updates on their progress. Each semester, students run a discussion on a relevant paper with a handout. Lab meetings provide a forum for informal guest lab talks, as well as for doing professional development work like writing abstracts, dissecting feedback, and introducing themselves and their research in a professional setting. Finally, the lab is fun, with activities such as end-of-term celebrations and building paper model

larynges. Students therefore gain a variety of professional, transferable skills, in an environment that they are deeply invested in.

Geissler

Short abstract (499 characters):

Situating research within courses can complement other forms of undergraduate research. This presentation discusses course-based undergraduate research through two examples: one English Linguistics course at a university in Germany, and one advanced undergraduate course at a small liberal-arts college in the United States. In both cases, students gained many of the benefits of conducting research in an unusually accessible format. Unique advantages for the faculty instructor are also discussed.

Abstract (272 words):

Course-based Undergraduate Research in Linguistics

A common image of undergraduate research involves a student working alone or as part of a laboratory group, under the supervision of a mentor. While this “apprenticeship” model works well in many cases, it is not the only option. Course-based Undergraduate Research Experiences (CURE) present a viable, scalable alternative for involving undergraduates in research. The key characteristics of CURE, as defined by Auchincloss et al. (2014), are familiar to research generally: scientific practices, discovery, relevance beyond the course, collaboration, and iteration.

This presentation highlights these characteristics in the context of two research-based courses led by the author: one at a large university in Germany, and the other at a small liberal-arts college in the United States. In the first, English students with varying linguistics backgrounds collected a set of recordings for open-science distribution, with the intention of building up a corpus over multiple iterations of the course. In the second, a seven-student class of linguistics majors designed and implemented an experimental study in acoustic phonetics. The latter replicated and extended a recent publication, and a subset of students expanded the project into, ultimately, a conference presentation.

Research courses such as these offer a number of unique benefits (see Bjorndahl & Gibson 2022, Ruth et al. 2023). They involve more students than other forms of research, and are much more accessible to a broad range of students, including in the social sciences. Such courses thus also provide a pipeline for students to become more involved in other kinds of research. For the instructor, they may contribute both to research and teaching aspects of one’s career, potentially helping faculty navigate competing demands on their time.

Hildebrandt

Short abstract (458 characters):

Language documentation is increasingly team-based and community-oriented, and so too can undergraduate research involve diverse forms of collaboration. This presentation surveys how undergraduates have participated in the creation of interactive digital archives of narratives from under-resourced language communities from Nepal. Students from different disciplinary backgrounds edit and curate materials while addressing methodological and ethical issues.

Full abstract at 285 words, including title

‘Community’ and ‘Collaboration’ in Undergraduate Language Documentation Research: A Case Study from Nepal and a U.S. University

A typical image of endangered language documentation is that of the “lone-ranger” scholar, devoting years to singlehandedly describing, analyzing, and preserving a vulnerable language, and taking sole credit for these efforts. However, this “single scholar” model is changing now, with the rise of team-structure documentation projects and with community-oriented materials designed by faculty, students and community collaborators. As ethical as these new methods may be, they can be challenging to realize in a shifting higher education environment, for example in a university or program where undergraduate teaching is emphasized and recognized before or in place of scholarly achievements. I propose to present on my experiences in providing informal learning opportunities for undergraduate students from different disciplines to engage in peer-like research collaborations, including providing experience with the digital humanities as a field of growing relevance to linguistics. I will illustrate my work with undergraduate students as we collaboratively have built interactive, multi-media digital archives of narratives recorded from speakers of under-resourced languages from Nepal, which is now housed for free public access at the University of Virginia (UVA). Students received stipends, either through my funded projects, or via my university’s Undergraduate Research and Creative Activities office to collaboratively edit narratives in ELAN, an audio-video annotation and translation program. They also uploaded videos and transcripts to the UVA archive and added meta-data and subject keywords for searchability in the library’s database. Students learned best practices for archiving born-digital materials, and we also discussed the ethics of data sovereignty

and issues that may arise in the archiving of materials that are not from our own personal experiences and communities.

Hogoboom:

Short abstract (381 characters):

Interest from students and faculty is necessary, but not sufficient, for undergraduate research to thrive. The Linguistics Program at William & Mary has developed curriculum and program infrastructure to facilitate student research. These include redesigned courses, a weekly Program-wide lab meeting, and a new elective, Experimental Psycholinguistics, all designed to develop research skills.

Abstract (292):

Adjusting curriculum to support students developing skills for conducting experimental research

A major challenge in growing URE experiences for students is the required investment on the part of faculty. Establishing a weekly lab meeting across the Linguistics Program, augmenting our Introductory course, and developing a mid-level Experimental Research Skills course have introduced foundational familiarity with all aspects of experimental research.

The Linguistics Program has set aside a 1-hour block each week for a Program-wide lab meeting. Students do not enroll, but turn up as they like. Faculty and research-involved students present their (ongoing) work pitched to an audience that may have minimal relevant background knowledge. This allows students to (a) see the scope of work being done by researchers in the Program (b) see work in various stages of development, and (c) gain an understanding of the components of research. We now require lab meeting attendance as a prerequisite to being involved with faculty research; a helpfully higher bar than just expressing interest.

We have added a 1-hour-a-week Workshop (Lab) component to our Introductory course, which introduces students to experimental studies. For example, they may run a perception study on themselves via Praat. Before we look at the results all together they go through the steps of looking at their own data in Excel, via pivot tables and graphs. These give them basic experience with software, study set-up, and data displays.

Finally, in the new elective, Experimental Psycholinguistics, students learn about relevant background for a linguistics question, and then individually work on making stimuli, coding results, etc, before they learn how to analyze the results (using data the instructor has previously gathered) and write up the study as mini-papers.

Implementing these components of our Program has successfully and sustainably scaffolded students into being prepared to engage with all aspects of conducting experimental research.

Scaffolding Research Opportunities for All Linguistics Students

Michal Temkin Martinez, Boise State University

Short abstract (472 characters):

Small programs must be creative in providing students with high quality experiences. In public universities, this involves leveraging campus infrastructure, disciplinary resources, and curricular innovations. Boise State's Linguistics Department offers a research-focused capstone, ensuring all students participate in research. Recent revisions scaffold research opportunities to prepare students and help them understand how this prepares them for post-collegiate lives.

Abstract, including reference (277 words):

Boise State University's Linguistics program has long provided high-impact practices through service learning with refugee communities, campus internships, and research opportunities since 2010. These experiences are key to providing a relationship-rich education, allowing students to foster meaningful peer and faculty connections, enhancing belonging, and improving retention and graduation rates (Felten and Lambert, 2020).

However, as a small program serving primarily in-state students balancing family obligations and employment, not all students could access co-curricular opportunities. To address this equity issue, faculty began intentionally imbedding high-impact experiences into the curriculum, including a research-focused capstone course.

Despite enthusiasm for the capstone, program assessments revealed concerning gaps: graduating seniors lacked confidence in identifying linguistics-related arguments, and many students wished they had started research earlier with proper methodological preparation, and sought more co-curricular opportunities.

When the program became a department in 2022, we leveraged these assessment results to secure needed curricular changes. We developed a new sequence introducing research methods to all juniors, building confidence and skills for capstone success while preparing students for competitive co-curricular opportunities and paid research positions through university programs.

Since implementation, students report improved methodological understanding and increased confidence in supporting linguistics-based arguments. Aligning with the