

Introducing linguistics to Atlanta high school students by opening linguistics talks through Zoom for everyone

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Abstract. In this paper, we detail our practice in promoting linguistics to high schools through a sustainable and efficient approach. By considering the interests of high school students and educators in the planning of our university's linguistics colloquium, and by providing access to these colloquiums via Zoom, we aimed to enhance engagement and outreach. In the Spring of 2023 and 2024, we hosted colloquium talks accessible to high school students and educators that focused on different topics, such as linguistics in the tech industry, linguistics in curriculum design, and language acquisition of sign languages. The initiative proved successful, as demonstrated by the high demand for these events and the enthusiastic feedback from participants. This approach offered high school students and educators a unique opportunity to explore linguistics and its practical applications without the need to travel to university campuses or plan additional events while also allowing college educators to gain valuable insights into the perspectives of high school educators and students on linguistics education.

Keywords. linguistics education; high school-university collaboration; outreach programs; sustainable approach

1. Introduction. Linguistics is the scientific study of language and can bridge the humanities studies and traditional STEM studies (Larson 2023; Manson 2024). Learning linguistics has been proven successful with growing interests in K-12 and provides opportunities for high school-university collaborations (Honda et al. 2010; Loosen 2014; Larson et al. 2019; Plackowski 2020; Casillas et al. 2023). Given the great benefits and demand of introducing linguistics to high-school students, many endeavors have been devoted to promoting and facilitating linguistics education to high school students, such as the North American Computational Linguistics Olympiad (NACLO), the Linguistics in the School Curriculum Committee in the Linguistic Society of America, and outreach programs initiated by individual linguists and educators.

However, the linguistics outreach programs for high school students are no exception to the challenges that any other academic outreach program may face, such as funding and resource limitations that hinder the sustainability, accessibility, and scalability of programs (Abramowitz et al. 2024). For both college and high school educators, the primary limiting factor in implementing outreach activities effectively is the time required, given their existing commitments to research and teaching, which are often more critical for career advancement under the current

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evaluation systems. This situation frequently leaves educators with the impression that they must sacrifice their time for outreach programs (Buxner et al. 2012). Logistical issues such as transportation are major barriers for high school students, in particular, for underrepresented students, to participate and engage in the academic outreach program (Kaggwa et al. 2023). In addition to the above challenges, language and linguistics departments face significant challenges compared to traditional STEM fields, primarily due to smaller faculty sizes and fewer resources (Tang 2019). These limitations and challenges underscore the necessity for linguistics outreach programs to consolidate existing resources and adopt sustainable strategies to promote linguistics education to K-12 students.

Back to the specific case of the development of the language and linguistics outreach program at Georgia Institute of Technology starting in the Fall of 2021, it experienced similar challenges and limitations as mentioned above, in addition to the challenges posed by COVID-19 and related public health issues. The outreach efforts started with registering Georgia Institute of Technology as a university hosting site for NACLO in 2021. Due to COVID-19 restrictions, neither hosting in-person outreach events nor making in-person visits to local high schools to present linguistics and organize events was a feasible choice. Relying solely on email promotion, we promoted NACLO to high schools in Atlanta and other parts of Georgia, resulting in 23 students registering for the Open round session in January 2022. However, the actual participation rate was not high, with five students attending the free training session via BlueJeans on January 8th, 2022, and nine students participating in the free NACLO in-person session on January 27th, 2022. When promoting NACLO, we observed that many high school students, their parents/guardians, and high school teachers and administrators were unclear about what linguistics education entails and how it can benefit students' career paths. For example, there was an inquiry from students asking whether knowledge of non-English languages is necessary for learning linguistics or taking NACLO and whether linguistics study can help students get prepared for STEM-focused research and careers. This lack of understanding of linguistics as a subject matter and how it is relatable to careers blocks active participation in linguistics outreach programs.

Meanwhile, participants and high school teachers who attended the free in-person NACLO event at the Georgia Institute of Technology on January 27th, 2022 suggested that more informational sessions and learning resources on linguistics would be very helpful. We also learned similar feedback and suggestions when having conversations with high school students at the virtual Linguistics College and Opportunities Fair for high school students, organized by the Linguistic Society of America's Linguistics in the School Curriculum Committee and the Linguistics League at Linguistics Society of America in February 2022. Additionally, because of a shortage of personnel and my lack of thorough planning of the programs, the outreach efforts were primarily conducted by me in Fall 2021 and Spring 2022, with only assistance from a few college student volunteers who helped proctor the contest on the test day. This situation resulted in a significant workload and perceptions of burnout, which even made me consider pausing these outreach efforts to prioritize my research and teaching responsibilities.

Therefore, it is crucial to create more opportunities for high school students and teachers to learn about linguistics and its potential career benefits while ensuring that these initiatives do not overburden organizers and participants. It is also essential to find low-cost methods to sustain the outreach program effectively.

2. Redesigning the outreach work. To achieve these goals, I collaborated with Dr. Kyoko Masuda, who shares a strong passion for promoting language and linguistics education, to redesign the outreach efforts in 2022. This redesign did not involve reducing program offerings. Instead,

we adopted an approach that streamlined the outreach work by breaking it down into smaller tasks distributed throughout the year, rather than concentrating them within a short time frame.

As part of the redesigning, we proposed three phases for the program. Phase One includes hosting the open round (each January) and invitational round (each March) for NACLO annually and two training sessions for NACLO before each open round (each January). Connecting school students with scientists through videos and video conferencing can solve logistical issues and has proven to be an effective and efficient way of engaging high school students in outreach programs (Chen & Cowie 2016). Therefore, in Phase Two, we focus on offering linguistics workshops and talks through video conferencing for high school students and high school teachers who are interested in developing linguistics workshops, seminars, or courses for high school students (throughout the year). Phase Three includes developing introductory online linguistics teaching and learning resources for Atlanta high school teachers and students (throughout the year). These three phases are closely integrated rather than separated. For example, Phase Two is incorporated into our pre-NACLO promotion, during-NACLO training sessions, and post-NACLO follow-up events. Lecture recordings collected from Phase Two and training sessions from Phase One are consolidated and reorganized to enrich the resources for Phase Three. The resources collected for Phase Three can be used to update the training sessions in Phase One.

Moreover, with the redesign, the outreach program transitioned from a one-way model—where college educators managed every detail of outreach events and provided resources for high school students—to a well-connected network. In this new model, high school students, teachers, and college students actively propose ideas and take on leading roles to refine the program. High school students, teachers, and parents are no longer merely participants who attend events; they are now included in the planning phases of the outreach programs, providing their feedback, needs, and requests. College students are no longer just volunteers who help with procuring the NACLO open round for one or two hours; they are now involved in every phase of the outreach programs, serving as student leaders and instructors. They contribute to event organization, documentation, and leading training sessions and communications. Studies have shown that having undergraduate students and graduate students play a leading role in outreach programs, particularly through paid student assistant positions, provides significant academic, professional, and personal benefits. These benefits include an enhanced university experience and improved communication skills (Pickering et al. 2004; Pfund et al. 2012; Clark et al. 2016; Curtis 2017; Rethman 2021; Saville et al. 2022). For high school students, having college students play a leading role in the program provides role models from their college counterparts and promotes communication between universities and high schools.

The thorough redesign of the work yields a successful grant proposal to an Atlanta Global Studies Center Title VI NRC award, titled “Introducing Linguistics to High School Students in Atlanta” (co-PI with Kyoko Masuda). With the funding from this awarded project, we were able to implement the redesigned outreach program starting in the Fall of 2022.

Figure 1 is a sample timeline illustrating how we integrated the planning of Phase Two when promoting events in Phase One. In the fall, when we sent out promotional emails about NACLO to high school students and teachers and calls for volunteers and student assistants to our undergraduate and graduate students, we also included information about the linguistic talks that were already scheduled for our undergraduate Introduction to Linguistics class. Additionally, we asked participants for their input on which linguistics topics they would like to learn more about as well as their preferred time slots for participating in invited talks. Meanwhile, we surveyed our undergraduate students in the entry-level Introduction to Linguistics class at the beginning

and end of each semester. By identifying the common topics of interest and common time slots between these undergraduate students and prospective NACLO participants, we contacted invited speakers to schedule events. We then sent out informational emails whenever these events were scheduled.

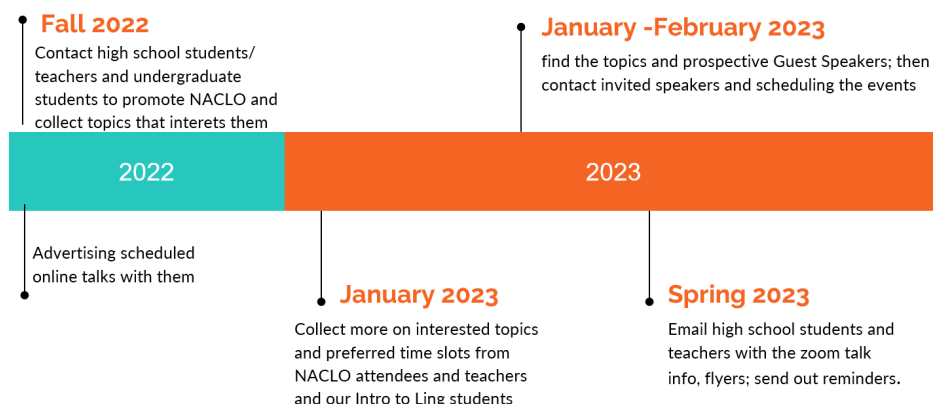


Figure 1. A sample timeline to implement the work

3. The outcomes of the redesigned work. Overall, the redesigned effort has resulted in a scalable, economic, and sustainable outreach program. For Phase One only, in the Spring of 2023 and 2024, nearly 60 high school students from over 12 Georgian cities participated in these open round sessions of NACLO at the Georgia Institute of Technology-Atlanta campus. Impressively, nine of these students progressed to the invitational round, competing for national recognition, and one student made it to the international round representing the US team to compete for international recognition.

Phase Two, a crucial part of the outreach program, has proven to be successful in attracting more high school students to participate in Phase One’s NACLO event. It has also increased the interest of both undergraduate students and high school teachers in pursuing linguistics studies. We successfully organized five invited talks with prestigious speakers through the video conferencing platform Zoom, covering topics such as linguistics in the tech industry, linguistics in high school, sign language acquisition, language and the brain, language dialects, and large language models (Figures 2 – 3). We recorded the talks if speakers and participants allowed us to.

The video recordings of these talks were also made accessible to all high school students, teachers, and undergraduate students who requested them. These talks have reached nearly 300 participants, providing high school students and teachers with more accessible opportunities to explore the fascinating field of linguistics and its real-world applications. For example, the audience said they now understood more about how studying dialects can help with refining large language models after attending Dr. Eisensten’s talk, while linguistics studies can also help them with media literacy after attending Ms. Placksowski’s talk. At the end of each talk, college students and high school students all have chances to ask questions or provide feedback through online Zoom chat. This interactive way has fostered a sense of partnership and mutual learning among the audience. These events have also inspired and motivated students to pursue research careers in language-related fields, for example, some NACLO participants from our test site at the end reached out to our department for summer internships with our linguistics faculty.



Figure 2. Flyers of Zoom talks in Spring 2024



Figure 3. Flyers of Zoom talks in Spring 2023

For Phase Three, we successfully launched the project website (<https://sites.gatech.edu/naclo/>) with resources for high school students and teachers. The resources list, as well as our training session materials, are also continually updated on the materials and feedback accumulated in Phases One and Two.

More importantly, the redesign includes involving college students in the outreach project and allowing them to take a lead role, which has proven a successful move. Since implementing the redesign, we have trained one graduate student and one undergraduate student as paid program assistants. Their tasks include organizing the annual NACLO, marketing and promoting linguistics at Georgia Tech to high school teachers and students, developing teaching and learning toolkits for high school educators and students, updating the project website, organizing related invited talks and workshops on linguistics for high school teachers and students, and leading free online NACLO training sessions for high school students who signed up for the NACLO at Georgia Tech.

Additionally, we have recruited eight linguistics students from our university to work as student facilitators for NACLO events. These student volunteers, along with our program assistants, provided day tours to high school students, teachers, and parents on NACLO contest days. They

engaged in vibrant conversations, offering high school students valuable insights into Georgia Tech and its linguistics and language programs. According to the student volunteers and program assistants, they improved their communication skills and leadership skills, gained personal growth, enhanced their resumes, and enriched their community engagement experience by playing a leading role in the outreach program. High school students reported enjoying and learning from their college counterparts and finding role models through these interactions. High school teachers and parents who participated in the events also indicated that they gained a better understanding of linguistic programs and how language and linguistic studies can guide high school students toward their career or academic paths through discussions with college students studying linguistics.

4. Conclusion and future work. In this paper, we present details about our redesigned linguistics outreach program and the outcomes of the redesigned effort. As part of the redesign, we proposed three phases for the program: hosting the annual NACLO open and invitational rounds and training sessions (Phase One), offering linguistics workshops and talks for high school students and teachers through Zoom (Phase Two), and developing online linguistics resources for Atlanta high school teachers and students (Phase Three). These phases are closely integrated, with resources and sessions from each phase enhancing and updating the others, creating a well-connected network rather than a one-way model. Through a sustainable and efficient approach, we have made the program scalable and a win-win program. In the future, we plan to conduct formal surveys to thoroughly assess the program's outcomes, further streamline the outreach workflow, and refine the programs based on feedback from all parties of the stakeholders. Our goal is to offer effective and sustainable outreach programs for high school students and teachers to learn more about languages and linguistics.

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