

LaCuKnoS Project Overview

Language, Culture, and Knowledge-building through Science

What is LaCuKnoS?

The Language, Culture, and Knowledge-building through Science project (called LaCuKnoS for short) is a new project at Oregon State University, working in collaboration with SMILE, and funded by the National Science Foundation. It is a four-year project, beginning in fall 2020, that will provide ongoing teacher professional development and resources to support teachers, students and families across Oregon. The focus of LaCuKnoS is on collaborating with teachers of science in response to three significant challenges affecting U.S. STEM education. First, U.S. student demographics are rapidly changing, with an increasing number of students learning STEM subjects in their second language. Second, the needs and opportunities of the national STEM workforce are changing within a shifting employment landscape. Third, academic expectations in schools have changed, driven by changes in education standards and assessments, as well as the more recent challenges of remote teaching and learning. Successfully meeting our students' needs will require all of us, as educators, to gain new knowledge, skills, and resources to build on students' and families' linguistic, cultural, and knowledge-building assets as we prepare them for the future.

What will the LaCuKnoS project do?

The LaCuKnoS project builds on prior work that was done in collaboration with teachers in Georgia. These teachers worked with the project team to develop, test, and revise an instructional model that brings together best practices for the role of language in science learning, the role of cultural connections in students' science engagement, and ways to build students' science knowledge cumulatively over time. The LaCuKnoS project will now work collaboratively with Oregon teachers to further test, revise, and then disseminate this model across and beyond Oregon. We will train SMILE teachers in the LaCuKnoS model and then work collaboratively to integrate the LaCuKnoS practices into our science instructional materials. We will provide a range of resources for teachers and students and will co-facilitate a series of family workshops to support students' academic success and learning about STEM careers.

Who's involved in the project?

All SMILE teachers are invited to participate in the LaCuKnoS project. We hope to work with you, your students, and your students' families. In addition to the SMILE staff you already know, additional members of the LaCuKnoS project are:

- Cory Buxton – faculty member in the OSU College of Education
- Francisca Belart – faculty member in OSU College of Forestry
- Yanming Di – faculty member in the OSU Department of Statistics
- Graduate students and other staff from across OSU

How will SMILE teachers be involved?

LaCuKnoS will partner with SMILE to help support the range of SMILE activities including your participation in SMILE teacher workshops, afterschool clubs, family engineering and science nights, and college connection events. LaCuKnoS will provide materials and sample curriculum, as well as online and in person support for using the LaCuKnoS materials and practices in your teaching. You will also be invited to participate in the research component of the project. This will involve asking you to complete a short “teacher log” once every two weeks to document what you have been doing relevant to the LaCuKnoS and SMILE work, as well as sharing with us the materials that you develop through your participation in the project. Students in your SMILE clubs will also be invited to participate in the student portion of the research, which looks at their evolving use of language, cultural connections and science knowledge over the course of the year but periodically asking them to complete concept maps as a way to document their thinking. As a SMILE teacher, you will still participate in the LaCuKnoS professional development work during SMILE activities, even if you choose not to participate in the research component of the project (although we hope you will participate in both).

What's in it for me as a SMILE teacher?

You'll learn about the latest research and practices for supporting all students, and especially multilingual students, in taking ownership of scientific language, culture and knowledge. You will learn to integrate these practices effectively into your instruction and will engage in guided practice to create and adapt science lessons that include the LaCuKnoS model. You will also learn and practice new family engagement strategies through participation in family workshops and will learn about the latest STEM careers and fields in Oregon and beyond, as well as how we might encourage a broader range of our students to consider and pursue such careers. As with other SMILE activities, we will provide financial support, such as the cost of substitute teachers, travel costs, and needed supplies and materials. Finally, you'll be contributing to advancing science education more broadly by helping us understand how to more effectively support teachers in preparing all students for the broad range of academic and occupational pathways they will encounter in life.

What are the first steps in the project?

Beginning this coming academic year, some of the SMILE activities you engage in will start to introduce the LaCuKnoS model, practices and resources. LaCuKnoS team members plan to visit your communities in person when we are safely able to do so, to hear about your needs and experiences as science educators. We also hope to conduct in person family workshops in spring 2021 if possible, to begin getting to know some of the families that are part of your schools and communities. However, our first year working together on LaCuKnoS will largely be for planning and networking, with the more intensive work beginning in academic year 2021-2022. We look forward to working together with you for the coming year and beyond.