A DUAL IMMERSION CLASS AT CANALINO SCHOOL IN CARPINTERIA
The Gevirtz School awarded $1.1 million NSF grant to prepare high-quality science teachers for high-need school districts

Darby Feldwinn (leading the class in photograph) of the Departments of Education and Chemistry is the lead PI for a new, five-year National Science Foundation Noyce Teacher Scholarship grant for $1,134,605. The project, entitled COASTAL: Collaboration for Opportunities in and Advancement of STEM Teaching and Learning, aims to serve the national need to prepare high-quality science teachers for high-need school districts. Julie Bianchini and Danielle Harlow in the Gevirtz School are Co-PIs on the award.

In partnership with Santa Barbara City College, Santa Barbara Unified School District, and the Wolf Museum of Exploration + Innovation (MOXI), UCSB intends to develop science teachers who will be highly effective in teaching both science and engineering to culturally and linguistically diverse students. Through field placements and coursework, the project will engage undergraduate interns and Teacher Candidate Scholars to be effective in using the Next Generation Science Standards. This goal will be accomplished by emphasizing convergent science, which includes the merging of ideas, approaches, and technologies among the disciplines of science and engineering.
## MAJOR GRANT AWARDS FUNDED IN FISCAL YEAR, 2018-19

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<td>COASTAL: Collaboration for Opportunities in and Advancement of STEM Teaching and Learning</td>
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<td>Karin Lohwasser (PI)</td>
<td>Effective Novice Teachers: How Systems of Support Can Transform the Clinical Experience During Preparation</td>
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<td>Tine Sloan (PI)</td>
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For more information about external funding at the Gevirtz School, see the Contracts & Grants pages: https://education.ucsb.edu/contracts-grants
The University of California is taking great strides to address the state’s chronic teacher shortage by systematically studying and improving the most important factor for determining the quality of TK-12 education: the quality of teachers.

Composed of four integrated project aims (see figure on opposite page), nine UC campuses, over one hundred researchers, and $1.5 million in seed funding through the UC Office of the President Research Catalyst Award, the California Teacher Education Research and Improvement Network (CTERIN) is poised to improve the preparation of California’s TK-12 teachers. A necessarily ambitious project, CTERIN has the resources to advise the state with key findings generated from a coordinated effort informed by California’s state education agencies, key stakeholders representing teachers, students and families, and the California State Universities (CSU) and Private/Independent colleges that prepare the majority of the State’s teachers.

“The consortium needed to be large and widespread to understand the impact of education policy and practice within and across the diverse communities our vast system serves,” says lead investigator, UCSB associate teaching professor, and Chair to the California Commission on Teacher Credentialing, Dr. Tine Sloan. “By coordinating research and networked improvement efforts in a centralized system, we hope to not only understand how the preparation of our teachers is serving school children, but improve our teacher education systems and practices to do better by them.” From urban areas of Los Angeles to migrant worker communities in the Central Valley, CTERIN will be conducting large scale studies through a new statewide data system, while simultaneously supporting researchers and teacher educators to do deep dives into understanding classroom practice, thereby helping teachers and students thrive. Sloan and her extensive team know that the Center’s four focuses—teacher preparation pathways, educational policy, variances across Teacher Education Program (TEPs) practices, and how to prepare teacher educators at the doctoral level—might seem discrete but are invariably intertwined.

In the two years since its launch, CTERIN has supported a knowledgeable statewide network of research teams, creating a feedback loop to inform and direct center activity. In northern CA, groups of
researchers are investigating how to recruit, retain, and support bilingual teachers, teachers of color, and teacher educators of color. Another project has teamed with the UC program CalTeach, which serves as a pipeline for undergraduates to become science and mathematics teachers, to understand STEM teacher retention in underserved schools. In southern CA, researchers are asking if new teachers feel prepared to teach students with disabilities, while another team develops an assessment instrument for UC-wide use to improve the racial climate within TEPs.

And, while one large-scale Networked Improvement Community (NIC) across all UC teacher preparation programs studies and improves the preparation of teachers for multilingual learners, another NIC examines the practice of faculty who supervise student teachers in classrooms. “I am seeing the excitement of teacher educators involved in the NICs, as it expands their learning when they can work with colleagues from across multiple programs,” says Dr. Sloan. Dr. Lisa Sullivan (UC Davis), the project lead for the teacher supervision NIC, notes that “the data shows that across our programs, supervisors want additional professional development, opportunities to collaborate, and resources to supervise student teachers in ways that meaningfully enhance their growth and learning.”

The data also reinforces their invaluable role in preparing candidates to be reflective practitioners.”

Just as the effectiveness of teachers is one of the most important variables to student success, so too is the quality of teacher educators’ practice. Currently, teacher educators develop their expertise in a variety of ways. For example, some focus exclusively on supervising student teachers, others teach courses and design programs, others do research, a few do all of the above. The ability to do “all of the above” requires specialized training that CTERIN’s Educating Teacher Educators (ETE) Initiative plans to improve. ETE is developing a multi-UC campus program that will provide doctoral students with coursework and systematic training in advanced teacher education research and practice. A crucial component of the full program is already finishing its inaugural year: the first cohort of CTERIN Teacher Education Fellows. This group of 21 doctoral students selected from across the UC system have formed a network of master teacher educators, creative scholars, and leaders in the broader field of teacher education research, policy, and practice.

“Working with the first cohort of Fellows has been exhilarating,” says Dr. Jason Duque at UC Santa Barbara, co-PI and leader of the ETE Initiative. “The place and time—and especially the people involved, with their talents and interests and commitments—it just feels like we have a new and different opportunity to shape things.” And quite dramatically, they do. If every single well-prepared teacher educator has a hand in preparing 25 to 200 K-12 teachers a year, who then go on to teach 30 to 150 students a year, the effect of one successful teacher educator is exponential.

“We are a large California public research university system,” says Sloan. “UC has made profound scientific advancements to fields like Agriculture and Medicine, and so too will we to TK-12 Education. As this project specifically examines the ways in which teachers and their educators are prepared, we believe the opportunities here will provide ever-rippling effects to our state, the nation, and most importantly, our school children.” Learn more about CTERIN activity at cterin.ucop.edu.
“Google, how do I get the students at Table 5 to socialize less and engage more in the task I’ve so carefully planned out?” For an aspiring teacher learning how to navigate a California classroom, such questions are best discussed with an education professional who knows both the students and the demands of the curriculum—an experienced K-12 classroom teacher. In clinical teacher preparation settings, a “student teacher” shadows and works in classrooms alongside accomplished educators, or “mentor teachers,” to learn the work of the profession. These mentor teachers have a profound influence on shaping foundational practices for the mentee’s career, yet many are not formally trained as Teacher Educators. That crucial role requires a completely different pedagogical toolkit than teaching children and adolescents, one rooted in an understanding of how learning to teach progresses over the course of a school year and how this progression is best supported.

Aiming to make the mentor/mentee partnership effective in preparing new teachers to lead their own classrooms their first year, researchers across four universities (UC Santa Barbara, UC Irvine, University of Washington, and Boise State University)—in partnership with their local school systems—are creating tools, mentoring routines, and developing informational materials needed to optimize learning for new teachers and mentors over the course of student teaching. The $800,000 National Science Foundation (NSF)-funded project, titled NASCENT, or New Approaches to Support the Clinical Experience of Novice Teachers, is led by GGSE’s Dr. Karin Lohwasser, an Assistant Teaching Professor in Science Education and Director for the UCSB CalTeach/Science and Mathematics Initiative.

The project builds upon empirical results from a previous NSF-funded study in which teacher candidates from four preparation programs were tracked over the course of their clinical experiences. The team surveyed and interviewed 65 student teachers from three different Teacher Education Programs (TEPs) during their internships to document how they experienced opportunities to observe and gradually take up the complex work of teaching under the guidance of mentor teachers. “We knew that the experiences in their classroom placements are very unique for each
teacher candidate, but we were surprised at how inequitable the opportunities to learn how to teach were distributed among candidates, depending on the mentoring of their classroom teachers,” says Lohwasser. While some students rarely had the opportunities to engage in and make sense of the work of teaching, others had ample situations that propelled them forward in their thinking and skills. The new project seeks to increase the quantity and quality of these productive situations.

Mentor teachers also saw opportunities for strengthening the partnerships. Many hoped to receive more guidance on how to support candidates’ opportunities to learn at specific times during field placements, so that they may be fully equipped for shape-shifting demands throughout the school year. Such requests were taken up in the follow-up research project, NASCENT.

NASCENT leverages six key mentoring practices (see figure on opposite page)—making thinking explicit, modeling the work of teaching, pre-briefing and debriefing, co-planning, co-teaching, and analyzing student work together. Consider practice one, making thinking explicit, which is both foundational and challenging for mentor teachers. Imagine ongoing cycles of explaining what you’re doing, pointing out how you are going to do it, and why, so a novice can understand and implement what you are modeling. To lessen this strain, the team developed tools that both parties can use to bridge their different perspectives—one far seeing and long-serving, the other still squinting through an unexplored, dense thicket of what it means to be a teacher—that intertwine to make a higher understanding. One tool took the form of “just-in-time” email newsletters designed to provide advice that aligned with distinct stages in the preparation trajectory for candidates to become effective teachers. Such content was created in close partnership with TEPs that emphasize ambitious and equitable approaches to instruction and leverage Ambitious Science Teaching philosophies (ambitiosusscienceteaching.org).

NASCENT makes it easier for mentors/mentees to develop routines that work for them to collaborate on all parts of instruction, including planning, teaching, and assessing the understanding of a classroom of diverse learners. Like pilots learning to fly through the practiced use of a flight simulator, it is important for student teachers to experiment with instruction in a well-organized environment before becoming responsible for their own classrooms. “The backstage work of being a teacher is often hidden,” says Dr. Lohwasser. “It’s hard for mentor teachers to open up their practice and make that work visible to help pre-service teachers make sense of what they’re doing, the rationale behind instructional decisions.” Dr. Mark Windschitl, a co-PI on the project and one of Dr. Lohwasser’s colleagues during her previous employment at the University of Washington, adds, “We want to get easy-to-use materials that mentor teachers and novice teachers can use. We want to take down barriers and make it as efficient as possible for mentor teachers.”
Among the many reasons to have brilliant students in a school’s program is their work can inspire yet more research. Such was the case with the dissertation written by Elena Lilles (now Diamond) in 2011, “High-Risk Latino Youth Make Gains Towards Closing the Achievement Gap.” Associate Professor in Counseling, Clinical & School Psychology Matt Quirk was taken with some of Lilles’ findings. Namely, that children who were Latinx, dual language learners that acquired English the fastest were much more likely to close achievement gaps the fastest too.

As school readiness and literacy development are two of Quirk’s major research topics, he decided to build on Lilles’ findings and examine existing English Language Development (ELD) programs. What he found wasn’t good. “There wasn’t a whole lot of rigor or science behind them,” he points out. “The programs weren’t having their intended effect.”

In 2016 Quirk fortunately was able to partner with Jamie Persoon, Principal at Canalino School in Carpinteria, and Carlos Pagan at the Santa Barbara County Education Office, to develop effective ELD programs, with support from local foundations and the Wendel Foundation. The work began just as California voters passed Proposition 58, which allowed for bilingual education in the state for the first time since 1998’s Proposition 227 banned it. That led to what Quirk refers to as a “perfect storm” for a study at Canalino. One group of students was working with an old ELD model that wasn’t evidence based. A second group began working with an evidence-based model.

Now a third group is receiving dual language immersion (DLI) instruction in school, every day. These DLI students receive 90 percent of instruction in Spanish and 10 percent in English during kindergarten and ratios adjust to include more English instruction each year until they receive 50 percent of instruction in each language in the fourth and fifth grades. What’s more, some of the students in the dual language program are native English speakers, so this allowed for Quirk’s team, which includes doctoral students Jennifer Scheller and Daniel Feinberg, to examine how these programs influenced the learning of both Latinx dual language learners and also native English speakers. Quirk points out, “These three models gave us a nice, neat accelerated longitudinal design.”

The project just completed its second year of data collection, so it’s difficult to come to any clear conclusions as of yet. But Quirk is heartened by some unanticipated results, namely that dual language instruction is changing the culture of the school. “Parents of all backgrounds are coming into the school,” he says. “All school events including school plays are now in English and Spanish. The school has become a more open place for the entire community.”

While Quirk is tracking student data in three areas—executive function (metacognition), academic achievement, and language development in both Spanish and English—he stresses he “doesn’t want the success of the program to only be evaluated

Matt Quirk (second from left) with his graduate student advisees (l-r), Sruthi Swami, Daniel Feinberg, and Jennifer Scheller.
based on students’ academic achievement. The way the children view themselves and their community and how they consider their language to be valued are also really important pieces.”

Quirk also admits there’s another factor that will be important to examine in this research—the rate at which children are redesignated from English Learner status in each instructional condition. “Getting reclassified as English proficient in California can be extremely difficult, as you not only need to be proficient in English, but you also need to be at grade level in terms of academic achievement,” he stresses. “You have to demonstrate you learned everything you ‘learned’ while not proficient in the language of instruction (English)....” The issue grows particularly problematic at the end of fifth grade, for if students aren’t redesignated by then, it becomes extremely difficult for them to fulfill the A-G requirements they will need to apply to a CSU or UC. Quirk simply adds, “It’s a social justice issue.”

For one can take a much larger look at the issue, as Carlos Pagan in the Santa Barbara County Education Office does. “Pagan sees it as California is the fifth largest economy in the world, and if we want to continue to compete, we need to be bilingual,” Quirk claims of the man he sees as a driving force behind the development of the ELD and DLI programs. “In Europe, it’s not just about being bilingual but how many languages do you know.”

To that end last year the CA State Superintendent of Schools released an initiative to move schools toward bilingual programs. Superintendent Tom Torlakson called for tripling the number of high schoolers who graduate with a “Seal of Biliteracy” and quadrupling the number of dual language immersion programs by 2030.

Such a call adds urgency to figure out what works best in Carpinteria. “A lot of Santa Barbara County schools are looking at Canalino as a potential model,” Quirk says. “We hope our work will provide data that will inform such programs across the state and country.”